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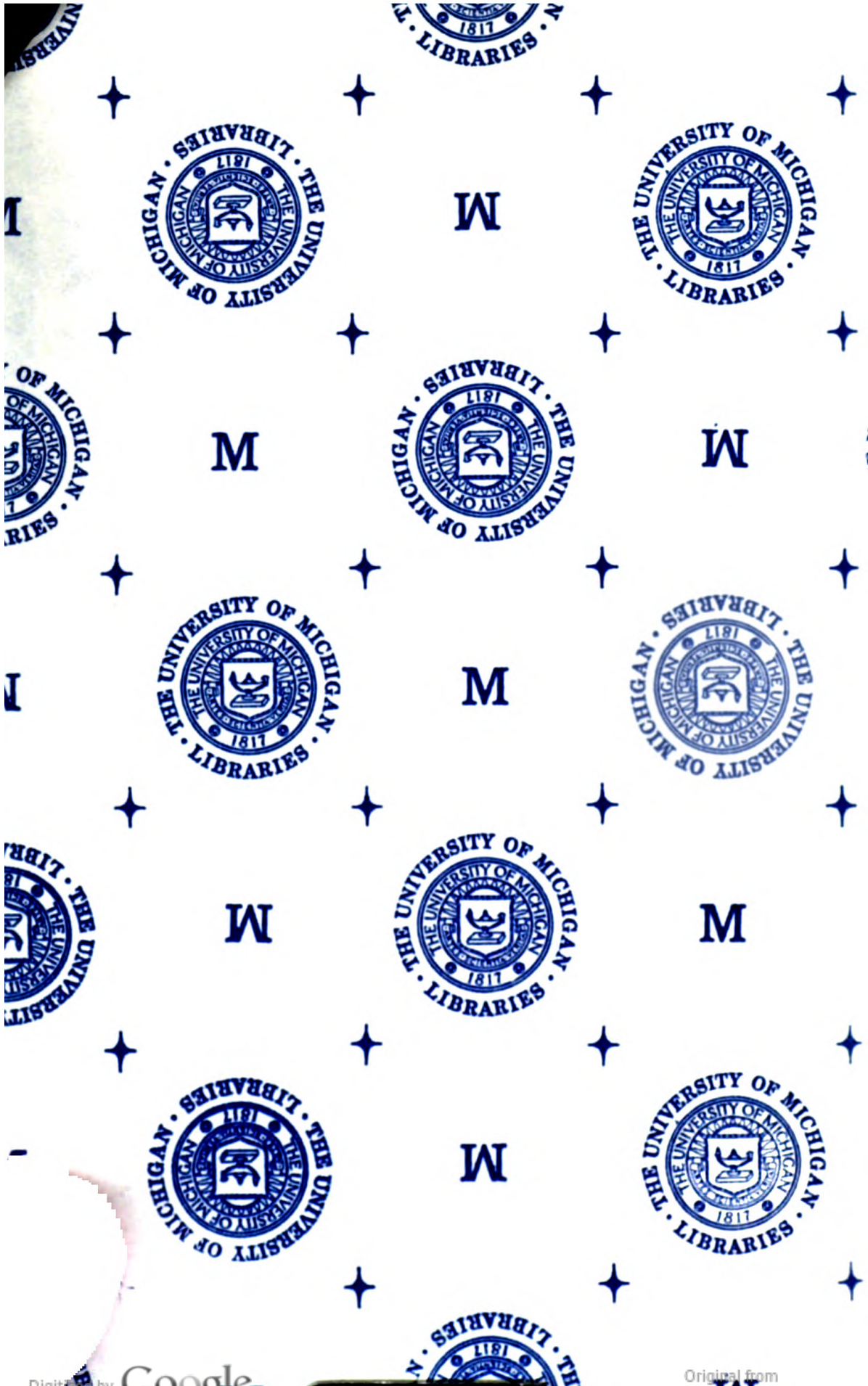
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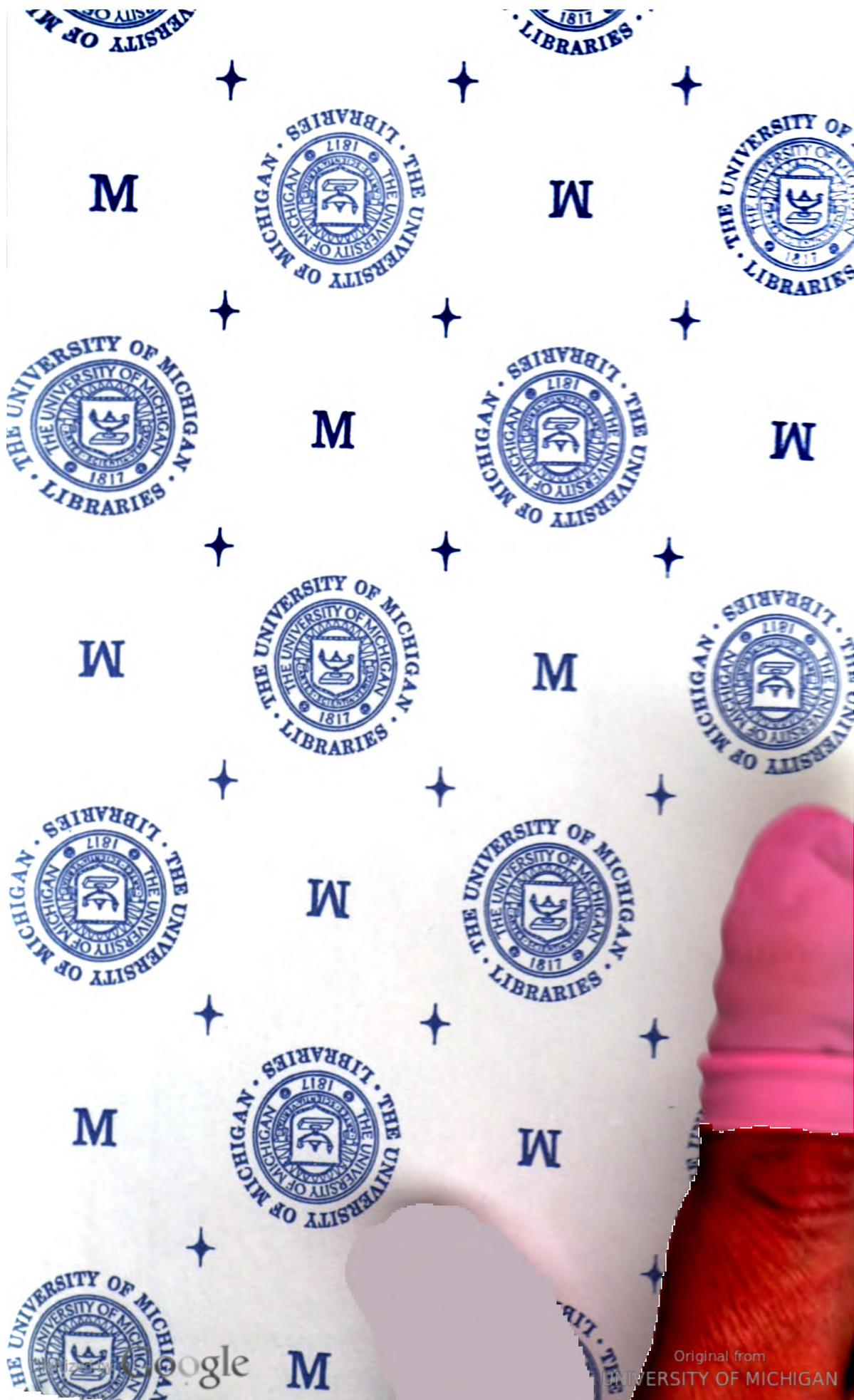
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# THEORIA

## to theory

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# THEORIA to theory

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the one hand, and contemplatives of different traditions, Eastern as well as Western  
the other.

Believes that the Christian mystical tradition—background of the whole development  
Western science and technology—demands at the very least another look.

Sees an urgent need for fundamental philosophical investigation into such questions  
within an enlarged scientific vision, without which so much of science is simply  
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## Editorial

With this “bumper” double issue, we begin our second decade. We had a number of practical problems in gathering the material for the first issue: and it seemed to us that it might be a positive advantage to begin our second decade by issuing together two numbers in which we could raise a wider range of questions than is usually possible. A manifesto for *T. to T.* at the end of its first decade needs a wide range, if it is to be representative both of our intentions and our history. The end of our tenth year is a natural enough time to reflect on our purpose—and to move in a new direction. When we started much of our attention was directed to rousing the Christian intellectual establishment, who seemed to want to study everything about religion except its dependence on a mystical root. Now we have had the counterculture, to whom this is the only thing that is important: comparative religion and the practical experience of differing faiths are now taken more seriously by more people; the importance of parapsychological phenomena for our understanding of the world and our place in it is now recognized by many; demythologizing is no longer so fashionable, and the possibility that religious claims may turn out to be true, and not merely poetic, is one that attracts the attention of scientists.

All this is to the good. But living as we do in a wider academic world, there is still much to make us uneasy.

In the sciences, natural and social, in philosophy, and still, as a decade ago, in theology, something is lacking; something that seems to us to be captured by the word “responsibility”. There is too little reflection on what academics ought to be doing, on what they are doing, and on how the latter measures up to the former. We have said in the past how much has been lost by the creation of academic professionalism. The academic world has followed the

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rest of the industrial economy: research gets grander and more expensive, responding more to needs internal to increasingly specialized sub-categories of science, or of philosophy—what we once called “the proliferation into pointlessness”. Miniscule problems in physics, as in philosophy, do have to be solved; but they lose their point when they distract from the serious task of theorizing, rather than focusing on it.

Such theorizing may mean a readiness to risk one’s academic reputation in looking beyond the limits of “respectable” problems for which grants are given. In Cambridge, in the days of Moore, the question was always: “Is it serious?” It is symptomatic that our contemporaries prefer to ask “Is it respectable?”.

This is not a wilful misunderstanding: “respectable” *may* mean worthy of respect because living up to ideals of reason. But it is not a coincidence that the term also has connotations of academic snobbery.

There are, of course, serious people trying to handle serious problems involved in trying, say, to integrate the central results of contemporary physics: quantum theory, the theory of relativity, particle theory. But there are far too many people who are willing to see these problems as merely technical, unwilling to contemplate radical revisions of our understanding. How many biochemists have ever seriously contemplated how shamelessly extrapolatory a gesture they make in identifying the atoms of the physicists with the functional components of living systems? This is not a “merely” theoretical or merely technical problem. Attention to such problems may—and, of course, may not—lead to a deeper and more powerful grasp of what these particles are.

Our interest in *T. to T.* is not extrapolation but synthesis. How does one get synthesis?

It can begin with interdisciplinary dialogue. In the last public lecture of his life, which we published in *T. to T.* VII i, Bishop Ian Ramsey made a strong plea for “transdisciplinary groups” in which people could “develop the facility for latching on to the multiple discussion of a problem”. Such “interdisciplinary discussion” will be more than the old cry that scientists should know something about Shakespeare, or literary critics about the second law of thermodynamics. It is not just a widening of culture.

Suppose three participants coming from three disciplines. They will start by telling each other about what they are doing and then go on to “brainstorming” sessions in which they may come to suspect a convergence of underlying principles. If they stop there they will be left with vague analogies and this is, indeed, where most such discussions do stop. If they don’t stop there, they must be prepared for a lot of work. There will be three probably extensive literatures and the person working in each will need to be able to pile up details so as to show an underlying pattern in a single example. This will be difficult to achieve—and probably difficult also to follow: it needs intellectual effort to see how a mastery of detail shows an underlying pattern. Without detail one can end with oversimplification, which comes when analogies are drawn which are only plausible because certain vital aspects in one or more of the respective fields are being left out: the use of a term like “vibrations” carried over from the physical to the psychic field is an instance of this.

Thus there is compression of detail in order to avoid oversimplification, and a pattern or underlying principle shown in a single example. Margaret Masterman does this with a simile from the first verse of a well-known hymn, where she sees fundamental patterns underlying natural language. Kathleen Russell does it with classical ballet, analysing in detail a passage from *Swan Lake*. Margaret Bottrall examines a metaphysical poem by Gerard Manley Hopkins in such a way as to bring out the indivisibility of metaphysical belief and expression in rhythmic patterns of language, where words carry a weight of latent meanings.

The next stage would be to draw comparisons so as to see whether similar patterns or principles are being exhibited in the examples from the different disciplines. In that case a convergence appears. The three papers in this number do not enter on this stage—this would be a matter for further work, but readers may consider whether they think there is a convergence. Where there does appear to be convergence, each party can then try to put their own techniques to work on each other’s examples. If doing so does not force a subject matter into a mould which misrepresents it, but shows important characteristics of it in a new light, then a synthesis is on the way. It will be achieved if the patterns can be

presented in a simple model which has applications in each of the three original fields. There would then be a new subject in which this unified view was developed, showing how a general principle can be made to work in the different sub-fields—and also used as a means of discovery by further extensions.

Philosophers who try for “synthesis” generally try systems such as Idealism. There are rival systems, but how is one to adjudicate between them? What we want them to do is to show underlying structures in the nature of man and the world. If they present us with alternatives, we can try to judge between them by comparing their presuppositions or the visions of the world which underlie them. But this goes on at a very general level, and does not provide a method of exposing underlying structures which can show why some actual subject matters have the character they have, so that at the end we are just left to choose which seems to be our “cup of tea”. But this is highly unsatisfactory, as those of us who started out from this way of looking at “philosophical synthesis” in the symposium referred to by Margaret Masterman realized. In going on to papers not directly addressing themselves to synthesis, we discovered that they could in fact be leading us towards it by putting us on the route we have tried to describe.

In setting out into a second decade, we demonstrate our hope that there are people who want to work on serious problems, not ignorant of technicalities, but seeing them in perspective; and who are willing to work with, learn from—and teach—people in other disciplines. It is this kind of dialogue that we want to initiate and support.

Questions with which we have concerned ourselves from the beginning need to be re-examined: questions about healing, for example, in the light of a developing body of practical knowledge, but with a philosophical sensitivity to the language healers use. Unless there are people who not only want to see such problems tackled, but are also willing to work at them themselves, and unless there are people willing also to enquire into the nature and status of their enquiry, this journal will have no serious purpose to pursue.

\* \* \* \* \*

Our discussions of the philosophical work of Steiner have made use of a distinction between “thick” and “thin” metaphysics, which originates in William James’s discussion of the nineteenth century experimental psychologist Fechner (in Chap. IV of James’s *A Pluralistic Universe*). James distinguishes between different types of philosophy—not different kinds of metaphysics, but the extension is a natural one. He says that some philosophical systems—transcendental idealism, say—give us “an impression of . . . being strangely thin”, and of the terms they use being “thin wrappings for so thick and burly a world as this”. James regards Green and the early McTaggart as thin philosophers even though they had highly developed systems. He quotes Taylor, an idealist expositor, who tells us of his own philosophy that it “can make no addition to our information and can, of itself, supply no motives for practical endeavour”.

The contrast James draws is with Fechner’s “concreteness” and “fertility of detail” and his use of analogy as a “great instrument for vivifying the daylight”. There is something strangely ironical in the way that the logical positivists’ objection to the emptiness of transcendental idealism brought us full circle through analytic philosophy to Wittgenstein’s dictum “Philosophy leaves everything as it is”, echoing Taylor’s comment. James’s three criteria of “thickness” seem to us to be just right: concreteness, fertility of detail, the use of analogy. And it is no coincidence that it is Quine, an American, raised in the tradition of pragmatism, James’s philosophical legacy, whose work, more than that of any other major Anglo-Saxon empiricist of our day, exemplifies these traits. Quine’s quarry is “stimulus-meaning”; but he hunts it through a forest populated with “sensory irradiations” hoping to trap meaning—or what can be trapped of it—in the net of the analogy of stimulus-response. Not surprisingly, for Quine, philosophy is continuous with science; if it makes “no addition to our information”, it is not worth doing. Still, if Quine’s work is thick, it is tied to the metaphysics of materialism, and his men are (complex) biochemical machines. Paul Feyerabend is the philosopher who has insisted that if philosophy is to be really creative it need not view itself as tied to the apron-strings of whatever is fashionable science.

By drawing attention to the great explanatory crises of science—the seventeenth century crisis in celestial physics, and the early twentieth century crisis in microphysics that produced the quantum theory—he has forced us to see that there is a place for philosophical thought to lead the way . . . “The debate between science and myth has ceased without being won by either side” (p. 171 *Against Method*). At the historical foundations of science, the metaphysics, concrete and more and more detailed, tries to make itself explicit; and when it succeeds its fertility is manifested in the science and the technology to which it gives rise.

And what is the source of this fertility?

It is analogy that begins that cross-fertilizing dialogue between disciplines that is at the root of new disciplines. There is still a great deal of work to be done before we have a picture of how metaphor and analogy work in the progress of our understanding. How *can* literal falsehoods point to the truth?

That they can and that we should pursue philosophical and scientific understanding starting from analogy seems certain: and in making this a criterion of thickness, James was surely right. Analogies can give intuitive “theoria”; development towards synthesis as we have described it may produce “theory”.

\* \* \* \* \*

Our publisher tells us that libraries would like us to have more professional scientific articles, rather than articles for the general reader. We ourselves value the general readers who are on our “wave length”, and they are among the people with whom we most want to communicate. Some of the articles in this number are indeed more technical than usual, and this may make the librarians happy. But we assure the general readers that we shall not always be as technical as this.

We have also been told that our dialogues are “in-group”. The dialogues and discussions have to be arranged among people who are prepared to take time to meet each other and to get down to discussing issues which ought to be and usually are not brought up. If our critics are willing to bring up such questions and meet to discuss them we shall be delighted to hear from them.

What we are not willing to do is to give up the work we do with our contributors and become like so many academic journals whose publications are impersonal rungs on a career ladder. And because of this, in a sense, our authors are bound to end up in an “in-group”: for our editorial work is not impersonal, and our referees are (or become) our authors’ friends. Our “in-group”, in other words, consists of those who want to face issues we want faced. There would be very little point in discussing with people who didn’t.

As with other journals, our subscription rate has had to go up to a price which some of our oldest and most valued contributors may find hard to pay. The publishers are letting us have a limited number of copies which we can sell as single issues at our discretion, especially to those who have contributed articles or otherwise collaborated with us. (Apply to the Editors, 20 Millington Road, Cambridge.)

### Apology

We omitted to state that the article by R. Thom “From a Model of Science to a Science of Models” published in *T. to T.* X. iv was a translation of an article “D’un modèle de la science à une science des modèles” which originally appeared in *Synthèse* 31, published by D. Reidel Publishing House, Dordrecht, Holland. We translated it with permission, and sincerely apologise to the publishers and to Professor Thom that we did not make this acknowledgement.





## Discussion

### Thick metaphysics in practice

OWEN BARFIELD, JOHN DAVY, MARGARET  
MASTERMAN, R. B. BRAITHWAITE and YORICK WILKS  
(chairman)

*M.M.* In our last discussion<sup>1</sup> Owen and John were putting forward Rudolf Steiner's view that one can develop one's consciousness so as to be aware of realities which we aren't aware of in normal consciousness. I would call this an example of "thick metaphysics". The term "thick" comes from William James, who contrasted "thick" philosophy which had consequences in human life and in interpreting the world, with "thin" philosophy. Process Theology would be an example of thin philosophy; it does not produce any particular consequences for human life, or account for why any particular feature of the world is as it is. Hegel, seen from this point of view, was a half-way house; his metaphysics had political and scientific consequences, even if the politics was undesirable and the scientific consequences, when he predicted the number of the planets, were wrong. Thick metaphysics not only has consequences in causing action: it is also poetic, in that it is abstract and concrete at the same time. Now the anthroposophical educationalists have developed methods, notably in the education of handicapped children, which they claim depend not only on their metaphysics, but on the thickness of their metaphysics. What we might discuss now, therefore, is how thick a metaphysics needs to be to get these practical consequences. Must the thick metaphysics be seen as the result of a change of consciousness, and do the practical consequences depend on the educationalists actually obtaining the thick metaphysics?

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*R.B.B.* Materialism is an example of a thick metaphysics from which people have drawn practical consequences.

*M.M.* Materialism was a crudely concrete image of matter as made of atoms, and atoms were like billiard balls, and when you go further into physics this doesn't hold up even as view of matter.

*O.B.* But only advanced physicists in fact go further.

*M.M.* My point only was to bring out that thick metaphysics is both abstract and concrete at the same time, and also the fact the such metaphysics has consequences in everyday life. I dispute that from materialism consequences do follow, because as soon as you press the view that matter is made of billiard balls you get contradictions, as the whole current literature of quantum mechanics shows. And if you take materialism crudely, without pressing it, as in, say, Skinner's school of conditioning psychology of stimulus and response, and apply it consistently and ruthlessly, you end by looking on people as machines. All you can then do is treat them as servo-mechanisms; and in fact this is not practicable as they just don't behave like this.

*R.B.B.* I don't want to go on discussing materialism—I only wanted to produce a non-esoteric example.

*M.M.* Why insist on calling anthroposophy esoteric, when in these days it is completely public? The question now for a number of people is not whether this movement or the other is esoteric, but whether in order to live fully, and operate fruitfully, you have to have a complete swing from no metaphysics at all to embracing, metaphysically speaking, "the whole lot". And this goes not only for anthroposophy, which has an explicit and exceptional amount of metaphysics, but also for the Catholicism of e.g. Gerard Manley Hopkins, and indeed also for our vaguer Protestant Christian beliefs. Do we have to swing over from too little to what is often felt to be much too much? Can there be a counterpart of an operational re-definition which can prune away what is accidental? The physicist Bridgman produced the view of scientific meaning called operationalism, which defined notions only by their observable consequences. This exclusiveness of definition is not now acceptable, but there is another and disregarded part of Bridgman's book<sup>2</sup> which talked about what happens in what he called "explanatory crises", when

thinking is operating on the borders of thought itself. In such crises concepts which ought to be opposites tend to mean the same, and also relations between them, even mathematical relations, blur. The only meaning you can then give them is from the concrete application, and it is thus, in crises, that arises the need for operational redefinition in science. The question then is, how like or unlike is science in crises to the permanent explanatory crisis state of thick metaphysics.

*Y.W.* Do anthroposophists accept that they have a thick metaphysics in the sense we have been discussing? And do they want to be able to give operational definitions of it?

*O.B.* We might get on better if we substituted for the term “materialism” “positivism”. What is meant is that the only access to knowledge is passively through the senses and that we then form ideas about those passive sense-perceptions. The kind of metaphysics called “thick” assumes that knowledge is also available through developing our powers of perception; if that is done, more is perceived. I suppose you could call it cognitive imagination. Science uses sharper and sharper instruments and keeps on improving them, but we forget that our minds are also instruments which can be sharpened and progressively improved.

*M.M.* One might get agreement that scientists are brilliantly sophisticated about their mathematics and about distortions that may come in through the limitations of their apparatus (e.g. in electron-microscopy) but they extrapolate wildly and are naive about distortions which may come in through the limitations of their own apparatus for perceiving. As philosophers of science we want to say there is an imaginative creative element, indeed, at the heart of science, but it has got to issue in the end in something which makes a new scientific discovery, or we don't think there is any point in accepting it as veridical. Inspiration in science may consist in extending the boundaries of perception: but also it may not. When Kekulé saw the snakes with their tails in each other's mouths he had to interpret this as the benzene ring, and, in terms of experiments based on ordinary perception, it had to come out right.

*J.D.* What Margaret is saying sounds to me like what most

scientists would say about what they are doing. It seems to me it leaves open two issues. One is that you still have to account for how Kekulé got an experience like the picture of the snakes for the Benzene ring which turned out to be the right clue.—As far as I know that it was the right clue is explicitly acknowledged. But what gets you into this state? You can see the starting point of science in imaginative acts—I remember Medawar says something pops up out of the sub-conscious but you don't know how to get into or out of this state, you are left with a void, and the first question is how does the picture of the Benzene ring or the molecular spiral come about? Then the second question is Margaret's one: when you have the picture you have to make a science out of it, and what does it mean to make a science out of it and test it? This seems to call for some kind of operational account, using the picture as a model and constructing some kind of experiments. You don't ask such a naive question as "is the model true"? but only "is it workable"? "Does it provide operational tests?" And it very often does. This seems to underline the miraculous nature of the starting point of science—"miraculous" is a strong word which I am using loosely.

*M.M.* Bronowski at the end of *The Common Sense of Science* said, that forming a scientific theory was always a case of precognition (though later on when he was a great man in the Salk Foundation he went back on this). Arthur Koestler also supports this precognitive suggestion with his theory of "sleepwalking". I used myself to give a lecture in a lecture course on "How is it that we can use a theory that isn't there"? Because, in real science, we constantly do. Actually making the theory comes quite late. You are fiddling about with pictures and schemata and all sorts of metaphysical entities long before you get the theory made up. Bronowski was right: there is a pre-cognitive element in scientific creativity and you can't make sense of the history of science without it.

*R.B.B.* But I have done this, and I have it well documented. I entirely agree it is an act of imagination but I think you are using far too high-falutin' language. I do not understand just what imagination is, though I can say something about necessary conditions for it. But understanding this doesn't throw any particular light on the nature of the universe.

*J.D.* I disagree. The question is whether you are just prepared to say that these things pop into your mind somehow, and you are content to be quite uncurious about them.

*R.B.B.* I am quite curious. But I was interested at the time about the mathematics I had come up with, and not in the psychology of the unconscious.

*J.D.* What I think Owen was wanting to say is that there is the difference between the people who say you can't find out where these things come from, if they came from anywhere in particular, and those who say they are themselves very real phenomena which point to the fact that the mind perceives them as well as presents them. This kind of perception can be of reality and can be extended.

*Y.W.* But then you have to account for the fact that scientists have all sorts of intuitions and even theories that turn out to be wrong. The important question is finding out whether they are *right* or not. Moreover, if you call this "perception" you have to explain why they "see" such different things.

*J.D.* By "right" you mean which work in the sense perceptible world?

*R.B.B.* We all know that Kepler had about fifty-three before he got one that was right.

*M.M.* When you get creative intuition, under any circumstances, there are things that can be done about it. One is, either you or someone else interprets it, like Kekulé's interpreting the snake as the Benzene ring. Kekulé knew how to do that. Similarly as I pointed out in the previous discussion, when Boole had his vision of the relation of algebra to logic, and heard a voice "O Lord thy Word is established for ever in Heaven" he knew that what he had really found out was the analogy of algebra to logic.

*R.B.B.* He had been thinking about the subject.

*M.M.* Sometimes other people see the interpretation, not the person himself who had the original vision, and there are always these who see the necessity of interpreting any "vision" and those who want to take it literally. My tendency to get turned off when I meet certain kinds of anthroposophists is straightforwardly because things that I think need interpretation are things they seem to take literally. This, in the Kekulé case would be like saying there really is a snake in the astral world with its tail in its mouth, or there

really was a light on a cloud from which Boole's divine voice came, and not getting either the structure or the Benzene ring or the analogy between algebra and logic. I think a lot of ancient people took for granted that you have to have an interpretation of any vision, whereas a lot of modern people don't: they just swallow it "as is".

*O.B.* What do you mean by interpretation? A restatement in terms of discursive logic?

*M.M.* No, not that: I don't know in general just what I do mean. Only by looking at cases where people have made these interpretations have I any clue as to what the process of interpretation itself is.

*J.D.* I think Yorick's point is that certain kinds of imagination, intuition and inspiration can't be called perception because people make mistakes with them. These kinds of "seeing" are supposed to differ from perception precisely because they are individual, whereas it is always said that in perception, people can all see the same thing. But surely you can make mistakes with perception too, and see different things, whereas I have always assumed that if a real mathematician (which I am not) has an intuition at all, it is correct.

*Everybody present* No! No!

*J.D.* In what way can you go wrong in pure mathematics?

*R.B.B.* In my case, the necessary condition for proving an existence theorem was to produce an example. I had been thinking about it while on duty as an air-raid warden, and when the all-clear sounded went to bed and wrote something down when I woke up a few hours later, before going back to bed. Later I found I had an example which fulfilled the condition. When I wrote it down I didn't know it was right, and I nearly didn't trouble to write it down. I was really very surprised indeed. This is similar to the account given by Poincaré of his experience in the Métro in Paris, although he was awake at the time. I think this is the case for unconscious thinking. I produced the right result but there are lots of cases where one doesn't.

*J.D.* What do you mean by "right"?

*R.B.B.* Something followed from something else without any question within the mathematical scheme.

*Y.W.* May it not be more complicated than that? There are cases of mathematicians thinking they have produced proofs when they haven't.

*R.B.B.* I was surprised when it turned out to be a proof—I didn't think I had produced one.

*M.M.* You know, it's more complicated than that. Pure mathematicians only present you with one way of doing mathematics, and there are at least two. In the second way, which is usually called the "heuristic" way, you aren't looking at a mathematical system of which you already know the rules and asking if you have made a deduction in it; you look at the world and get a theorem-like feel about something without their being any mathematical system at all. There is nothing yet to have a theorem in, because you have no system, so a fortiori you can't have any maths, yet in spite of this you get a proof-like intuition. The queer thing is that, though very often this is wrong and you don't, alas, end with a new mathematical application to some aspect of reality, yet this heuristic way may also sometimes, and suprisingly, lead you to a fundamental intuition which people can then formalize. At the beginning you don't say "Is this maths or is it not maths"? You only say, "I have a proof-like feeling". But if you are lucky this proof-like feeling may give you a new mathematical idea starting from the real world; and don't forget, pure mathematicians are always idea-deprived because they don't look at the real world.

*Y.W.* There seems to be general agreement about the nature of insight; the problem is over what it is to be right. But mathematicians do generally agree in the end.

*J.D.* When you turn to experimental scientists, what they mean by "right" seems to be that a certain experiment works.

*Y.W.* That isn't what they want to mean by "right".

*J.D.* They are made happy by something more, so that they can write it up, but if you push them they don't go much beyond what turns out to be workable. But it seems to be that in the pure world of insight criteria of truth don't depend on physical experiment at all. That's what interests me.

*Y.W.* Do you want to deny that interesting metaphysics has any consequences at all?



*J.D.* Oh no; I do want the insights to have consequences. But if you start to have insights or imagination into the development of children it isn't immediately obvious what you mean by consequences, and how you submit the consequences to an experiment which would be respectable in a physical laboratory.

*M.M.* You are making science too limited and too stereotyped. The truth is that there has to be something *comprehensible* that counts as a consequence; not something rigidly repeatable and experimental.

*O.B.* It need not be a question of whether any one particular statement can be verified or falsified? Isn't it rather that you have got to take the whole system and a number of propositions together which support each other in a pattern?

*M.M.* Of course. And don't forget the extreme indirectness of a lot of scientific verification.

*O.B.* The indirectness means that it covers other things as well.

*M.M.* No; you go down just one chain of inference towards verification. The initial stage has to be interesting enough for the labour of constructing a whole sequence of stages of inference towards indirect verification to be worth doing. I counted fifteen stages for some statement in a paper in molecular biology which I analysed once and at each stage you had an empirical shift which made a subsidiary hypothesis: "If this, then that"—

*O.B.* But where the question is the reality of spiritual beings you couldn't have a chain of falsifiable or verifiable demonstration. It would be the whole pattern that would convince. At the end of your chain, it would still be some individual proposition whose truth was at issue.

*M.M.* To the extent to which I thought there was a hope of this I would be curious. But if I thought any assertion of the existence of spiritual beings was only a poetic remark, I wouldn't be. The notion of spiritual beings has to be curiosity provoking.

*J.D.* But in what way verifiable? I haven't the answer to that, and I wish I had. I want to put it the other way round. Let me put forward as a hypothesis that the activities we observe in a small child as it struggles and learns to stand upright are an outward manifestation of an "inner" reality of a spiritual being. I don't see

how, if you talk about measuring or ordering, you could meet this particular hypothesis with any of the current procedures of science.

**M.M.** Why not? You don't want to be superstitious about the procedures of science—we have made the canons of science far too tight, and actual use goes far beyond them. You are trying to apply ultra respectable canons of verification to something which by its nature can't be like that. But even in this case you ought to be able to do something. Your real scientist would fumble about until he got a situation where he could say that if the child was a spiritual being one kind of thing would happen and if it wasn't another would happen. The extant case about which people are worrying in just this kind of way is that of the nature, not of children but of dolphins. There are some who say that dolphins have been trying to get in touch with men for millennia—there are stories where dolphins pull people out of the sea, and of the little boy riding on the dolphin's back—and if it is true that dolphins have been trying to get in touch with us, not we with them, then it isn't just a question of putting them in tanks and cutting their brains open, but of finding out what it is they want. This would be the counterpart of saying dolphins are spiritual beings; they have the right to be taken seriously and let's find out what they want. Then there are the people who say, Oh no, a dolphin is only a complicated servo-mechanism and we put it in a tank, observe it and then cut it up, and this is how we approach our future colleagues. It makes an enormous difference which school of thought you belong to. I want to learn dolphin speech; I don't want to train dolphins to go and find Soviet submarines. Now putting the child in a tank and cutting its brain open is forbidden by law, but, alas, they can do this kind of thing in the case of the newly-born monkey, and soon they will be doing it also with aborted six months old human embryos.

**J.D.** Owen would say that by developing powers of perceiving—not with the senses but with the mind, in the way we were talking about it earlier—you might actually *see* the child as a spiritual being.

**R.B.B.** I think another way of approaching it is the moral one. In Vercors' *Les Animaux Dénaturés* some apes in Malaya were being trained to use tools and they got so good at it that the anti-slavery society said that to employ them for commercial purposes

was slavery, and an argument took place as to whether it was or not. Whereupon someone had sexual intercourse with one of the apes and had a child, and killed the child and the matter was taken to an English Court to decide if it was murder or not. The criterion of its being a man was here not upright posture (which penguins have) but was language and tool-using and mutual offspring, and the decision that had to be made was, do we accept these creatures as members of the club of men? The point was not were they spiritual beings, but were they to be treated as *persons*.

*M.M.* One of the things people like Rudolf Steiner is saying is that it isn't just a decision as to whether we admit them to the club. You use a special kind of clairvoyant perception directly to perceive their spirituality, and if it is really there you ignore that which you have perceived at your peril.

*J.D.* I know Steiner says this, but I want to know what you do when you meet people who say they don't see it in the same way. But I agree that to make it just a decision as to whether the offspring belongs to the club is to introduce a sociological version of operationalism.

*R.B.B.* Of course I see the objections. But how does it assist the matter to say you have an intuition of a spiritual being?

*J.D.* Margaret seems to allow that statements of this kind could enter into respectable discourse at least when you are trying to learn what dolphins have to say. You have a general feeling about that this is the way things go on, and you build up a supporting case. I would say that with the child, it is pointing in the right direction to say it is a spiritual being. You will treat the child in a certain way, but you are never going to produce the falsifiable statement that Popper would demand. Nevertheless, I don't see any essential difference here from the way in which ethologists try to build up statements about animals' states of mind. In the same way, in working with children in the class-room over the years, gradually you get a body of experience that tends to confirm an intuition about the inner situation in the child. You are dealing with something absolutely real.

*M.M.* Yes, but if you just take this assertion of the child's

spiritual nature on its own, it really is not adequate at all. For even if someone sees that there is something, in a deeper layer somehow, which is beginning to grow inside that child (your clairvoyant would say this) this still wouldn't by any means be the end of the matter. If someone says "I actually see the spiritual being beginning to come into the child" you could say "Could other people see it too? Could one photograph it?" In that case, you would be testing the veridicalness of the instrument, of the human being who first sees. However, there is also something else you could do. You could say, what other situations were like the child standing up? Well, for instance where people are going in for healing situations in quantity, on the assumption that there is a spiritual as well as a material process in healing. And in the healing case you could see if the person really does get better. The weakness in the child situation is that there are cases where the child doesn't develop, doesn't learn to stand up. Are you then going to say such a child isn't a spiritual being? You are not, and especially anthroposophists will not, since it is they who have asserted the existence of a full spiritual being even in retarded children and mongols. Moreover, the whole treatment of these has been revolutionized in consequence; thanks to anthroposophical initiatives, mongols are now accepted as, and also become, people; though those who now accept mongols as people don't use a reincarnation hypothesis: they haven't got one. So there is no child situation in which you would say "In this case there isn't a spiritual being". In the case of the healing, it is better because you can say "Are people going to get better if we make this assumption and act accordingly?" You are beginning to get nearer to a situation where considerations capable of influencing the intellect can be brought to bear on whether the insight was a true one. What for me, as an applied philosopher, is wrong with Steiner is that he is constantly making assertions where there is no contrast.

*O.B.* It is characteristic of human beings that they stand upright: there are exceptions, but the fact we call them exceptions shows that we don't take them to falsify the general statement about human beings.

*M.M.* I wasn't talking about exceptions falsifying a general

assertion, but that there has got to be something more that you can say about a general assertion. It was the isolation of the assertion I was objecting to: the fact that you just assert it and then stop.

*Y.W.* To put the matter in another way, what would it be like for an upright child not to be a spiritual being?

*R.B.B.* To me it is much more interesting that a child starts solving problems; and it does this long before it stands up.

*J.D.* I used this very simple example of standing up because it shows how you can think that here is something very important to be found out. Something extraordinary is happening, and when the child starts to talk there is something still more extraordinary.

*M.M.* You are being very male. For the mother, the really glorious moment is at the first suck, and when the child begins to recognize you and you realize that here is an independent human being. When the little bastard stands up it is probably only wanting to pinch things off the table.

*J.D.* What I mind about isn't what moment you take, but whether you see something marvellous happening, or simply a number of reflexes. What determines the difference?

*M.M.* People get turned off by the use of the word "spiritual". They don't know what it means and they haven't a context for it. What would you say, Owen, instead? People think that with the word "spiritual", used by anthroposophists, they are having a re-incarnation context wished on them.

*O.B.* The trouble is that the word "spiritual" has all sorts of nuances which *Geist* in German hasn't got. What about saying "noumenal" or "immaterial"?

*R.B.B.* You don't like the word "person"?

*O.B.* I don't like it because if you are talking about babies and children you can't really say "persons" without a concept of their development in time. Also it limits the meaning to human beings, whereas the question of "spiritual" or "immaterial" really is important for nature, and the science of nature as well.

*M.M.* This is asking us in one breath to accept the metaphysics which under another breath has already been imposed.

*J.D.* No. I am not asking you to do this.

*M.M.* Then you should answer Yorick's question of what it

would be like for an upright being not to be spiritual. There are people who are applying Steiner methods in the treatment of mongols without the metaphysics and I think they are now getting similar results. However, the people who started had to fight a tremendous battle against the attitudes of those who wanted to treat these children just as vegetables. These people, these innovators, innovated as they did because they had this metaphysics behind them. And so the question is, is it a psychological fact that they needed the metaphysics to have the courage to assume the potentialities in these mongols? Or is there a real consequence or discovery in the metaphysics? There was a mongol child in Cambridge whose case was reported in the local press, where, when the surgeon gave it to its mother after six weeks, he said "What a pity, this child will never recognize you". The child was refused by all the handicapped schools, but the mother didn't give up, and now the child has had a painting exhibition at which two-thirds of the pictures have sold to dealers, and won a gold medal for swimming. The child first really began to develop when the mother had the notion of causing it to swim which it did superbly well. It was such cases as this which brought home to the medical world that these imprisoned personalities compensate for things they can't do by things that ordinary therapy never even asks them to do. Now I want to say that if there wasn't a full person imprisoned in that disabled brain the notion of "compensating" by a complicated activity like swimming or an even more complicated activity like painting couldn't release the capacity for simpler activities like walking or speaking. And would people have got on to this notion of compensating if there hadn't earlier, at the "discovery" stage, been people who said that imprisoned here is a spiritual being?

*J.D.* You are asking for empirical reinforcing evidence that a way of speaking is correct.

*M.M.* I confess I am not happy with the Steiner world, but I do believe that to get any fundamental discovery which runs counter to commonsense, you have to have a metaphysical hypothesis so strong that it almost goes counter to our normal perception of the world also. For my part I had to look at language and doubt what everyone else said was obvious, and see something which,

when I saw it, nearly sent me as well as everyone else, reeling backwards with horror, so counter-intuitive was it. I had to have an extremely strong “metaphysics” about the existence of fundamental semantic patterns to make me see this. Other people said these fundamental semantic patterns did not exist: and yet I myself almost both “heard” and “saw” them. And I believe that this sort of thing nearly always provokes innovation within science. To go back to the mongol case, I believe that the perception of the intense damage which was being done to mongols may have needed something extremely metaphysically strong to counter it. You didn’t quite know what you were discovering.

*Y.W.* We are now back to the Steiner hypothesis that people whom commonsense mightn’t consider as human at all are in fact spiritual beings.

*R.B.B.* This can be a useful myth. I think that there is no doubt that historically the emancipation of slaves came not just from the humanist view but from the evangelical religious view that they were children of God. This gave a very strong motive.

*M.M.* Don’t smear such a view by calling it a myth.

*R.B.B.* All right; then, let us ask whether you can have a multi-racial society without a common metaphysical *Weltanschauung*. People like me in the positivist tradition think one can. If you have to have the *Weltanschauung* for educational purposes this is not what we should prefer. But this is a matter of politics.

*M.M.* We aren’t talking about politics. We are thinking about metaphysical truth. In the story I told about the brain damaged child, who learnt to compensate by swimming and painting, would the mother have had the courage to go on without a belief that in this child was a spiritual being? Without this strong anti-positivist metaphysics would there have been the discovery of the possibility of compensating for one disability by developing a complementary capacity? You have to have a tremendously strong power of disregarding commonsense.

The Steiner people brought a very strong metaphysics of the child having come down from heaven from a previous incarnation. You mustn’t take this in isolation from other things they say, nor can you see what they mean by a spiritual being *tout court*. Never-

theless, they have earned the right to make us at least listen to what they say.

Then of course, there are other things which can be said. For instance you have the question of what would it be like for the child to be a spiritual being without being reincarnated.

*O.B.* It may not be so important that a child is reincarnated as whether it is incarnated. Steiner teachers meditate and look at the child and see it developing and changing in definite stages. It acquires its etheric body at about seven, and its astral body at about thirteen, and you devise the curriculum according to how you have seen the child develop in subtle ways you would never have seen if you had not had that picture at the back of your mind.

*M.M.* I repeat: could we state that second hypothesis for which there is now a considerable amount of evidence without such a lot of metaphysical superstructure?

*J.D.* You get empirical evidence that Steiner was talking some sense about stages of development from the work of Piaget, and there is enormous support now for Piaget's work on one particular aspect of human development, namely the intellectual. There might be an experiment with two schools in one of which the Steiner methods were used without the metaphysics, in the other where they also had the metaphysics. Would there be any difference? A Steiner teacher would be interested not only in what happens to the child in the day, but what happens in the night. If he has a problem with the child, he will attempt to meditate on the problem and carry it into sleep. He will also have a sense that he is working not only with the child, but with the child's guardian angel, who may help him to some fruitful intuitions in the classroom the next day.

Is a state school using Steiner methods going to exclude that part of the method? If you include it, what are you going to say about guardian angels to hard-headed modern people?

*M.M.* Let us consider this. I think what John is saying, or perhaps rather, what it amounts to, is that in the Steiner treatment of, for instance, a mongol child, there is an open ended strategy which causes you always to go on calling on more and more resources, and that unless you have a metaphysics which has this open-



endedness, you will only do some of the things which, if you have it, you are prepared to do. With it, you will go on each time trying one more thing, which you wouldn't try if you were reductionist.

*J.D.* But there is a difference between those who say "These are the things I concern myself with in my work", and those who say (as I don't) "You have got to believe all this". People have got to decide, and on independent grounds, whether a particular way of working and thinking about things stands up or not.

In the Waldorf (Steiner) classroom a teacher would obviously work differently if he had a different theory. But he has to try to see how his ways of thinking about children work for the individual children, which is a delicate thing. So the Waldorf teacher who takes these ways of thinking to be true would probably not apply them in just the same way as the teacher who felt them to be no more than possibly useful working tools.

I think it is on the cards that things can happen in a Waldorf classroom that can't happen anywhere else, but at the moment I can't prove it. And I am also very aware of the gap between a lot of what I have explained in Steiner's work and what I can use directly in my work. For instance, there is all that is said about what happens after death and whether what happens in one life depends on what happens in a previous one. I say that this background plays into real work in a general way. But find it hard to see how to define its effect in particular. It is much easier to say, either that you could get the same results with a different or more limited theory, and that the theory is a "useful myth". But I am interested in whether the myth is true, in the sense that if it includes guardian angels, it refers to real beings, and does not simply represent a convenient or useful notion. As we seem to agree that all science starts with some kind of myth—or I would prefer to say a way of imagining the world—a lot depends on the question we began with, but haven't yet resolved, which is where myths come from.

*O.B.* That question "Where does the myth come from?" seems to me to be very near the heart of the matter. When Richard spoke of a "useful myth", he was clearly regarding myth as fancy or invention. Whereas I would say that the myth embodies in pictorial form precisely the spiritual or immaterial substance that underlies both man and nature.

*J.D.* Yes, and I would add that we should at least be ready to entertain the possibility that we can extend our powers of perception by the mind—not the senses—so as to see the source of the myth, rather than its symbol or image which we normally grasp.

But I fully agree that such seeing on its own is of limited value unless it can be translated into doing, and that we need to apply some real discipline when assessing both what we are seeing and what we are doing in practical life.

*Y.W.* The standards you applied might in effect be *moral* standards about how you should trust people. The Steiner people have the courage to say that it isn't enough to say the question is just a moral one, and then leave it at that. But they do need to be able to sift out what could count as science, even in a wide sense of science, in their "thick" metaphysics, and also show that at the end they have something that could count as a discovery.

#### Notes and references

1. See *Theoria to Theory*, X, 4.
2. *The Logic of Modern Physics*, p. 41 ff. (New York 1928).



## Discussion

### Finding Mental Capacities in the Brain

COLIN BLAKEMORE, NICK HUMPHREY and ANTHONY APPIAH

*A.A.* When people first started out to examine the idea that the brain was where mental capacities were located, many of them supposed that these capacities were located in quite specific places. One general problem, both conceptual and methodological, that arises from the facts as they turn out is that an awful lot of capacities are extremely unlocalized and that the notion that if you made a lesion and some capacity was lost you could conclude that the capacity was located at the site of the lesion—an obviously very crude notion—proved inadequate. It could have worked: it was not a conceptual error to suppose that mental capacities could be localized, but it did turn out wrong.

*N.H.* Well obviously there is a philosophical problem about what it means to locate a capacity. In what sense can a capacity have a location in the brain . . . or anywhere else? You can try to define it operationally in terms of the effect of lesions—but, as was very soon discovered, that gives necessary but not sufficient conditions for saying where a capacity is located.

*C.B.* But logically capacities must be located: if not at a particular locus, at least in a system or through a series of logical connections that perform a certain function.

*N.H.* It depends a bit on what you mean by a capacity.

*A.A.* I was trying to use the most general word I could. I suppose I mean a characteristic which is dispositional—the capacity to produce well-formed sentences of English is presumably in some sense grounded in the structure of our brains. Now the ability to

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produce those sentences is a capacity—a disposition to produce speech—and it is one we assume has a physical grounding.

*N.H.* If you cut somebody's tongue out they're not going to be able to produce English sentences either.

*A.A.* Certainly not to *speak* them: but clearly they could produce them in other ways. It's one of the interesting things about the way we pick out our linguistic capacities that even Helen Keller—sightless and speechless—still produced language in the end. The reason the tongue is not the locus of linguistic ability is that linguistic ability can be exercised in ways other than speech and the interpretation of speech. One can see the tongue as a surface structure not essential to speech just because people go on producing bits of behaviour with the structure of spoken sentences, even without it.

*N.H.* This does obviously raise the question of what people would count as evidence for something's being located in a particular place.

*A.A.* Well, I thought there were discussions of that question amongst those who do work on the brain.

*C.B.* There's a lot of discussion about the ability to localize functions by lesions, yes. The method still goes on. It's interesting that the debate at the philosophical level has had very little impact, because for many purposes in physiological psychology it really was and still is the only available, appropriate technique. Pragmatically it's the only approach, don't you think, Nick? Your work is a prime example of that. Perhaps it would have been even more elegant to do it some other way. . . .

*N.H.* In a sense that work I did with my monkey Helen was demonstrating rather the opposite. What interested me was the fact that you could take out a part of her brain—the visual cortex—but if you coaxed her she would actually learn to “see” in a different way. In a sense something which had been taken to be a necessary condition for an animal's showing a particular kind of behaviour turned out not to be.

*A.A.* But where a skill that is in some undecided sense located somewhere is not lost, perhaps carried on less adequately, and doesn't have to be relearnt though when that locus is damaged,

something very puzzling for a materialist is happening. And those who don't want to regard the brain as the locus of the mind will pick on this and suggest that there must be an organizing field of some kind that is really what the mind is, and that the field merely works through a different part of the brain when its normal locus of action is damaged.

*N.H.* Perhaps it's because this is such an old argument, but I really can't see what you're getting at. I can see that there could be philosophical discussion about whether it is an appropriate use of the language to speak of locating a capacity, just as one might ask whether it's sensible to discuss whether a capacity is innate or not. But presumably what you're asking is a straightforward clinical question: has it proved helpful in predicting the effects of brain-lesions on memory, say, or epilepsy, to suppose that various capacities are located in various places?

*A.A.* I don't think that there is some absolute difference between philosophical and clinical questions.

*N.H.* Well, take language, for instance. It is conventional to talk of language being located in the left hemisphere, and, beyond, that, in particular areas of the frontal lobes. But at another level that kind of localization is almost meaningless. Because language isn't just a *capacity* to speak; it doesn't exist without actual discourse. And what you discourse about is what you see through your eyes and what you feel about it in your body: so that you change a man's language by making him blind, you change a man's language by taking away his arms and so on. To say that, in some sense, there is a locus for language, and that the rest of the brain has other independent functions, is almost certainly an extraordinarily limiting way of understanding what language is.

*A.A.* I'd agree. I doubt you could build a real picture of how people come to speak without a picture of perception better than the one we have, and that means a physiological rather than a philosophical picture.

*C.B.* I'm not sure that I'd agree with that, actually. There's not much evidence that the ability of the cat to process visual imagery is fundamentally different from that of a man. Maybe there's a difference in the way that cats and people store informa-

tion but it's as if man has the same fundamental ability to recognize patterns as a cat, but has grafted onto it some hierarchically more advanced structure, which also gives man the capacity to speak; or to code in a linguistic form whose expressive output is speech. It's quite wrong to think one couldn't identify structures which give people or animals the capacity for language over and above the capacity to see and to recognize and to act on the basis of the patterns that they abstract from what they see.

*N.H.* I think I agree with that to the extent that the evolution of a particular area of the brain was a necessary precondition for moving from the prelinguistic state—or whatever you call the state of the cat—to actually being able to communicate about what we experience. But I don't think that's sufficient for regarding this area as the centre for language because, while it's a link which is important before you can have language, the perceptual system is just as much part of the linguistic mechanism.

*A.A.* But if somebody says to you "How do you explain the fact that human beings can speak?", there are many places you can start your answer. You can start with the social and add that no organism which didn't have input in perception and the capacity to act as we do could have anything like a language in the sense that we have a language. And from all these capacities we can build up a picture out of which would flow as a consequence that human beings are capable of speech. . . .

*N.H.* I don't know if you're going to say that despite that we nevertheless want to locate "language". If one looks at the new evidence for acquisition of sign-language by chimpanzees, for instance, it's quite clear that what was previously lacking was not a part of the brain but a social context which encouraged the development of language. There is some extraordinary work that Rumbaugh and his colleagues have done on their chimpanzee Lana, in which they've shown quite clearly that in some very important ways she thought in verbal or conceptual terms prior to acquiring her language.

*C.B.* But you're not suggesting that the capacity for apes to talk has, as it were, been dormant and has only been brought out since. . . .

*N.H.* Yes I am.

*C.B.* But that's nonsense! Obviously if a capacity exists it must have been exploited.

*N.H.* I don't agree with that at all. The capacity to drive motor cars has existed for a long time.

*C.B.* And it was exploited in all sorts of manual tasks other than driving motor cars.

*N.H.* The capacity to do mathematics or neurophysiology, then.

*C.B.* Well, I think one could define logically the sorts of operations that are involved in mathematics and find them in the behaviour of people who don't know mathematics—in things they actually do.

*N.H.* But the same is true of chimpanzees. I think chimpanzees at some level do have a lot of the skills which are needed to speak a language. But they've never been placed in the situation which would develop it. Human language emerges out of a very particular sort of education. Take a man and deny him exposure to language, and in fact he'll not be so different in terms of speech from an ape. What makes a man a linguistic being is the social context, which his brain can respond to and exploit. It took the imagination of people like the Gardners, against the advice everybody gave them, actually to say: "Let's try putting a chimpanzee in a human social situation and see what happens." Just as you can have an axiomatic system and, if you develop it in the right way, you can come up with new theorems, so the brain will come up with new ways of doing things, if it's programmed in the right way. What's interesting about a chimpanzee brain is that it has never been put in a context in which it could be programmed to produce a language—until the Gardners came along. But there's nothing neurophysiologically very importantly different between chimpanzees and men. We now know that chimpanzees do in fact have what looks like Wernicke's "speech area" on the left side of their brain. And so I think there is every reason to think that the machinery is there; it just hasn't had the right programming.

*C.B.* But the machinery can only exist on a basis of selective pressure. What would be the selective pressure in producing a brain like that? I'm sure it must be the utility of it. What the Gardners and others have provided is an expressive system that they can recognize; what's remarkable is that the mechanism, which I'm sure



is utilized by chimpanzees in a form that isn't identified yet, in the wild, was adaptable enough to be compressed within a scheme that the Gardners imposed on the animals. You're not really suggesting that probably a major fraction of the brain of the chimpanzee—put in volume or in computational terms—could conceivably have evolved with no real use?

*N.H.* It had a use, but in the same way as you can use a PDP 11 computer to do statistics. It may be necessary for a computer that is to perform a relatively low level function to have machinery of sufficient complexity to do higher level operations, when programmed or educated.

*C.B.* I think you're falling into the trap of making the software/hardware distinction and applying it simplistically. The reason why a PDP 11 can do things from rather trivial number-crunching to rather high-level algorithms is in the nature of programs. There's just no evidence that the nervous system has the fundamental distinction between hardware and software that the computer does. The nature of a program is determined by connectivities just in the same way as the "hardware" of the brain is determined by connectivities. And there is no abstracted programmer which can impose different organizations on bits of the brain on the basis of logical connections.

*N.H.* I think the programmer is the world, if one's talking about perception. And in the case of language or social skills, the brain is programmed by the intercourse a child has with its parents and its peers in the early years of its life. And I think this is demonstrated by what's happened with chimpanzees when they've been taken out of normal chimpanzee society and introduced to an admittedly-very-artificial human society: you find emerging properties which you would never have suspected, and which are not so qualitatively different from those in man.

I feel quite strongly that men's brains are not that different from the brains of apes and that though there's been a very big expansion from *Australopithecus* to *Homo habilis* and modern man (the brain has doubled in size) there isn't any evidence of that having any important consequences. What changed was culture. If one had taken one of the creatures whose skull Richard Leakey dug up,

and put him in school, he might have been a bit backward, but he would learn language.

*C.B.* I think that's right—for the same reason that an ape would also have learnt fairly well. I am sure there would be deficits in performance, but no finite cliff, as it were: but where do you draw the line? Ultimately you're driven to ask what animal would not be capable of language. And if any animal would not be capable, it must be due to some finite limitation in the performance of its brain. So there must be some structural differentiation in evolution: there is a point at which brains are capable of sustaining language and before which they are not. That implies a step-change in genetic organization. Maybe even a single gene. Or a combination of genes. And the reason that that's supposed to emerge, if one follows dogma, is demand. It must serve some adaptive function. If you're suggesting that the capacity to use that piece of the brain which has emerged in stepwise fashion during evolution hasn't in fact been exploited in the natural environment until man arrived, then why has it evolved at all?

*A.A.* There seems to me, Colin, to be an argument working there, which is supposed to derive from our current theories of evolution, and it seems to me to rest on a misunderstanding. Clearly, on the standard picture, mutations happen, and if there's some adaptive need, they'll be selected for, and if counteradaptive, they'll be selected out. Now, how they are adaptive and unadaptive will be consequences of particular structural organizations and some aspects of those structural organizations will have functional consequences which are more selectively significant than others, in that particular environment at that particular stage. But, of course, in setting up, through the genetic apparatus, some structure in succeeding generations, you're setting up a physical structure whose significance depends not only on its molecular properties, and not only on its relationship to the other molecules of the organism, but also on the environment in which those molecules and that organism exist. And it's perfectly possible, though of course it may not happen all that often, for a structure to develop within a particular kind of environment and be selected for because it serves some function in that environment, and for

the environment to change and for it then to be discovered to serve some other function.

*C.B.* Of course that *must* happen; it would obviously be stupid to think that the apparatus for language really does depend on a single gene locus and therefore could be due to a point mutation; and yet the cultural situation that would require animals or people to speak is presumably something that could have matured really quite quickly in hominid evolution. The *situation* that demanded speech could have happened quite rapidly. I don't think the *apparatus* in the brain that would sustain speech could have evolved so quickly. So one's led to the conclusion that the capacity to speak must be grafted onto a capacity of the brain which already existed. The essential question is: what were the adaptive pressures that led to gradual emergence of that system and yet did not lead to speech in apes? And I don't think we yet know quite what it is that apes use that piece of machinery to do. They must do something with it.

*A.A.* Isn't this analogous to other kinds of problems for evolutionary theory: you know, for example, that a wing is only going to be some use when you can fly with it and yet large numbers of genetic changes had to take place for the wing to develop; and it's not clear what the advantage of the changes that lead up to the wing can have been for a population that lost its functional forelimb and had it replaced by a stub with which it couldn't fly, as a crude model might picture it.

*N.H.* I think that's actually a very misleading suggestion: because language is quite a different kind of thing. Nobody has a language individually, a society has a language. It would be very hard to define a language in such a way as to make it a property of an individual. What we're talking about, as Colin said, is what properties of the brain had to evolve before a linguistic culture could take off. There were, of course, many relatively small advances, but there was nothing one would want to point out as being a real breakthrough towards language. There were changes to do with the ability to analyse patterns of sound, to recognize temporal structures stretching over a period of more than a few seconds. It had something to do with memory, to do with the way animals began to categorize objects. All these things contributed,

not too quickly—we don't know how long it took, probably ten million years.

*A.A.* Are you objecting on principle to the idea of the capacity for speech being localized somewhere?

*N.H.* No, it's not an objection in principle; I accept that the kidneys are the locus of the filtering of the blood.

*A.A.* Then the objection to the view that the capacity to speak is located in the left hemisphere which you have raised earlier is one which could, in principle, be decided by experiment. But earlier you *did* seem to have an in-principle objection, because this capacity depends on the whole structure within which the brain operates.

*N.H.* Yes. Because we're talking about language.

*A.A.* You think it's peculiar.

*N.H.* Very peculiar, yes.

It's something which involves the whole of the apparatus of perception and of memory and in the end even people's ability to relate to one another on all sorts of social levels. All of this is essential. Hack up someone's frontal lobes and that affects the way he relates to people; and if you did it to a child it wouldn't learn language.

*A.A.* So you're willing to talk about the localization of some capacities?

*N.H.* Yes. Although I don't want to go along completely with the Lacanian psychoanalysts in saying that a man *is* language, language is certainly a great deal of what a man is. But there are lower capacities which are localized. Take away the cerebellum and you can't catch a tennis ball, and your hands shake. So that you can say the ability to judge positions and so on is located there.

*C.B.* It's still quite conceivable that an organism with all the capacities which you say are required in order to be able to speak should exist and not be able to speak: an organism with a complex social structure, with pattern recognition highly developed, with a good visual memory, with the ability to categorize, with a tongue, and yet not be able to speak.

*N.H.* You *can* take such an organism, and it can be a man. Bring a man up in the wrong kind of social set-up, with a dumb nurse on an island and he won't speak.

*A.A.* Why is this fact peculiar to language? The brain can function as an organ of language only in the right environment, just as the kidneys can only function within certain ranges of osmotic pressures.

*N.H.* That comparison is not fair, because the right environment for the kidneys is ensured by a lot of other biological mechanisms in the individual's body. Language is quite different because no individual man could invent it. If that were possible, then since I believe chimpanzees have all the necessary skills, they *would* have invented it. There was some historical accident in human evolution that put a premium on a particular kind of communication and slowly there evolved a system of education in which men were exposed to more and more complex social forms, learnt more and more complex forms, and taught their children more and more complex forms. So language became a property of the species, but it's not a biological property.

*A.A.* And the reason you say it's not a biological property is that one could have all the relevant biological properties and not be capable of speech. In fact, some people who were not given the right cultural environment don't learn to speak.

*C.B.* I'm not sure you're right even in saying that a child that's deprived through the critical period for learning language does have all the capacity for developing language, but hasn't utilized it. Because there's a lot of evidence that the actual structure of the brain, physically, anatomically, depends on stimulation. So that it would be quite reasonable to conclude that a child who had gone through a period of linguistic instruction actually had a different kind of brain from someone who hadn't.

*N.H.* Yes, I agree, of course. But the chimpanzee evidence is interesting, because the best of the talking chimpanzees was in fact four years old when she came into the laboratory. Yet apparently she has come to understand a fair amount of *spoken* English—though she can only respond with her plastic symbols.

*C.B.* A lot of autistic children respond to spoken English too. And even a lot of dogs have a fair vocabulary for comprehension of speech. It's not the capacity to recognize that counts, but the ability to produce organized speech.

*N.H.* I thought you were suggesting that there was actually something wrong with the sensory analysing apparatus of a child who hasn't learnt language. A reasonable hypothesis. . . .

*C.B.* No, I don't think the *sensory* apparatus so much as other parts of the brain more involved with language—motor programming and so on—might actually change in the course of language-learning. So it's a different brain.

*A.A.* In fact, surely, in the very rare cases where people have come across children brought up away from human culture, they have had some difficulty later on.

*N.H.* I think almost all those cases are actually very ambiguous. If you look at them—the wild boy of Aveyron, for instance—certainly one plausible hypothesis is that he was a mental defective to start with.

*C.B.* Incidentally, there's a case in Burundi at the moment: interestingly, though perhaps this is a bit of a digression, he has quite a severe motor deficit in pyramidal functions, involving fine movements of his hands. I corresponded with a journalist who has seen him. Very few people have. He lives with a group of nuns at a mission in Burundi and he is probably about nine years old now.

*A.A.* Is there any evidence about how long he was away from people?

*C.B.* He was probably found at about the age of six. There are records of tribal warfare in 1968/1969 and certainly families were broken up and forced out of their villages and children were lost. It's thought possible he was lost then. He would have to have been two years old or so then.

*A.A.* What are his linguistic abilities?

*C.B.* Zero. He has none. Unfortunately when they first caught him they sent him to a lunatic asylum which had neither the capacity to handle that sort of case, nor the interest in doing so. He had a very tough time in the first year or so. Then he was taken in by this group of nuns, who have treated him rather well, but haven't made much effort to teach him language. And I think it's probably getting too late for that. What interests me is this difficulty with pyramidal functions. He can't open doors and this kind of thing. If you look at the other things man is good at doing, apart from lan-

guage, one of them is the organizing of complex sequences of movement, of which there are again the rudiments in ape behaviour. But perhaps the same kinds of logical operation are involved in planning a series of bodily movements with a particular aim in mind, as in conceiving of a sentence-structure. In planning to add one thing to something else, one has to have a conceptual description of the something else, and a knowledge of how the components will fit together to make a whole. And I think a lot of the logical rules are the same as in constructing a sentence. You have to have a preliminary internal description of the idea which you wish to express in a sentence and then a knowledge of how the components of a sentence fit together to express that idea.

*N.H.* Take this child in Burundi, who has, you say, an inability to perform fine movements of the hand: your first hypothesis would be that there's been some degeneration of cerebellar function or pyramidal function. But also, an equally plausible hypothesis is that, because he was never given toys to play with, he never learned the skills which are required for those fine movements. In other words it may be just a failure of education. And the brain may still be as capable of learning as it was—he may not have had the right incentives, the right teachers, to bother.

I think men's brains were much cleverer than they needed to be a long time ago. In order to make them do what was adaptively necessary, nature produced machines which were capable of extraordinary things. I think a lot of human evolution has been to do with providing incentives to exploit the brain. And sometimes in rather simple ways. Let me give you an example. Starting with language. It seems to me quite likely that the development of language in man depended on his losing his memory.

The evidence from chimpanzees is that they have very much better immediate memory and picture memory than men do. There are remarkable studies which show that chimpanzees can leaf through a series of pictures and remember them as eidetic images. Now we know that the same kind of capacity is potentially present in man, but only turns up in pathological cases.

*C.B.* Hardly pathological!

*N.H.* Well anyway it's not a property of a normal adult brain.

We know that there is a clinical syndrome which is called palaeopsia in which you go on seeing images in absolute detail after the events have passed. And it's an awful nuisance. This occurs after parietal lobe damage. Now, given that that's so, and given that normal men don't do it, it means there must have been selective pressure for the repression of that kind of picture memory. Now it seems to me possible that at some stage a mutation occurred which left a man with a mechanism that overrode the capacity to maintain eidetic images: a man in that state would have had to compensate, and one way he might have begun to compensate is by developing language, because language allows one to use abstract rules, and not work with particular examples all the time. An interesting example of this is Luria's famous "mnemonist", whom he called S, who was surprisingly stupid. And the reason he was stupid was that he remembered too well. Luria would give him a list of random numbers to look at, and he could learn them very easily. If Luria had given him a list which went 2, 4, 6, 8 . . . , he would have learnt it as usual. But if Luria had said: "Well, is there anything funny about those numbers?" S wouldn't have noticed anything. Now, you and I can also remember long lists of *that* kind, but we do it by generating a rule, which allows us to get around the problem that our memories aren't good enough. And I think that the development of language may have depended in some important way on a step backwards of this kind in order to take important steps forward. We lost our memories and were therefore forced to use a conceptual system. And that produced pay-offs which might not have been predicted.

Let's take a simpler example: there's been a lot of discussion about why men lost their hair. Now it's very hard to see why they should have. They get cold: there are no men in the world who live without fire. The fact is that some time a mutation for hairlessness must have arisen which actually benefited its bearers. It seems to me possible that the benefits of losing hair derived precisely from the fact that it made people cold. If you make an ingenious man cold and he's in an environment where fire is to be found, he's going in the end to learn to control it. The hairless mutation may have arisen again and again, and perhaps only one or two of those who bore it "invented" fire. But if—and when—a man invents fire,



besides keeping himself warm, besides compensating for the loss of hair in that way, it produces all sorts of other benefits: it keeps predators away, it gives him a focus where other people meet and talk to him, it gives him a way of cooking, smelting and so on. So that the physiological step backwards of loss of hair might have led to giving men an incentive to use their brains in a creative way, which brought all sorts of unexpected bonuses. Chimpanzees, with hair, don't need fire: and so they don't have it. If you could make chimpanzees naked they would, I suspect, invent fire quite quickly. And if they invented fire, then they'd develop a whole lot of other secondary skills: and it would be the same brain that was doing it.

*C.B.* I think that's a very ingenious argument. But one might equally well argue that the development of the capacity for language produced the ability to substitute a different form of memory. You pointed out yourself that parietal lesions produce eidetic imagery which is actually a nuisance. And it's true that eidetik-ers often don't perform particularly well, because they're so dominated by purely pictorial memory and this somehow inhibits them from organizing at a higher level, recognizing generalizations. So I think I would argue, and I'm aware that this is a more conventional argument, that the capacity for language, which was developed quite independently, imposed itself in the verbal form on the ability to remember things and produced, as it were, a revolutionary change in organization of memory. It's a change which is repeated in every child probably. If you were right about its having been a mutation which made man worse at remembering, why is it that every child has eidetic imagery? I would say that the ability to speak imposes itself on the organization of what is inherently and genetically eidetic memory.

*N.H.* Yes: I'd just like to know what would happen to a chimpanzee if you made its memory worse.

*A.A.* There is, as you must know, a lot of evidence that the capacity to remember lists of words is more highly developed in non-literate societies, in so-called oral cultures, and very much higher than in literate societies.

*N.H.* I'm rather sceptical about that. Jack Goody recorded the same oral myth on two occasions ten years apart and found that

although the men said that they were speaking the exact words that their grandfathers had used, it had in fact drastically changed.

*A.A.* The experiments I was thinking of had to do with memorizing lists of words and meaningless sounds.

*N.H.* What you're suggesting is that men have a capacity to remember lists of words which are lost. I've seen a demonstration of pathological memory in which a hypnotist put somebody into a trance and then read twenty numbers to him. It was a student from the audience, who couldn't have been a stooge. Five minutes later he came back to him and said, "Look, you remember those numbers I gave you? Could you repeat them backwards?" And the man repeated the twenty numbers backwards. Now every theory of memory in the psychology textbooks, says that the human capacity for remembering numbers is limited to 7 plus or minus 2. And certainly not backwards. So that a brain in this peculiar state can remember a very great deal. There is no practical physiological limit on what we can remember; and therefore the practical limit in the normal everyday use of memory must have some function. The really interesting question is why men's capacities have been reduced in the way they have been.

*A.A.* Part of Colin's point surely was that these capacities are not genetically limited. Your argument has to be an evolutionary one, and therefore must depend upon genetic changes, and yet this capacity to remember well, for example is, as you've just shown, highly dependent on what kind of cultural environment a man is brought up in.

*N.H.* Well, you see, my view is that, however absurd it seems, there's not been all that much change in the brain since the higher apes evolved. I don't know what happened before chimpanzees and gorillas and so on, but in terms of evolutionary distance they are certainly closer to man than they are to monkeys. Although there *have* been changes in the volume of the brain the volume of the brain is fairly irrelevant. A man can have an intelligence quotient of 120 and only have half a brain. So that the volume is of little significance. There's a marvellous case of someone who actually did have an I.Q. of 120 and was discovered on post mortem to have only one cerebral hemisphere.

*C.B.* That may reflect more on I.Q. tests than on measures of brain volume.

*N.H.* But still it does mean that in principle an Australopithecene with that amount of brain volume could have a relatively high IQ on conventional tests. I think what's changed has been the way in which men, because of their physiological needs, developed the use of that brain.

*A.A.* And you don't find any difficulty for evolutionary theory in the idea that this highly complex apparatus of the brain should have been available long before large parts of it could be exploited?

*N.H.* No.

*A.A.* And the argument there is that this brain serves *some* function of selective value?

*C.B.* I think I would argue that it has to be the same function. There is not an adequate distinction between hardware and software to sustain that argument. You can't just argue that having a certain amount of core and having a certain processing time is enough to sustain any logical function that only demands that much core. I think that if an animal was capable of speaking it must have been capable of organizing language, whether it spoke or not.

*A.A.* That means that conceptual thought pre-exists language in the spoken form.

*C.B.* Conceptual thought and simpler forms of communication too.

*N.H.* O.K. Well, I think I'd accept that. Almost certainly chimpanzees do have conceptual thought and they also have a fair amount of communication. On the other hand, they don't have language. It may be that the reason they don't have language is that they've taken the route of using visual signalling—as opposed to auditory—and that memory for visual stimuli is extremely poor. If they had used sound, which, perhaps, for some reason we are better at controlling and recalling, they might have spoken language. It is a great advantage in using sound that you can get on with other things while communicating. So it may have been an accident that we chose sound . . . and culture developed.

*A.A.* I wonder if you're right. Surely we'd have the same difficulty remembering entirely arbitrary sounds as a chimpanzee. The reason we remember bits of music is that they're structured by rules we have learnt. And similarly with the long sequences of poetry that we can learn, or sentences in the middle of which other people are: they mean something. But meaningless sequences?

*N.H.* But if you take meaningful visual sequences, a film for example, you'll certainly code that in verbal terms. You're unlikely to code it as a cinematic image.

*A.A.* But that's not going to help you with an argument which distinguishes auditory and visual stimuli: presumably if I listen to a sequence of music of a kind with which I'm familiar I'm just as likely as a musicologist to record it abstractly as I am to record it as a remembered auditory sequence.

I don't know whether that affects the argument about the contingency of our having discovered some way of communicating that had features that made it possible for it to "take off". After all there may be simpler reasons: how capable is the chimpanzee larynx of producing differentiated sound?

*C.B.* I think the evidence is pretty good that the evolution of the larynx was actually very rapid. Probably the evolutionary pressures to vocalize and to increase the repertoire of vocalizations were extreme, and there was an explosive period of evolution.

*N.H.* Rather recently as well. We can guess that Neanderthal man probably didn't have the ability to articulate certain sounds. There's enough fossil evidence of the shape of his larynx. It has actually been suggested that the reason modern man, *Homo sapiens sapiens* ousted Neanderthal man was modern man's larynx was better developed. I don't think I really believe it. But that goes back to my earlier point: the larynx differing didn't entail a difference in the brain. The Neanderthal brain may have been just as developed.

*C.B.* That's right.

*A.A.* But doesn't your argument, Colin, depend upon saying that it's right precisely because the larynx only made it possible to express what was already there in conceptual thought?

*C.B.* Certainly.

*N.H.* I think that Colin and I are not really in disagreement: I still think there *is* an argument here. It is extraordinary the way in which physical anthropologists have placed a great deal of emphasis on brain size. Leakey is absolutely delighted if he can find a brain which has a few cubic centimetres more capacity. Anatole France had one of the smallest brains ever recorded.

*A.A.* And Dostoyevsky or someone had a huge one. I can't exactly remember, but of both the largest and smallest recorded human brain capacities some belong to geniuses, some to madmen.

*C.B.* But then if you're an archeologist who's interested in mental functioning, and that is essentially the most interesting area for speculation in archeology, what else can you look for?

I suppose you look for things like evidence of culture, tools and so on. If you've done that and you want to look for something that is within the organism, then obviously you look at the brain.

*N.H.* But I think you may be in real danger there of making a mistake: I think men's brains may have got bigger simply because their bodies got bigger.

*C.B.* There is of course the danger of saying that clearly there is a correlation between brain size and performance—the brain of a fly is smaller than the brain of a man—and then extrapolating from that to instances within a single species or between closely related species. It's just not true that you can conclude that because an animal has a bigger brain than some fellow of its species, it's more intelligent.

*A.A.* But the correlation does break down terribly often even in general.

*C.B.* There's certainly no causal relationship at all. The fact that very intelligent animals have large brains is to do with the fact that they have a large number of other things to do with their brains: if they're intelligent they have a bigger effective environment.

*N.H.* And bigger animals are also longer-lived and that may be the important correlation.

*A.A.* But there are obviously things about minimum size—just that if you don't have enough brain cells, the complexity of the kind of information you can deal with is reduced. I wonder if we

could turn right away to another set of problems and consider for a moment whether either of you can think of something that might happen in your field which would make you entertain the possibility of dualism?

*N.H.* You mean some kind of Cartesian dualism?

*A.A.* I use the term with some diffidence, just because I don't know terribly clearly what it means. One possibility is that there is a spiritual structure organizing the brain.

*C.B.* I don't think, by the way, that that's Cartesian dualism at all. There is very little in Descartes about the soul organizing the brain. Descartes tried quite hard to avoid any intervention from the soul in the actions of the brain. He saw cases where it was essential to do so: for instance in the case of choice or selective attention. Given two conflicting sensory inputs with equal demands on the sensory systems or the muscular systems, choice has to be exercised. And the pineal could deflect the animal spirits this way or that. But in fact he tried very hard to avoid actual intervention of the psyche on the brain. To think of dualism as requiring a force to act on and organize the brain is a mistaken interpretation of Descartes.

*A.A.* I don't terribly want to get into questions of Cartesian exegesis, but I suspect that Descartes would have had some difficulty in making his system at all plausible, if he hadn't at some point allowed for interaction. I think there's something very significant in the fact that Descartes was not successfully able to avoid interaction. What I'm after is not Cartesian dualism, but whatever it is that antimaterialists are after in general. I have difficulty in putting the question because I don't myself want to defend dualism: insofar as I understand it, I don't believe it.

*C.B.* We may have even more trouble if none of us believes it!

*A.A.* Let me put it like this: there is supposed to be some consequence of the success of psychophysiology which is said to refute something which people call dualism, and which involves the claim that there are structures of some kind which are the real locus of mental capacities and that those structures, wherever they are (if that question even makes sense) organize brains.

*N.H.* Organizing being interfering through quantum indeterminacy, say? People like Eccles who've tried to think about this have claimed there is some room for manoeuvre because of Heisenberg's uncertainty principle.

*A.A.* That's just bad physics, isn't it?

*N.H.* I'm not at all sure we are going to be able to talk about this because I can't picture, and therefore can't understand the idea of a deterministic machine having room for a cause which is not actually part of the mechanism.

*A.A.* This is why I raised earlier this question of what consequences can be drawn from the fact that you can get a brain to do quite well something it did before with a bit that is now damaged. This might suggest that there's some underlying capacity, perhaps not in the brain at all, which is capable of reorganizing the brain in new ways to achieve old purposes.

*N.H.* I don't think you need dualism to explain that: if you cut off the head of a planarian worm it grows a new head.

*C.B.* You land a Boeing 747 with two PDP8 computers in tandem, so you have a back-up system; you land a moon-landing vehicle with a double computer system; and that's actually a sensible way to run a brain. I don't know what was the incidence of brain damage during human evolution but certainly the attrition of brain cells carries on at a fairly high rate in all of us. So there has got to be either a system for regeneration of neurons, which so far as we know there isn't, at least not to a large scale in vertebrates, or there's got to be redundancy, and the capacity to regenerate function, amongst pools of uncommitted neurons. And that's the accepted view, I think. You see invertebrates certainly do have totally committed neurons with no redundancy, but then they have the capacity to regenerate. Probably most people lose something like ten percent of their neurons in the course of their lives, probably most of it after the age of 60—but they do lose them, and to some extent there's a loss all the time. If every component were as essential as the components of an invertebrate brain, that would be simply disastrous. Every other part of the body has, to some extent the capacity to regenerate. The brain doesn't have this capacity, so it must adopt a different strategy.

*A.A.* So that your picture is of the capacity being located in two places, so that if one is destroyed we simply use the other. But my dualist will say there's nothing of the kind going on in the bit of the brain that takes over the function until the normal locus is destroyed; and then the mind reorganizes that bit to achieve its purposes.

*C.B.* I don't think that is an argument that's actually very commonly used.

*N.H.* No. I can understand it; it would be a possible way to build a brain.

*A.A.* So you are willing to contemplate other ways of viewing the brain?

*N.H.* I don't think that this kind of organizing entity need lie outside the brain.

*A.A.* Presumably the point for someone who does want to believe in the soul as independent of the body, and, in particular, surviving it, is that it *would* be outside the brain in some sense. Or it could be an emergent property, that is, one which couldn't be predicted simply from a knowledge of the physical and chemical structure of the brain.

*C.B.* I think that it is true that we don't either understand this capacity to reorganize behaviour after brain damage or have the ability to ask the necessary questions to learn to understand it. So-called emergent properties are defined by the inability of people to ask appropriate questions. As soon as the right type of question can be formulated by scientists, then I think we'll solve the problem by experiment. The question of emergent properties will disappear.

[For reference: *Language Learning by a Chimpanzee*. D. M. Rumbaugh, Ed. Academic Press, New York 1977].





## **Language and metaphysics : introduction to a symposium**

DOROTHY EMMET

The three papers which follow have developed out of a symposium held in the New Year. Each in its own way is concerned with underlying structures in language. Each is making a detailed analysis of a particular single example; Margaret Bottrall of a poem by Gerard Manley Hopkins; Kathleen Russell a piece from *Swan Lake*; Margaret Masterman a part of a well-known hymn by Tate and Brady. They did not in this symposium get on to trying the techniques of their several approaches on each other's examples to see what analogies might be drawn—this would be a matter for further discussion. But it is already apparent through the presentation of these three, and only three, examples, that a hypothesis about the foundations of language could be tested on them.

“Language” in Kathleen Russell's case is not ordinary linguistic expression. It is expression through movement in the dance forms of classical ballet, but, as a form of communication, Kathleen is prepared to speak of this as a “language”. Using an analytic method which she has developed and taught in the Institute of Choreology, she shows layers of rhythmic patterns, reiterated with variations, within the stretch of dance. The meaning conveyed is both concrete and abstract; concrete in that something is conveyed about the character of the Swan Queen, abstract as creating an intelligible structure of interlocking and reiterated patterns.

Margaret Bottrall's paper is the least technical, and was not given with these technical concerns in mind. Her example shows how words are used in the poem in a multi-meaningful way, the dominant meaning being brought out by the setting of a word in

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context, while other meanings reverberate recessively. Moreover, Hopkins was prepared to sit loose to orthodox grammatical form; in his poems the role of words is shown by stress.

Margaret Masterman's contribution is directly concerned with presenting a view of the foundations of natural language; showing it as stress-based rather than syntax-based, rhythmic, layered, and reiterative, and, semantically speaking, not to be static but to "flow". This type of analysis of language, she claims, is still at an early stage and it is exhibited here by working on a single example. She is making a radical departure from the view that the fundamental structure of language is shown in sentences of subject-predicate form, bounded by full stops; instead she looks at longer stretches of text seen as strings of words marked by emphasis points.

By agreement among the symposiasts, it was hoped that these papers would show something of the "metaphysicalness" of language. The way the world is and the way language is are of course different questions; but the way we interpret the world can be influenced by the forms of the language in which we talk about it. Philosophers have known this for a long time. The great pioneers of categorial schemes, Aristotle and Kant, were well aware that the fundamental distinction of substance and attribute bore an analogy to the grammatical distinction of subject and predicate. There is something to which reference is made, and something is said about it in the linguistic unit of a proposition. Similarly there are things in the world and properties or happenings which characterize them.

There have been other philosophers, notably Bergson, who have said that this may indeed be the way in which natural language encourages us to think about the world. But so much the worse for natural language; it presents us with a distorted way of thinking, as though the world were made up of static things instead of dynamic processes. Bergson's remedy was to substitute direct non-linguistic intuition for natural language. But perhaps we can do better than this for natural language, and here Margaret Masterman's view becomes relevant. She is challenging the notion that the basic units are propositions in subject-predicate form.

Three very different philosophers have fastened on the importance of the subject-predicate form as affecting the way we think about reality—Urban, in *Language and Reality*, Strawson in *Individuals*, and Whitehead in his later works (*passim*). Urban maintains that the only way to determine being or reality is in those forms in which statements about it are possible, and “if no statement about reality is possible which does not have the form of subject and predicate, substance and attribute, then precisely such notions must be constitutive of reality insofar as it can be empirically intuited and *expressed*”<sup>1</sup>. (Italics in text). He holds that there is a *philosophia perennis*, ultimately stemming from Aristotle, which sees the world in terms of substances and attributes, and if this is the only intelligible way of talking, then this is the kind of metaphysics we must have.<sup>2</sup>

Strawson’s view is explicitly geared to the word “expressed”, which Urban italicized. Strawson is concerned to write “descriptive metaphysics”, bringing out the actual structure of our conceptual thought about the world, as he believes it is shown in natural language, leaving open the possibility that there might be other kinds of “revisionary metaphysics” which would have different structures.<sup>3</sup> My concern is with the fact that his “descriptive metaphysics” shows us a world where remarks are made about identifiable particulars, and that this view marches with the reference-description distinction in subject-predicate expressions. Strawson shows with great subtlety how this distinction works in referring to things of different kinds; there is no doubt that the distinction is basic, both to his view of natural language and to his “descriptive metaphysics”.

Whitehead could be taken as a “revisionary metaphysician” who is trying to see the world in terms of dynamic processes instead of in terms of substances and attributes, and he says explicitly that this involves challenging the basic importance of the subject-predicate form of expression which he thinks has influenced the metaphysical views of philosophers from Aristotle onwards. The later Whitehead is notoriously obscure, if not sometimes unintelligible, so that it is possible for Urban to say “What can you expect if you repudiate the only intelligible form of

grammatical speech?" But Whitehead's obscurity is due to insufficiently explained neologisms, not to a refusal to write English grammatical sentences in subject-predicate form; he does so write them. He does not cultivate a style like that of James Joyce or Gertrude Stein who try to convey the flow of experience through a flow of words. But scattered in his later writings are remarks on language which suggest that separate subject-predicate sentences do not represent its basic character. "When we examine the content of language . . . its meaning presupposes the concrete relations of real events happening and issuing from each other." (*Modes of Thought*, p. 46). Such meaning is conveyed not just by sentences giving particular discrete bits of factual information; there is a flow in which the significance of earlier words is brought out by those that follow, and where the main weight of communication is carried by emphases which show the direction of interest.<sup>4</sup>

I don't think Whitehead ever worked out a philosophy of language. But there are features of his metaphysics which describe the world in a way which might be reflected through the underlying rhythmic and reiterative patterns in language which these symposiasts bring out. Thus he sees the world as a directional flow or "passage", the elements of which are pulsations which produce rhythmic patterns with durations, themselves parts of other rhythmic patterns displayed in longer durations extending over them. Moreover, rhythm is not mere repetition. "A mere recurrence kills rhythm as surely as does a mere confusion of differences. . . . The more perfect rhythm is built upon component rhythms. A subordinate part with crystalline excess of pattern or with foggy confusion weakens the rhythm. Thus every great rhythm presupposes lesser rhythms without which it could not be. No rhythm can be founded on mere confusion or mere sameness." (*The Principles of Natural Knowledge*, p. 198.)

A view of natural language such as Margaret Masterman's, as well as one of the "language of classical ballet" such as Kathleen Russell's, could indeed have an analogy with a view of the world seen as ongoing processes made up of reiterated patterns within patterns. This is not to say that such language necessarily reflects the structure of the world, any more than that the subject-

predicate form necessarily reflects the fact that the world is composed of substances and attributes. There need to be ways other than linguistic—experiential ways, observation, experiment—by which we gain access to the world, and without these we could not consider which ways of talking were the more adequate. But what is being here suggested is that the subject–predicate form of natural language is superimposed grammatically on an underlying structure which is an ongoing flow with stress points and reiterations. This sounds more like a Whiteheadian world of processes than it sounds like an Aristotelian world of substances and attributes. G. E. Moore, talking to I. A. Richards, once said, “It seems to me very curious that language should have grown up as if it were expressly designed to mislead philosophers; and I don’t know why it should have.” These new investigations of natural language may at long last reveal enough of its potentialities to show that it need not have so grown up.

I must now try and say something not just about how some philosophers have seen language as leading or misleading us metaphysically, but about how I myself would see metaphysics. Some thirty years ago I wrote a book called *The Nature of Metaphysical Thinking*. I always feel embarrassed—indeed ashamed—when people refer to this, since it was a prolegomenon which I never succeeded in following up. I suggested that the metaphysical view was developed by fastening on some particular form of experience or relation within experience—personal for instance, or organic—and extending a way of thinking of it by analogy in a wider interpretation of the world. But I was not able to see what might be a present key analogy, and could never follow this up.

There are, I now think, different kinds of metaphysics. There is the descriptive kind, such as Strawson writes, which is concerned in a neo-Kantian way, to bring out the conceptual structures in our thinking about the world, looking for these primarily in the uses of language. There is the more speculative kind which tries to make a synthesis of a view of reality drawn from an enlarged view of science. There is also a kind of metaphysics which is predominantly interested in the significance a view of the world may have for human interests—moral, for instance, aesthetic, religious. This

would hold of views such as that in Russell's *A Free Man's Worship* which give a minor and transitory place to human existence, as well as to those which encourage us to "think nobly of the soul". This last kind of metaphysics will have to be written in the end in the first person because it contains value judgements which one sees as having implications in the conduct of life, that is to say, it has a moral dimension. I can see that it was this kind of metaphysics which I was wanting in *The Nature of Metaphysical Thinking*, and which indeed I still want. But I am more aware of the difficulty in finding analogies between the concepts in which we interpret the world and those in which we interpret our moral experience. At the same time I am dissatisfied with a prescriptive view of morality which makes it consequent purely on our choices as to how we decide to live. There are moral experiences as well as moral principles, and moral experiences may come from how certain courses of events actually work out. Such experiences may not be universal or even happen very often, but that they can happen at all is I believe of metaphysical significance, in the sense in which I have said that metaphysics is concerned with how we see certain features of the world in relation to human life.

One such feature would be the fact of *process*. In a process it is possible to distinguish earlier and later stages and say something about their differences. It is not a timeless state which cannot be characterized in language, but only indicated, Bergson-wise, as the object of some direct intuition. Even if a process is unusual, this need not mean that it cannot be talked about in normal language, and the more we are aware of the possibilities in normal language, the more we may be able to do this with greater awareness. To describe something in natural language need not make it into something common or mediocre, as poets have always known. (This is not a way of saying that such metaphysics is poetry, if that means that it is expressive of an attitude, and not an attempt to give a true description. Indeed I should not want to say that poetry is only expressive, nor that the language of metaphysics is poetic language. My point is the Wordsworthian-Coleridgean one—uncommon experiences may be matters of common speech without being trivialized.)

Well then, what would be an example of a pattern of process which is both in the causal world and of moral significance? It is a time span of experience, not divided into separate happenings, each of which may stand in a causal relationship to future happenings, but is otherwise left behind except that there may be a memory of what it was like. Rather, the experience is taken as an ongoing process, perhaps in the end a total life-span, in which temporal divisions may indeed be drawn but are seen as marking stages where what happens at one stage can have a “feed-back” on a further stage. “Feed-back” is a term from Cybernetics (or, as it would now more often be called, Information Theory) to stand for how some output in a process acts as a signal on the input in the next stage. In the case of a servo-mechanism feed-back may set it back on course or keep it within the limits of a steady state. In the case of a learning organism, such as the human being, the effect of the rectification can be to improve performance the next time round. So on this longer view of an ongoing process, happenings in the past where one has gone badly wrong, or had to suffer, need not only keep their trace as painful memories or as causes of irreparable damage. Nor need one just be stuck with programmed patterns which repeat themselves over and over again—a kind of Nietzschean “eternal recurrence of the same”—with performance becoming decreasingly effective as the organism runs down. Instead, painful experiences in a past stage can be utilized in a later stage by what has been discovered through them; experiences can be evaluated in an ongoing process and not simply for what they were at the time. So “souffrir passe, avoir souffri ne passe jamais” need not be a depressing thought, but a way of saying that the ongoing process is enriched through what has been learnt.

I believe that this kind of enrichment is a fact; not a general one, for there can indeed be mere repetition of pattern—“an eternal recurrence”—in moral as well as other kinds of performance. But when painful experiences are learning experiences there can be cumulative increase in insight.

That past stages in a process of experience can enrich present insight depends on the capacity to make a critical examination of what went right or wrong and on conscious evaluation. This is a



kind of learning which therefore differs from Skinnerian Learning Theory, where performance is changed by positive and negative reinforcements through rewards and punishments. This latter kind of learning, which undoubtedly happens, depends on pleasures and pains changing patterns of behaviour just because they are pleasurable and painful. In the kind of learning with which I am concerned the interest in whether the experience is pleasurable or painful is subsidiary to the learning interest, instead of the learning being a response to a stimulus where the response takes one form or the other according to whether the stimulus is pleasurable or painful. I am enough of a “naturalist” in morals to think that the fact that processes in the world can be cumulatively enriched and self-adjusting may help one to take a longer view of what a moral experience may be, where earlier stages are evaluated by what can come out of them at later stages. And a view of natural language, where reiterations in later stages enhance or modify the emphases in earlier stages, might encourage us to look for such processes, instead of looking for atomic facts to correspond with propositions in subject-predicate form.

#### Notes

1. “Whitehead’s Philosophy of Language and its Relation to his Metaphysics”, *The Philosophy of A. N. Whitehead* in the *Library of Living Philosophers*, pp. 350-1.
2. *Language and Reality*, p. 15.
3. *Individuals*, p. 9.
4. I once wrote a paper called “Emphasis and Importance” (*Proceedings of the Aristotelian Society*, XLI), which was based on an interpretation of Whitehead’s use of these notions, especially in *Modes of Thought*. This pointed to the need for a logic of emphasis, but I never produced one. Margaret Masterman’s method of semantic analysis does indeed contain a logic of emphasis.

## **Reiterative semantic analysis of a simile**

### **Part one : The nature and stages of the process**

MARGARET MASTERMAN

The purpose of this paper is to use a technology which comes from the field of mechanized information-processing to make a philosophical analysis of a piece of text. I call this analysis “philosophical” because, although it is the kind of analysis which could in principle be made by a machine, it has not, in fact, been put through a machine—though at the points and stages which I will indicate, other similar analyses of text have been made by machine.

So the interest of this effort is not primarily computational but philosophical; and its philosophic interest is that it displays a conception of language which is not subject-predicate based. It also shows that real words cannot be introduced into language on the cheap, because as soon as speech is considered as consisting of contours of stressed and unstressed words, then it becomes clear that the meanings of these words have to reiterate.

To philosophers, it may not be initially obvious why the idea of reiteration occurs. Indeed, if this idea were so obviously obvious, it would not have been missed for so long. Real speech consists of modulations and restatements of sometimes as little as one basic stressed word. But every such stressed word is initially ambiguous, and has multiple meanings. The multiple meanings produce ambiguity. Contrary to the received wisdom the ambiguities are not resolved by extra-linguistic contexts. What resolves the ambiguities is the speech following or preceding. Real speaking consists of modulated sequences of initially ambiguous stressed words which

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knock the ambiguities out of *each other*. It is this process that the Thesaurus model simulates.

To see how this works, take the well-known hymn by Tate and Brady:

As pants the hart for cooling streams  
When heated in the chase,  
So long by soul, O God, for Thee,  
And thy refreshing Grace.

Take the simile of “pants” to “longs”. If we look under the Thesaurus entry for “long” we find: diurnity, length, diffuseness, tedium, desire. If we also look under the entry for “pants” we find: agitation, (See 318 in Roget’s Thesaurus) oscillation 317, wind 352, heat 379, fatigue 684, feeling 818, desire 859. The common head under which both these words intersect is “desire.” When this intersection is recorded under the words of the simile, the stressed meaning which reiterates is “desire.”

However, the word “pant” combines also with other stressed words besides “desire.” If we now take the Thesaurus entry for “heat”, we find that “pant” and “heat” intersect under “heat”. For the entry is: heat 379, morning 128, dryness 342, contention 716, excitation 821, desire 859, love 887, resentment 891. The common head for “pant” and “heat” is “heat”. “Pant”, therefore, already has two layers of reiteration. The larger scale reiteration between “pant” and “long” which forms part of the simile, and a smaller scale reiteration in which “pant” and “heat” and also, incidentally, “hart” and “chase” intersect, combine to form an underlying isocolon.

This analytic procedure is being used, moreover, by semantic information processors and mechanical indexers all over the world to retrieve basic information from texts; and it depends, not on any prior syntactic analysis being made of the text, but on discovering in it what are called in the trade variously *keywords*, or *concepts*, or, as I have already said, *heads*, which are also, in fact, the basic unit of what philosophers have call speech acts. These units are then mathematically combined to give a description in ‘head-language’, of something which a “searcher for information” might want to find out; and this description is then matched by the machine, to a second description, also in “head-language” of what he does want

to find out. Thus a searcher might say, "I am interested in *wing-stress* on *aircraft* as an effect of *flying faster than the speed of sound*". This declaration would be turned into a request to the machine, "Find a document which contains all of the keywords AIRCRAFT, MACH SPEEDS, WING-STRESS": and because the document in question might not contain in its head description the exact key-term WING-STRESS, (just as the "searchers" request did not contain the exact term MACH SPEEDS, but only the more colloquial phrase "flying faster than sound"), ways have to be found of connecting these near-synonymous terms with one another by associating them in a machine-stored semantic association-system called a *thesaurus*, the system being so named because of the famous thesaurus of English words and phrases first made by Roget.

Now not only can this technology for document-searching also be applied to the analysis of full natural language: in fact it was first started, in order to analyse full natural language in 1956 in the years which followed<sup>1</sup> and then taken over and simplified to apply

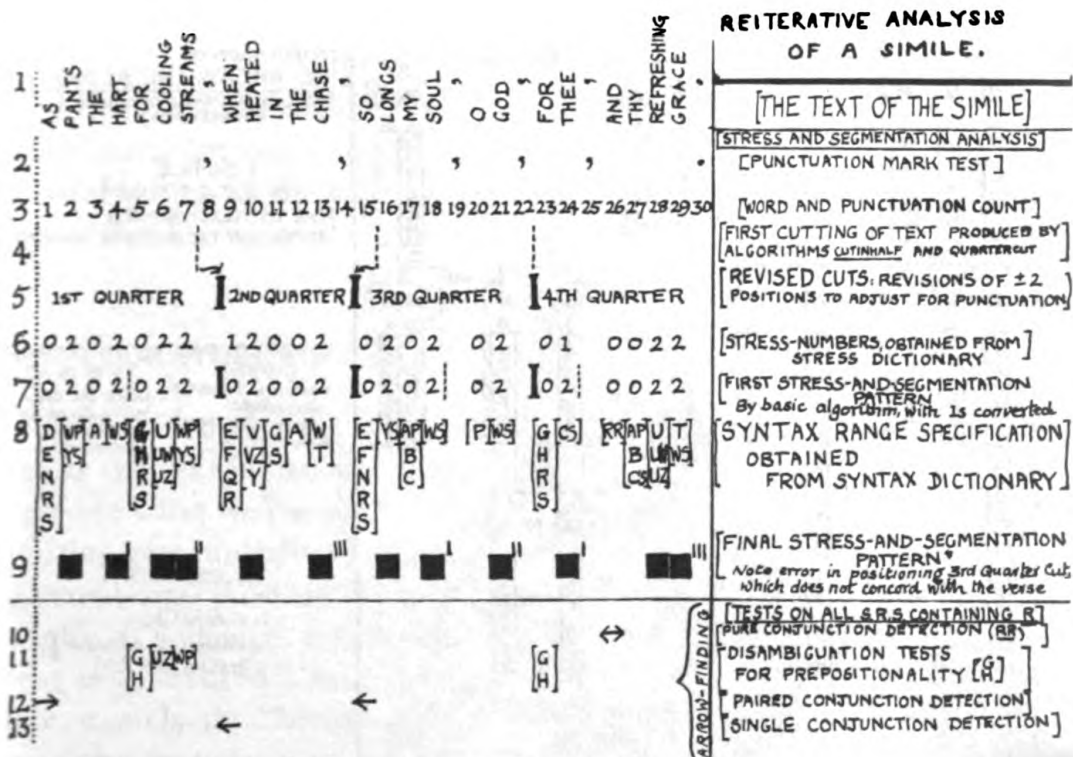


FIGURE I

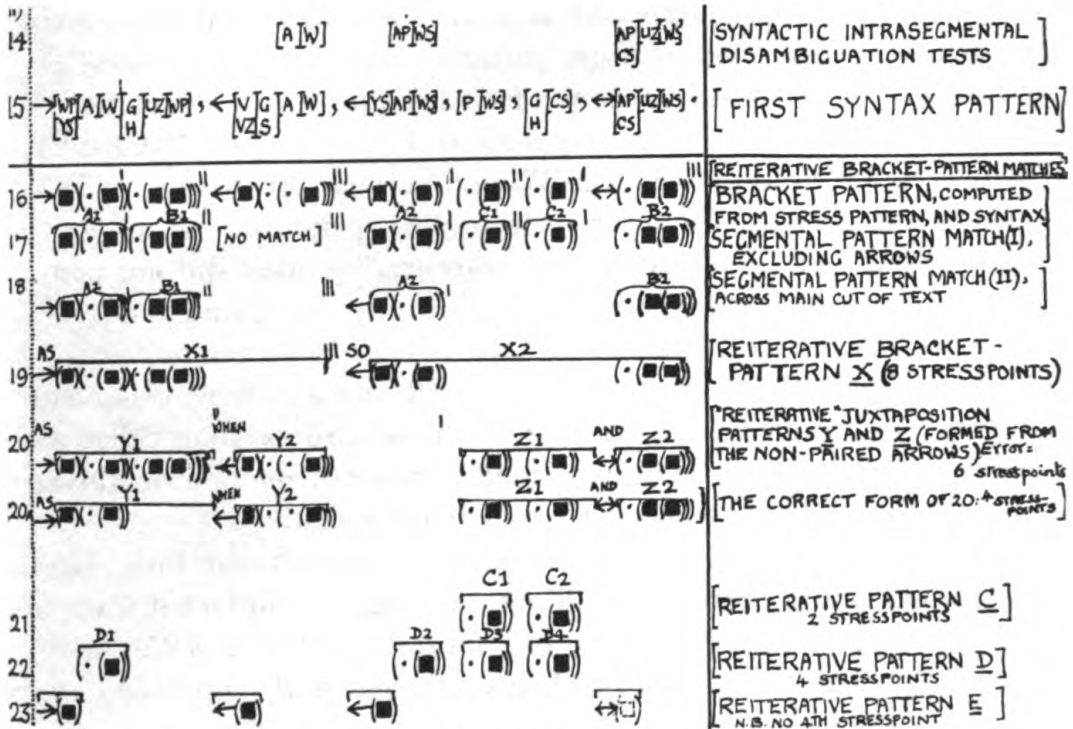


FIGURE II

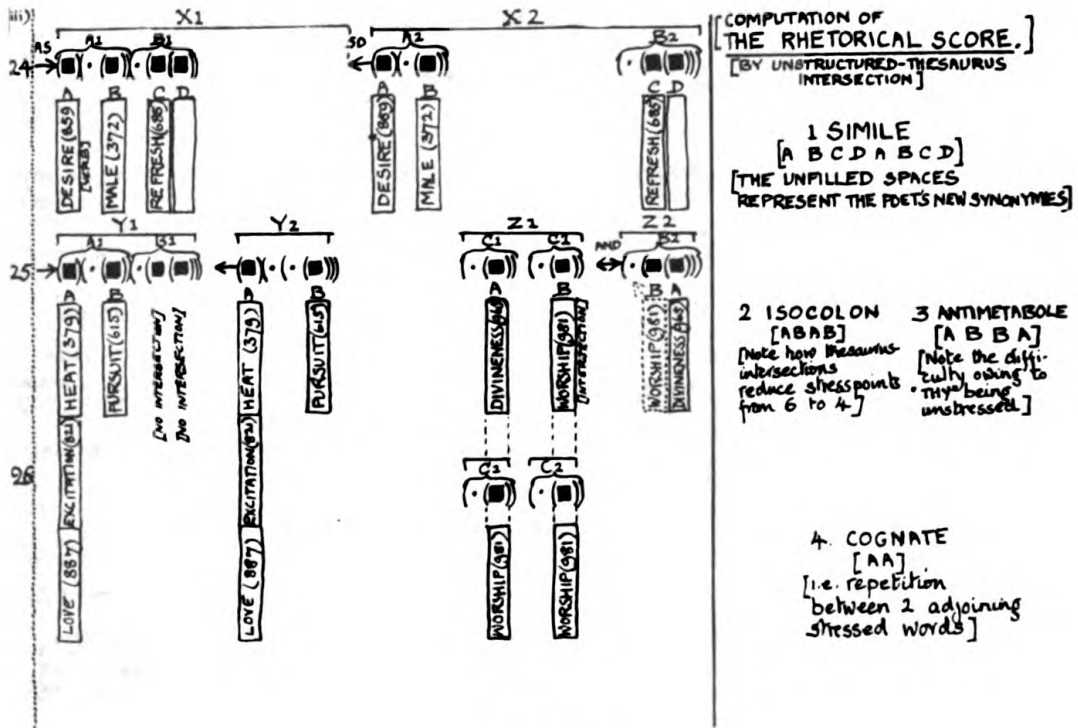


FIGURE III

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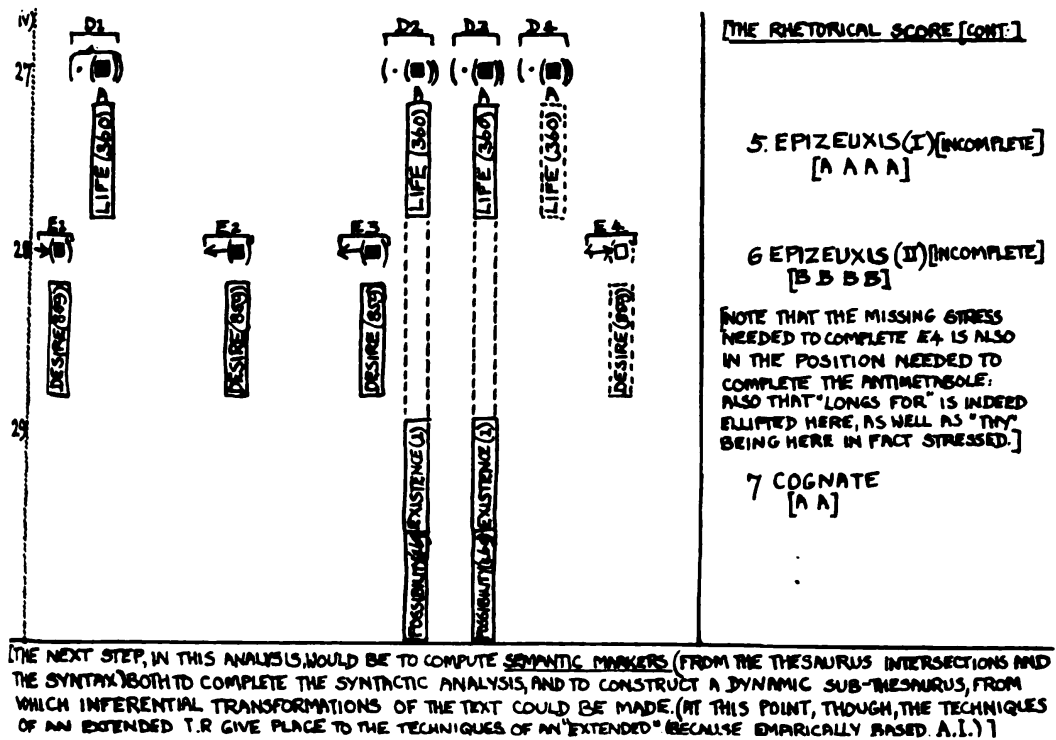


FIGURE IV

it to document-searching.<sup>2</sup> And when it is so extended to analyse full natural language, what you get is an analytic process consisting of four stages which is displayed in the four charts given here in Figs. I to IV.

**THE FOUR STAGES OF THE ANALYTIC PROCESS**

i) The first stage consists in making the machine segment and stress the text in order to find its *stress-pattern*. (Note how often in real life what we consider basic information in a piece of discursive writing gets underlined, as it did in the “searcher’s request” just given above.) And the interesting thing is, for students of the philosophy of language, is that the “unit of meaning” into which the text is segmented is not primarily a syntactic unit but an intonational one, namely the “breath-group”; i.e. what the man who wants to read the text aloud to an audience can say in one breath: what the immediate short-term memory of the brain can hold at any one

time: what the “rapid reader” can take in at any one scan. This is the “phrasing”<sup>3</sup> (in French, *phrase rythmique*) which normally consists of two stressed words, or *stress-points*, together with what syntactically either hangs on them, or comes between them. And the extraordinary thing is that though this was the known primary unit of the old, widespread, rhetorical punctuation-and-accentuation system, which, in English, not only underlay the rhythms of Chaucer but persisted right down to the time of Shakespeare or even, in part to that of Milton, and is still the primary unit of simultaneous translation, this unit of the breath-group has been totally overlooked as a universal feature of language, both by modern linguists and by modern philosophers of language.

The teachers of English as a foreign language know about it, though, and, unselfconsciously, the semantic information-processors-by-computer have rediscovered it. It has actually been used to stress-and-punctuate text by machine<sup>4</sup>; and a simplified account of how it works is given in Part II.

ii) The second stage (which fails here) is to use the breath-group segmentation to make a syntactic analysis of the text. This analysis fails not for the usual reason which makes computer-syntax-analyses fail, which is that, owing to the many syntactic ambiguities of word-function between which the machine does not know how to choose, vast numbers of alternative analyses are mechanically generated (in one extreme case, 30,000) among which the human user of the machine has to try and find the right one. The use of rhetorically punctuated text stops this proliferation of alternatives, because the machine can, in the first instance work only within each breath-group to find a *syntactic contour*; and then combine the contours: find a *sentence-profile*. However, syntax-analysis programs never sufficiently allow for word-inversion--which is, in fact, an exceedingly common feature of real language; and so (on purpose) I have chosen to analyse here a stretch of verse in which the subjects and predicates are both inverted, in order to make sure that the subject-predicate structure of the text shall never be found; in order to bring home the philosophical point that, though we don't find it, in this type of analysis we also don't miss it.

We do use the syntactic functions of the words, though, both to compute the stress-pattern, and to compute the bracket-pattern at stage 3. And the fact that, in order to do even this, eight parts of speech by no means suffice, but all the letters of the alphabet, and in a 2-letter code, are needed, shows the complexities which arise when real machines analyse real syntax: complexities which philosophers always conveniently forget.

The actual syntax-dictionary by Rutherford<sup>5</sup> and some account of the procedure is given in Part II.

iii) From the stress-pattern and what we have of the syntax-pattern have to be computed the *bracket-pattern*. To find this, the conjunction-words and phrasing-connectors of the text have first to be turned into arrows, and two-way-pointing arrows. An algorithm (i.e. a mechanical procedure for doing is outlined in Part II: but I do not know of any computer-program which does it as yet—owing to the “openness” of the set of words and phrases which, in real natural language, can be used conjunctively. The head of the Hatfield Polytechnic linguistics department, Dr. Eugene Winter, is working intensively on this phenomenon of language—which, again, is one which is disregarded by philosophers.<sup>6</sup>

Once you have your stressed segments, connected by arrows, you use the arrows to find the bracket-patterns. You do this by the overall strategy of matching, first, each *half* of the text with the other half (which here fails): then each *quarter* of the text (which here also fails): then each *eighth* of the text (which here succeeds): then each *sixteenth* of the text (which succeeds also). Note that here also, the first bracket-pattern-match succeeds only because the syntax is ignored: that is to say, the bracket-pattern of the words “for cooling streams” matched (correctly) with that of the words “thy refreshing grace” as though the machine had realized that the word “for” had here been ellipted before “thy”, which in fact it has. (Had it been put in, though, the bracket-patterns would not have matched.)

No program at all exists for computing bracket-patterns (we are all too much bogged down currently in the mechanics of arrow-finding). The chart therefore almost certainly contains mistakes; but it



does display the intention of the strategy. (Note especially that it is part of the strategy that matched bracket-patterns must contain either eight stress-points, or four, or two, not three or five, so that when they don't, the machine tries (and often with a slightly uncanny prescience) to reconstruct the missing stress-point in order to complete the basic rhythm of the text.)

Enormously more ought to be said here and everywhere, about the necessity, if we are to understand language, of making the machine disentangle and discover, through improved punctuation, the basic parallelisms and recurrent rhythms of text: but alas, no more will be said here, not even in Part II.

iv) However, paradoxically, the fourth stage of the analysis, namely the detection of the key-words, which ought to depend cardinally on the machine having first found the bracket-patterns which give their positions of the key-words, has in fact developed independently of the third stage: by the simple device, in the crudest case, of having a human being underline beforehand the words of the text which are to count as keywords; and in the next less crude case, of making the machine find the actual stressed words and phrases which occur most frequently in the text.

It is at this stage that to sophisticate the search, the machine uses a *thesaurus*: and it is in the study of these unconscious "forces of the mind" which shape the construction of full semantic thesauruses that the philosophic depth of this whole enterprise lies. For consider (a) to get out "basic information" for your searcher you want to make the machine match across the parts of speech; i.e. you do not want your inquirer to fail to find a paper on wing-stress in supersonic aircraft if the writer or the paper writes predominantly about it by using not the noun "wing-stress" but the verb "to stress", or the gerundive "stressing." Similarly, (b) the keywords must match across the languages: the paper which your inquirer is searching for may exist only in Russian—or (in some other subject) only in Chinese. (c) the keyword matches must extend the ordinary frontiers of synonymy, as well as allowing (as Roget does) for ordinary close synonyms: if a paper has been written only about the apparatus, or tools used, for some particular investigation, the searcher

will need it even though it does not mention the investigation itself. And so (d) the concepts of semantic areas of the thesaurus must themselves each have a structure which reflects the whole *kind* of basic information or spread of information which that concept can give. And it follows from that again that in a fully articulated semantic thesaurus the small set of overall *heads*, or concepts (c. 1000, in Roget) end by being on a higher semantic level from the many more individual *keywords*: because in order to get enough matches, the heads must be more general, and more abstract than the keywords: semantically independent of one another. And finally, (e) the ideal thesaurus of the future (using bracket-patterns) must be, not static but dynamic i.e. capable of change: because it must be able to detect, from their bracket-pattern position, both new technical words and phrases which are being used synonymously, and also old ones which are being so used (say by poets or persuasive scientific orators) for the first time. And this means that a semantic thesaurus must not only be a word-book, but also have an explicit and transformable mathematical structure: and this last fact converts the still comparatively minor technology of semantic information-processing into a new, and philosophically central, hard science of the structure of meaning.

For by its nature the study of dynamic thesaurus-construction, is the study, at once semantic and mathematical, of *semantic word-meaning-transfer*. Word meaning is transferred by reiterative synonymy-change, and in two directions: by *specification* which makes word uses in general more concrete; and by *analogical* use, which in general makes them more abstract: and both of these types of changes become recorded in the end in the thesaurus.

In the analysis given in the charts, transformable, semantic thesaurus was not available, I have used the newest edition of the English Roget, edited by Robert Dutch.<sup>7</sup> I have used it to the full, moreover, bringing in the cross-references; which results in calculations so cumbrous that only a machine can do them properly, much less check their accuracy.

And the patterns of synonymy, of reiteration which are found with the help of the thesaurus? Why, they turn out to be none other than the old classical world's set of Rhetorical Figures: which were

thought by Aristotle (though not by Plato) to constitute also the fundamental forms of argument. So in the 20th century computation-search for, or technology of finding, basic information in texts, first it turns out that we have to reconstruct the old rhetorical accentuation and punctuation pattern: then from that, to find the text's recurrent rhythmic bracket-patterns: only to land ourselves once again in the situation of being the target of scorn of all Plato's descendants in that we are finally stuck with the task of detecting (and this time in layers) those same comprehensive sets of Rhetorical Figures once taught to pupils by orators preparing them to defend themselves clearly when pleading in Court. (Don't forget that the judges, if they were to be persuaded by you, had first to *hear* you: there were no hearing-aids then, and if, young man, you nervously mumbled in Court and were also unintelligible, the judges, instead of admitting that it was they who were in fact getting slightly hard of hearing, were quite likely to decide that you were no loss to the state, and to condemn you to the galleys, or to exile, or to drink the hemlock. So you paid high fees to learn your rhetoric, and considered it money well spent.

Enormously more can be, and surely, in the end, will be written about all this thesaurus-work, and further study of the philosophical implications of this kind of semantic model will surely be undertaken if the model becomes more used. In Part II, I have been able to give only two examples of thesaurus algorithms (the second of which fails) prefacing these with the baldest possible lattice-theoretic statement of what I think must be the minimum mathematical specification of a thesaurus which would be capable of change.

Finally, since everybody without exception who hears about all this always asks, "yes, but what happens when the text which you are analysing is not a verse simile?" I have given in an Appendix the short list of passages which, using this same method, an attempt has been made to analyse.

Part II of this work, which contains the more detailed discussion, will appear in the next number of T. to T. The footnotes to the present article will be found at the end of Part II.

**APPENDIX—PASSAGES WHICH HAVE BEEN TREATED BY THE  
REITERATIVE METHOD**

(1) *Passages generated by Computer.*

- (a) SHE MAKES BOILERS AND HIS TRAGIC AND NEW  
LEG

(Yngve random sentence, 1961)

*Problem: Make the machine "see" that this sentence is not a  
sensible one.*

- (b) WHAT IS ARMOUR?

THE ARMADILLO HAS AN ARMOUR PLATED SHELL,  
TO PROTECT IT AGAINST ITS NATURAL ENEMIES.

(Answer to a question supplied by the Golden Book  
Question-and-answer system at Systems Development  
Corporation, 1968-9)

*Problem: using the method, extract from this question-and-  
answer the information about armour.*

1. *Passages of naturally occurring text.*

- (a) WILL YOU HAVE SOME ICE CREAM?

NO, I'VE ALREADY HAD LUNCH.

(Example discussed at Informatic IV conference,  
April, 1976)

*Problem: extract the underlying reiterative "gist" of this piece  
of text.*

- (b) AS PANTS THE HART FOR COOLING STREAMS,  
WHEN HEATED IN THE CHASE,  
SO LONGS MY SOUL, O GOD, FOR THEE,  
AND THY REFRESHING GRACE.

(Verse simile, from a hymn by Tate and Brady)

*Problem: make a layered reiterative analysis of this simile.*

[solution attached]

- (c) IF PRIMITIVE MAN'S INVETERATE DISTRUST OF  
PORTRAITURE HAS RETARDED THE PROGRESS OF  
ART, THAT PROGRESS HAS EFFECTIVELY BEEN  
FURTHERED BY HIS DESIRE FOR ATTRACTING OR  
INFLUENCING THINGS AND BEINGS. NOR IS THIS

TRUE OF THE PLASTIC ARTS ALONE. NUMEROUS EXAMPLES ARE KNOWN OF PANTOMIMIC OR DRAMATIC REPRESENTATIONS, INTENDED TO PROVOKE SIMILAR MOVEMENTS OR PHENOMENA IN THE ANIMATE OR INANIMATE WORLD. WE NEED ONLY RECALL THE PRACTICE, PREVALENT AMONG SO MANY NATIONS, OF OBTAINING RAIN BY POURING WATER ON THE GROUND, OR OF UNLOOSING THE STORM BY COUNTERFEITING THE SOUND OF THUNDER.

(Randomly chosen paragraph, taken from a file of specimen paragraphs: origin unknown)

*Problem: using the method, extract the layered reiterative patterns from this paragraph.*

[The charts in Figures I to IV are reproduced from the article by Margaret Masterman in *Informatics III* by kind permission of Aslib.]

## Linguistic structures in classical ballet

KATHLEEN RUSSELL

I am a little hesitant about the use of the word “linguistic” in the title so I will start by saying something of what I understand by “language” in the context of dance. Anyone familiar with dance is able to recognize various different styles. He would for instance be able to tell if he was watching classical ballet, modern dance or folk dance. Not only that, but someone knowledgeable in that area of dance would be able to tell if he was watching the English Royal Ballet or one of the Russian Classical schools. If asked how he recognizes these different styles, he might possibly give a list of the different features, for example the arms might never rise above the shoulder, the movement in the spine might be all from above the waist, there might be a frequently occurring relationship between a specific musical interval and a specific movement of the legs, etc. However, these details are all disparate, only to be memorized like a shopping list.

When a choreologist records dances in various styles, he observes details like these. But something else happens. The choreologist begins to “feel in his bones” what specific details he must record. He begins to predict; so his eye shifts to the part that is about to move, his pencil ready to record the expected movement. Of course it is his experience that has taught him to do this, but the fact that it is possible to predict while hardly noticing that one is doing so suggests an underlying structure. The apparently disparate elements of the style do not need to be remembered because one can learn from repeated exposure to different styles the rules of their construction.

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It is this underlying structure that I believe can best be termed the “language” of dance. To test the theory by use requires its further elaboration, that is a greater understanding of these structures than we have at present. This paper is a brief outline of some of my findings in my attempt to locate these structures in classical ballet. I must first say that in classical ballet I have chiefly considered *Giselle* and the works of Petipa and Ivonof as they are known to us in the West. I will not deal with the important questions of the relation between music and dance, nor with groups of dancers, nor with plot structures; this is principally because I lack space.

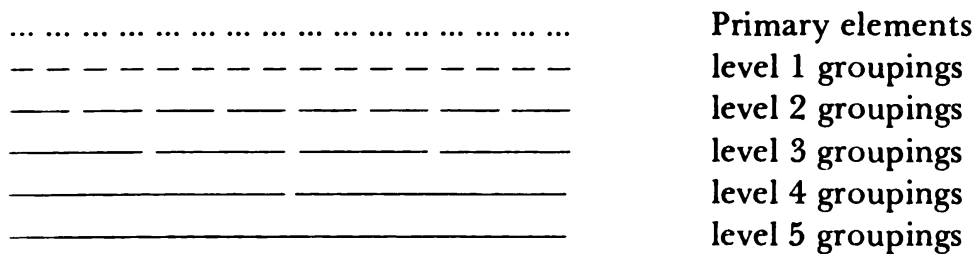
What kind of thing am I looking for then, when I look for dance structures? As I cannot perceive every aspect of the movements I have to select and concentrate on those aspects that are most important. For example in classical ballet I will not concentrate on the facial expressions of the dancers nor on the movement of the fingers, though in many Indian styles of dance these would be important. There must be some principle by which we make this selection. In this example it is apparently clear-cut: in classical ballet the fingers move very little, while in some Indian styles they move a great deal. However, this way of selecting would not always be appropriate. In some folk dances the dancers move about on the floor space a great deal, but we attend rather to the type of steps and the rhythm rather than to this. If we hear two different sets of noises, one patterned, the other not, it is the patterned one to which we will attend. It is the fact that the important features of the dance are structured that makes us attend to them. Patterns consist in the rearrangement and distortion of the elements that make it up, so, in following a dance, it is necessary to be able to distinguish the elements that constitute it, and relate these to the whole dance. So, in asking about the structures in dance, I am asking firstly how “bits” of the dance are made distinguishable from each other; secondly, how these bits are made easily comparable (which of course involves making them memorable).

### **THE STRUCTURAL HIERARCHY**

The structure of classical ballet is hierarchical. The basic elements

are grouped, these groups are themselves grouped and so on. Music is similarly arranged. In both, beats are grouped into bars, bars into phrases, phrases into sentences, etc. As I use them, these terms ascribe a sequence of the ballet to its place in the hierarchy, rather than describe its actual length. It is also useful to have a general word that applies to groupings at all levels in the hierarchy; for this I use Koestler's word "holon" (a holon being that which is a part in relation to a larger grouping and a whole in relation to the parts of which it is composed).

A chart of a common classical grouping hierarchy:



I shall come later to describing the "primary elements". Level 1 could be beats or bars; level 2 could be bars, half phrases or phrases; level 3 could be phrases or half sentences; level 4 could be half sentences or sentences; level 5 could be a sentence or even a section. These are not the only possibilities.

The grouping is not always as regular as this; however, I suspect that this hierarchical system is one way of enabling the audience to remember what has gone before, and perhaps allows it to recall the main features from a minimum amount of material actually memorized.

**HOLON DEFINITION BY REITERATION**

Holons at different levels of the hierarchy are formed in different ways, but all levels of holons can be formed by reiteration with the exception of holons shorter than half a phrase, which are too short. One important factor influencing holon definition on all levels is *duration balance*. In music this is sometimes referred to as announc-

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ing and responding phrases. That is, we tend to expect that given one holon it will be immediately followed by another of similar length. This appears to apply to all levels of the hierarchy, though the longer the holons, the less similar need the actual durations be for us to feel that the second holon balances the first. The basic holon groupings are of either two or three smaller ones, but there are many holons which are groups of four, that is where the division into two groups of two is "smoothed out" by the nature of the material or the nature of the reiteration into a single group.

In Classical Ballet there are far more groups of two and four than there are groups of three. The only level of the hierarchy where groups of three are more common than groups of two and four is the grouping of sections into a whole dance, that is, holons of around the 16-32 bar length. In the case of the grouping of beats into bars there are about as many groups of three as of two. At all other levels of the hierarchy groups of three are extremely rare. This might be something to do with the lengths of time over which "duration balance" can operate easily.

The simplest kind of reiteration is found in some folk dances, where a holon of only two to eight bars may be repeated over and over and over again. I want to try to say something of the kinds of reiterations found in classical ballet. I think I can do this most simply by discussing one example, the Swan Queen's solo from Swan Lake, Act II, as it contains many typical classical reiterations. The version I use is the one published in *Dances from the Classics Vol. II*, by the Institute of Choreology 1967. (In the music score it is given as No. 16 Scene.)

At any one grouping level, similar letters represent similar holons. At any one level where two holons are the same in every respect except that the second is a mirror image of the first, I record this fact by adding a line above the letter. For example in a.  $\bar{a}$ . the second a is a mirror image of the first. Where there is some variation of the holon other than by mirror image, I add a prime to the letter standing for the varied holon, e.g. a. a'. Where there is a further variation I add another prime. At any one level, all letters represent similar durations unless otherwise stated. Where there is a holon longer than the standard length

Grouping and reiteration patterns of the Swan Queen's solo from Swan Lake Act II

First Section: (bars 3 to 18 inclusive)

.a-. .a-. .b-. .c/d-. .c/e-. .b'- .a-. .ā-. .a-. .b-. .c/e-. .b"-. .-	1 bar groups
: :	
: A : B : A : B' : B' :	2 bar groups
: :	4 bar groups
: :	8 bar groups
: :	16 bar group

Second Section: (bars 19 to 34 inclusive)

.ff'. .g-. .g-. .c/e-. .c/e-. .b"-. .- .- .ff'. .g-. .ff'. .g-. .c/d-. .c/e-. .h-. .-	1 bar groups
: :	
: C : B' : C : B' : B' :	2 bar groups
: :	4 bar groups
: :	8 bar groups
: :	16 bar group

Third Section: (bars 35 to 50 inclusive)

.jj. .jj. .k/b-. .- .- .jj. .jj. .k/b-. .- .- .jj. .jj. .m-. .-	1 bar groups
: :	
: D : D : D : D' : D' :	2 bar groups
: :	4 bar groups
: :	8 bar groups
: :	16 bar group



for that level, I add dashes to the letter, each dash standing for a similar duration to that of the letters, e.g. a. a. b—. The b holon lasts twice as long as the a holon. In classical ballet, at any one level of the hierarchy, the holon lengths are most frequently the same; where they vary it is, as a rule, by exact multiples. There are some cases where a holon is slightly lengthened or shortened (i.e. not an exact multiple), but in those cases it is a structural variation, by extension or contraction, and so I record it as a variation.

Where a holon is related to other holons at the same level in such a way that some aspects of the movements relate it to one holon, other aspects of the movements relate it to a different holon, I use two letters, e.g. A. B. A/B. The third of these holons contains aspects of both the first and of the second. (This is a not infrequent reiteration for sections; sometimes it is related to the music reiteration A. B. A.)

#### **DEFINITION OF HOLON BY THE COMPLETION OF A PATTERN IN TWO OR MORE "CHANNELS"**

There are a number of holons that are not defined by reiterations. That is, neither are they obviously composed of reiterated holons nor are they themselves reiterated.

I think we can begin to analyse what it is that makes us see these apparently unreiterated holons in this way. With the type of reiteration we have been discussing so far, we considered every aspect of the movement as one unit. But there are many aspects to a series of movements. We could for instance consider different parts of the body separately, e.g. the head movements could form one pattern, the arm movements could form another, and this would give us two simultaneous patterns. There is also the "floor track", that is the pattern "traced" on the stage as the dancer moves about. There is the pattern traced in the air by an extremity. There is the pattern formed by a succession of postures. Most obviously there is the rhythm. Even the directions in which the dancer faces can form a pattern.

It appears that not every one of these aspects will necessarily be patterned in all circumstances; however, I suspect that we pay attention to only those aspects of movement that are patterned. Any one aspect of movement that is patterned I call a "channel". Once such an aspect is patterned it will then play a role in the whole structure of the dance. One way we recognize different dance "languages" is by which aspects are patterned.

I think that a holon is felt to end at any place where two or more channels complete their patterns simultaneously, or where one completes its pattern then remains still until at least one other channel has completed its pattern.

It is difficult to define "pattern" in this context. It is only possible to say that it must be some arrangement that can be perceived under the conditions in which it is normally presented to us. For a dance, that means that we must be able to see the arrangement, that it is in some sense separate from the total movement, and that we feel that we could recognize it again.

Although I first formulated this theory to enable me to describe unreiterated holons, I found that it is also useful in analysing them when they are reiterated. The fact that there are reiterations, in the sense that I have been considering them so far, doesn't rule out the possibility of there being other sorts of patterning at the same time. Holons that I am considering as holons defined by the simultaneous completion of patterns in two or more channels can contain reiteration, but these reiterations will be reiterations within a channel, not reiterations of the whole movement.

As an example I would like to say something about one four bar holon from the solo dance known as "Prayer" from the last Act of Coppelia. This phrase is in fact reiterated in the pattern A.A.A.B. The fact that it is reiterated contributes to its definition, but I want to say something about how the various channels contribute to its definition. The main channels or patterns used in this example are the direction faced by the dancer, the pattern "traced" in the air by the hands, the movements of the head, and the postures.

The movements of the head are simple: the head is dropped forward, then raised three times; the first and last time both take two beats, the middle time takes four beats. The pattern traced in the

air by the hands is a large arc, which is then repeated in the reverse direction, and finished with a small horizontal curve. The direction faced is the same at the end of the holon as it was for the opening: to achieve this there are two separate changes of direction to the dancer's right, through about  $45^\circ$ , followed by a change of direction to the dancer's left through about  $135^\circ$ , and finally a further change to the right through  $45^\circ$ . You will note that the change through  $135^\circ$  is too big a change to balance the previous two changes, and it needs the final  $45^\circ$  change satisfactorily to bring the pattern to an end.

The main feature of the postures is that there are only very small changes into each one, e.g. one arm moves or the body bends. If the successive postures were to be drawn in one picture they would make a pleasing group. It would be noticeable that they would appear a little like an over-exposed photograph of one movement with the exception of the final posture which would not form part of the imaginary movement at all. The difference between the final movement and those that precede it acts as a kind of rounding off to the posture pattern. The patterns in all these channels end on the same beat.

### HOW PRIMARY ELEMENTS ARE DEFINED (MARKERS)

So far I have only talked about groupings. Now I will say something about the smallest indivisible units of dance movement, the primary elements out of which holons are made. To look for the way these primary elements are defined is to look for the features that enable one to distinguish between those that precede and those that follow. The boundary between elements is always some sudden change in the movement; these boundaries, which I will call markers, fall into three main categories.

#### Category I markers (P and D markers)

Where there is a change from movement to no movement. (I don't consider that the start of a movement acts as a marker; it is always too ill-defined; we can see that a movement *has already started*

because we can see that the part moving has changed its place, but I don't think we can see when it starts.) There are two types of markers in this category:

(1) *Arrival in a posture (P markers)*. In classical ballet, almost every time a movement stops, it stops in a well-defined posture. (This is not true of all theatrical dance forms.) It is the fact that the movement stops that makes the marker rather than the posture itself, although it is possible that the arrangements of body and limbs seen in classical ballet make it easier for us to observe that the movement has stopped. This posture can be reached during a jump. In this case the dancer will still be moving (rising or falling and possibly travelling horizontally as well), the limbs and body will stop moving in relation to each other, the posture is held. The cessation of movement following adoption of a posture constitutes a marker.

(2) *Arrival at a new direction of facing (D markers)*. This is when there is a change resulting in a new direction, and the dancer remains facing the new direction long enough for it to be distinguished from simple continuous changes of direction.

#### Category II markers (C markers)

These are at the point in a continuous movement at which one direction of movement stops and a new direction of movement begins. That is, where there is a *sudden* change in the direction of a movement. Note that the movement out of a posture can be in a different direction to that of the movement into the posture, in which case we will see that a movement has stopped before we see that it has taken a different direction. The marker is formed by the ceasing of the movement, not by the change of direction. This will be a P type, not C, marker. The most common C marker is in jumps where a new posture is not taken up during the jump.

The point at which the movement stops going up and starts

coming down acts as a marker. Jumps that travel make less clear markers, as the change in the vertical direction tends to be cancelled out by that in the horizontal direction. In practice, almost all the travelled jumps in classical ballet have a new posture, taken up during the jump, so they are P type markers.

#### Category III markers (W markers)

These occur where the weight is transferred from one support to another. The weight can be transferred from one foot to the other, as in walking; from one part of the foot to another part of the same foot, as when the dancer rises onto the toes; or even from no support to support, as in the landing from a jump. There are many other possibilities, but these are the only ones common in classical ballet.

Though weight transfers appear to act as markers, there is some problem about exactly which part of the movement forms the marker, and why, because often there is no sudden change. For example, in a smooth continuous walk, there is a kind of “glissando”. Is the marker the point at which the foot first contacts the ground, or the point at which the weight is completely transferred, or some other place in the movement?

There are two ways in which transfers of weight can become markers:

- i) by a (slight) pause at the part of the movement which is to be the marker. In this case it is not really a W marker but a P marker.
- ii) by reaching the part of the movement we wish to appear as the marker on a *previously established pulse* and/or on a pulse supplied by the music. For example, if the heel reaches the ground on the beat, and the weight is transferred to the rest of the foot slightly after the beat it will appear that the point where the heel reaches the ground is the marker. (This is not a true marker, because it cannot be used to *establish* a pulse.)

One function of a primary rhythmic unit is to establish a pulse,

that is, to establish a frequency of occurrence, a kind of “time grid” against which we can perceive the rhythmic patterns.

Let us look again at the case of the smooth continuous walking. Provided the walk is regular, we will be able to clap the same frequency as the walk, but we will have made an arbitrary decision as to whether we will clap as the heel reaches the ground, as the weight is finally transferred onto the whole foot, or at some intermediate point. No part of the step stands clearly apart from the rest. If after each step there is a pause, there will be no problem; we clap as the movement stops temporarily. This is another way of illustrating the way in which P markers establish a pulse, where W markers do not. Of course the fact that true W markers can’t establish a pulse, doesn’t mean they play no part in the rhythmic patterns, as often the rather woolly effect they can create is used as an essential element of the pattern. As all classical ballets are danced with music, the music could establish and keep reminding one of the pulse, but in practice it seems to me that the pulse is always carefully established and maintained in the dance itself.

C markers occur most frequently, though not invariably, as an anacrusis (i.e. an unstressed starting point). Except in very slow dances (adages) W markers occur from twice to four times as frequently as P markers. P markers occur more often on the beats, particularly the first beat of the bar, although there are also many P markers on sub-beats.

All the channels in which there are markers are combined in the dance to form a multi-layered pattern. The P markers and to a lesser extent the C markers each form their own reiterated patterns, which combine to form another pattern.

I began by suggesting that the fact that within a style of dance we can come to predict the important movements and aspects of movements suggests some underlying structural principles. This deep structure might be what we mean when we apply the term “language” to dance. Rudolf Benesh and his wife Joan invented the Benesh Movement Notation, and it was they who first applied the term “language” to dance. Choreologists have found it a very useful concept, even though it has never been properly defined.



I have, in the course of this essay, made some suggestion about what the underlying structures in dance might be, but how much nearer does this get us to understanding the linguistics of ballet? The example from Swan Lake I discussed earlier has some vaguely swan-like movements in it; some people would claim that it also shows something of the character and emotions of the Swan Queen. But the dance is valuable not because it is pretty but because it is intelligible. The real meaning of the dance, that which we value it for, lies not in the individual movements as they imitate the swan or express a state of mind, but is created by the interlocking reiterative patterns that form further reiterations, combining in many-layered structures, simultaneously appreciated by the audience.†

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† In this article I have not used the Benesh Movement Notation, but if there had not been a large number of dance scores in this notation I should never have been able to see these underlying structures. I am very grateful to Joan and Rudolf Benesh, not only for inventing the notation, but for their friendship and for the opportunities they have given me in the Benesh Institute of Choreology. (See Note on Cover Design.)

## A poet of epiphanies †

MARGARET BOTTRALL

Gerard Hopkins was a poet who celebrated epiphanies, in his notebooks and in his poems; a poet of disclosures, whose theology inspired him to read, sometimes indeed to decipher, the world of nature. His view of the world was sacramental. Unlike the medieval advocates of the *Liber Creaturarum*, Hopkins did not regard the natural world as an elementary textbook, to be discarded by those on the upward path to the highest knowledge. In some notes on the *Spiritual Exercises* of St. Ignatius, Hopkins wrote:

God's utterance of himself in himself is God the Word: outside himself is this world. This world then is word, expression, news of God. Therefore its end, its purpose, its purport, its meaning is God, and its life or work to name and praise him.<sup>1</sup>

News of God exacts study, concentrated attention. Hopkins brought to natural phenomena the scrupulous observation of a scientist. His Journals are full of descriptions of clouds, sunsets, swirling waters, trees and flowers. He did, indeed, contribute letters to the periodical *Nature* on sunsets. Those resulting from the Krakatoa eruption in 1884 elicited from him some characteristic turns of phrase:

. . . Above the green in turn appeared a red glow, broader and burlier in make; it was softly brindled, and in the ribs and bars the colour was rosier; in the channels where the blue of the sky shone through it was a mallow colour.

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† Based on a talk given to the Epiphany Philosophers, January 1977. Some of the points raised in our discussion of Hopkins's sonnet have been elaborated here.

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While still an Oxford undergraduate, he was accustomed to jot down such observations as this:

I have now found the law of the oak leaves. It is of platter-shaped stars altogether; the leaves lie close like pages, packed, and as if drawn tightly to. But these old packs, which lie at the end of their twigs, throw out now long shoots alternately and slimly leaved, looking like bright keys. All the sprays but markedly those ones shape out and as it were embrace greater circles and the dip and toss of these make the wider and less organic articulations of the tree.<sup>2</sup>

Such a description, analytical rather than pictorial, points to the influence of Ruskin. Hopkins was only one of innumerable Victorians to keep an illustrated journal, full of nature notes and comments on ancient buildings; but he was exceptional in taking very seriously Ruskin's contention that artists should stimulate people not only to see the beauty in nature but to read "the laws of her aspects".<sup>3</sup> In *Modern Painters* III, xvii. Ruskin declared that there is "a science of aspects of things, as well as of their nature", and that it is "as much a fact to be noted in their constitution, that they produce such and such an effect upon the eye or heart, as that they are made up of certain atoms or vibrations of matter". Ruskin strongly disapproved of the propensity of Romantic poets to annexe for their own emotional satisfaction such natural phenomena as rainbows or wild west winds. He counselled (and practised) that detachment and intensity of observation—to be seen in the extract from Hopkins's Oxford Journal—which respects what is being observed; hence his use of the word Science.

Hopkins as a rule maintains the stance of the enquiring observer. His delight in the selfhood, the individuality of animate and inanimate creatures is obvious in many of his prose entries, and emphatically so in some of the celebratory poems; but delight does not lead him to distort what he has seen. "What you look at seems to look hard at you", he observed in one of his journal entries.<sup>4</sup>

The Journals abound in attempts to delineate phenomena that defy verbal description. Hopkins quite often added little pictorial glosses; he was a sensitive draftsman. But he was not an art-critic, nor an artist, nor was he consciously keeping a notebook of

impressions to be worked up into poems. For much of the time covered by the Journals, he had forsworn the composition of poems. It was a self-imposed ban, following on the burning of his early verse when he became a member of the Society of Jesus, as a token of his total dedication to the service of God. He evidently had no qualms about continuing his prose descriptions of the world about him, for the good reason that the created world presented to his intelligence, through sense-impressions, manifestations of the divine energy at work; an energy informing, patterning, determining whatever has being. Therefore he saw it as incumbent on man, made in the divine image, to look for manifestations of God in his fellow-creatures and in the physical universe.

Hopkins does not value the natural world because it provides him with metaphors and analogies. His mind did work analogically, but in his poetry he is not a symbolist. Rather, he writes as a contemplative, content to wait patiently until—maybe—what he looks at yields up an inner significance. In some notes on the *Spiritual Exercises* he wrote:

All things are charged with love, are charged with God, and if we know how to touch them give off sparks and take fire, yield drops and flow, ring and tell of him.<sup>5</sup>

He was specifically thinking of “the Holy Ghost sent to us through creatures”, and recalling that another name for the Holy Ghost is Love—(*Fons vivus, ignis, caritas*). This throws light on the first line of that sonnet† which most thoroughly demonstrates his reverence for the unique and intricate self-hood of objects observed, *As kingfishers catch fire, dragonflies draw flame*. It is not simply the glancing light on the feathers or skin that the poet is recording; he sees bird and insect indwelt by the very fire of the love that animates the created world. The succeeding images, of stones dropped into water and bells ringing, are also closely related to this meditation:

As tumbled over rim in roundy wells  
Stones ring; like each tucked string tells, each hung bell’s  
Bow swung finds tongue to fling out broad its name . . .

† [This and two others of the poems discussed in this paper are given as “Sentences”. See below p. 139, Ed.]

Hopkins began his descriptive recording of natural phenomena some time before he started his Jesuit training, with its discipline of systematic meditation and its study of Scholastic philosophy. At Oxford, however, Hopkins (the best Greek scholar of his year at Balliol) became much interested in the pre-Socratic philosophers, and in some undergraduate notes on Parmenides he coined the two words, *Inscape* and *Instress*, which he needed to express phases of his exploration of truth. "All things are upheld by *Instress*," he writes, "and are meaningless without it". By this he seems to have meant, at this point, the positive force of being; an energy which transmits itself to all that is, and which men can recognize as an indwelling power. In the *Parmenides* notebook, he remarks: "I have often felt when I have been in this mood and have felt the depth of an *instress*, or how fast the *inscape* holds a thing, that nothing is so pregnant and straight-forward to the truth as simple *Yes* and *Is*".<sup>6</sup> As an undergraduate travelling in Switzerland, he uses the word *Inscape* as he was frequently to use it later in his descriptive and critical writings, in the sense of the unique, intrinsic design of an entity:

In slanted brooks the bias keeps falling from bank to bank across and so knits the stream, and glaciers also are cross-hatched with their crevasses but they form waves which lie regularly and in horizontals across the current. (So water does in fact, wimpling, but these wimplings have the air of being only resultants or accumulations; perhaps they too are a real *inscape* here seen descending and vanishing.<sup>7</sup>

The movement of water fascinated Hopkins, as it did Leonardo da Vinci. How capture the intrinsic selfhood of something in constant motion? A note of bafflement is sounded in this account of breakers withdrawing on a beach in the Isle of Man:

About all the turns of the *scaping* from the break and flooding of the wave I have not yet satisfied myself. The shores are swimming, and the eyes have before them a region of milky surf, but it is hard for them to unpack the huddling and gnarls of the water, and law out the shapes and the sequence of the running.<sup>8</sup>

Ruskin, in his statement about the Science of Aspects, gives equal value to the effects that objects produce upon the eye and the

heart—rather oddly bypassing the mind. Because Hopkins believed that everything, by being itself, participates in a whole divine scheme, he could not remain emotionally detached when he saw Nature violated. A Journal entry for April 8, 1873, reads: “The ashtree growing in the corner of the garden was felled. It was lopped first: I heard the sound and looking out and seeing it maimed there came at that moment a great pang and I wished to die and not to see the inscapes of the world destroyed any more”.<sup>9</sup> Later, his lament for the felling of the poplars at Binsey gives poetic expression to just this anguished sense of man’s power to destroy beauty that has its own irreplaceable, matchless selfhood:

Ten or twelve, only ten or twelve,  
Strokes of havoc unselfe  
The sweet especial scene.<sup>10</sup>

Hopkins’s characteristic response to natural beauty is embodied in stanza 5 of *The Wreck of the Deutschland*, that magnificent ode which broke the poet’s seven-years’ silence. The response is passionate, ecstatic even; but it is grounded in, and validated by, the theological beliefs which by that time he had made resolutely his own. For him, God is marvellously disclosed in creation:

I kiss my hand  
To the stars, lovely-asunder  
Starlight, wafting him out of it; and  
Glow, glory in thunder;  
Kiss my hand to the dappled-with-damson west:  
Since, tho’ he is under the world’s splendour and wonder,  
His mystery must be instressed, stressed;  
For I greet him the days I meet him, and bless when I understand.<sup>11</sup>

Here the linked words “instress” and “stress” emphasize the double imperative; first to experience, then to proclaim, the mystery of God’s presence.<sup>12</sup>

The last line of the stanza is poignant. Hopkins spent several months of desolation, particularly towards the end of the 1870s.

long life. And even in periods of exhilaration he well knew that epiphanies are vouchsafed. There was no counting on them, no guarantee that striving would win that sense of divine activity at work in the universe. Sometimes this did come home to him with exquisite certainty. In May 1870 he wrote:

I do not think I have ever seen anything more beautiful than the bluebell I have been looking at. I know the beauty of our Lord by it. Its inscape is mixed of strength and grace, like an ash tree . . .

He goes on to describe the way the bells are carried on the stem, the “cockled petal-ends”, and how light and shadow emphasize the flower’s form. One remembers Christopher Smart’s amazing comment, in *Jubilate Agno*—“Flowers are the peculiar poetry of Christ”.

Returning to the sonnet, “As kingfishers catch fire”, it is necessary to point out the Scotist elements in it. Hopkins, as is well known, found in Duns Scotus a kindred spirit; the philosopher “who of all men most sways my spirits to peace”.<sup>13</sup> Hopkins found in the distinction made by Duns Scotus between the Nature of a thing and its Individuality a confirmation of his own apprehension of the uniqueness of self-being. Fr. Christopher Devlin S.J., the most competent of commentators on Hopkins’s debt to Scotus, equates the Scotist term *haecceitas* (thisness) with Hopkins peculiar use of the word “pitch”, rather than with “inscape”. His Appendix<sup>14</sup> to a very difficult discourse by Hopkins on Grace, Personality and Freewill should be read by those who want a close commentary on the indebtedness of the poet to the philosopher. For the general reader, however, an article, written by Devlin for a special Hopkins issue of *New Verse* in 1935, makes some of the essential points. Scotus held that “Each man’s nature is the Nature of all the world, elemental, vegetative, sensitive, human. But one man differs utterly from another because by his Individuality he possesses the common nature in an especial degree. The individual degree is the degree in which he lack the Infinite; it knits together in the one man all his natural activities, animal, rational, etc. and gives them direction Godwards”.<sup>15</sup> Scotus taught that God the Son assumed all Nature. As Man, Christ possessed his created Nature in

the highest possible degree, summing up all other degrees. In the Appendix referred to above, Devlin makes the point (very relevant to the sonnet) that Hopkins believed that “all takes place in the mystical enclosure of Christ’s created nature leading to the divine”. Christ’s created nature is seen as the original pattern of creation, and the Holy Spirit that reaches our innermost being is Christ’s spirit charged with Christ’s likeness. Both Scotus and Hopkins affirmed the mystery of continuous creation. They understood Personality as simultaneously a coming forth from God and a going back to him; a movement from the ideal to the actual and from the actual to the ideal; and thus “a journey into ever-increasing, never-ending self-realisation”.<sup>16</sup>

Two texts of St Paul which deeply influenced Hopkins’s thinking on these matters are the passage from *Romans* viii 29-30 and that from *Ephesians* ii. 10: “All those who from the first were known to him, he has destined from the first to be moulded into the image of his Son, who is thus to become the eldest-born among many brethren. So predestined, he called them; so called, he justified them; so justified, he glorified them”. Even more crucial, as Devlin points out, is the second passage: “We are his design; God has created us in Christ Jesus, pledged to such good actions as he has prepared beforehand, to be the employment of our lives”. He does not refer in this context to the Scotist sonnet, but nothing could better illuminate the sestet, in which the poet moves from the consideration of the natural world fulfilling its predestined function to the higher achievement possible to—expected of—man; who stands in a closer relationship to God, being not simply a creature but, through grace, a child, a son.

Fr. Vincent Turner S.J. long ago pointed out<sup>17</sup> the close correspondence between the sestet of the sonnet and a note concerning grace which Hopkins made in his Comments on the *Spiritual Exercises*. So far as grace “is looked at *in esse quieto* it is Christ in his member on the one side, his member in Christ on the other. It is as if a man said: That is Christ playing at me and me playing at Christ, only that it is no play, but truth; that is Christ *being me* and me being Christ”.<sup>18</sup>

Is the sonnet then little more than a versification of doctrine



and pious speculation? Surely it is much more. The energy and individuality of the language, its vigorous rhythms and accurate wording, guarantee its poetic authenticity. It is a work of art, as formally constructed as an Ignatian meditation, but intensely concentrated.

Starting with vivid impressions of sight—kingfisher and dragonfly reflecting the play of sunshine—the poet evokes impressions of sound (and Hopkins was as musically sensitive as he was visually perceptive). Neither the ring of stones dropped over the rim of “roundy wells”, nor the vibration of plucked fiddle-strings, nor the clanging of church-bells are sound-effects that would exist without the intervention of man. They all represent a kind of co-operation between the experimenting human mind and the properties of stone, catgut, metal. The inner rhymes and assonances of lines 3 and 4:

Stones ring; like each tucked string tells, each hung bell's  
Bow swung finds tongue to fling out broad its name—

implicitly make the point that every entity not only *has* a characteristic aspect and activity, but exists in order to *proclaim* its individuality. This is spelt out in the central affirmation of the poem:

Each mortal thing does one thing and the same.

This proposition is expanded and expounded in intellectual rather than physical terms over the next three lines. The essence which dwells within each being is communicated by activity; by acting it fulfils its own individuality. The crescendo, from speaking, through spelling (out), to crying aloud, leads to the emphatic, monosyllabic, entirely plainspoken conclusion:

Deals out that being indoors each one dwells;  
Selves—goes itself: *myself* it speaks and spells,  
Crying *What I do is me: for that I came.*

This assertion does not mean, however, what is implied nowadays by the phrase “doing one’s own thing”. Deeply as Hopkins valued individuality and personality, he had no use for anarchy. True

self-fulfilment, in his view, consisted in realizing the design of God; for humans, in being conformed to the divine image.

Meditating on God's purpose in creating the universe, Hopkins has left in his Spiritual Notebooks some eloquent passages about the way in which creation does fulfil that purpose by glorifying God through obedience, service and praise. The culmination throws much light not only on the poem under consideration but on Hopkins's own understanding of the imperatives of the religious life:

The sun and the stars shining glorify God. They stand where he placed them, they move where he bid them. "The heavens declare the glory of God". *They glorify God, but they do not know it.* The birds sing to him, the thunder speaks of his terror, the lion is like his strength, the sea is like his greatness, the honey like his sweetness, they are something like him, they make him known, they tell of him, they give him glory, but they do not know they do, they never can . . . This then is poor praise, faint reverence, slight service, dull glory. Nevertheless, what they can, *they always do* . . . But man can know God, *can mean to give him glory.* This then is why he was made, to give God glory and to mean to give it, to praise God freely, willingly to reverence him, gladly to serve him. Man was made to give, and mean to give, God glory.<sup>19</sup>

This passage throws light on the transition from the octave to the sestet of the sonnet. The poet's tone of voice becomes urgent. In the first draft, the first three lines ran smoothly, with regular stresses; but for the sake of emphasis and greater colloquial vigour, this smoothness is disrupted, and instead of

Then I say more: the just man justices;  
Keeps grace and that keeps all his goings graces;  
In God's eye acts what in God's eye he is . . .

we have the strongly assertive, idiosyncratic rhythms of

Í say more: the just man justices;  
Keéps grace: that keeps all his goings graces;  
Aácts in God's eye what in God's eye he is . . .

Hopkins in his sonnets frequently uses the sestet to develop an explicitly religious or moral point suggested in the more descriptive octave. Sometimes this results in a falling-off of poetic intensity,

as in *The Valley of the Elwy*, where the priest intrudes into the poem with a prayer for the conversion to Catholicism of the people of Wales, in other respects already so lovable. In the sonnet under consideration there is a threat of “sermon talk”, but it is averted by the daring precision of the language. By using “justices” as a verb, Hopkins brilliantly and with the utmost conciseness illustrates the point he has already made about activity revealing the intrinsic quality of a being. He also calls up a host of associations for anyone familiar with the Psalter and with the Hebrew prophets’ insistence on moral righteousness. But with the New Testament word “grace”, used first theologically and then with overtones of “gracefulness” and “graciousness”, the viewpoint shifts, and we are led on to the unfolding of a mystery, in the last four lines of the sonnet:

Acts in God’s eye what in God’s eye he is—  
Christ—for Christ plays in ten thousand places.  
Lovely in limbs, and lovely in eyes not his  
To the Father through the features of men’s faces.

As Christ the Logos expresses, makes intelligible, the creative power of God (“By him were all things made . . .”), so Christ the Incarnate Word, Mary’s Son, fulfilled in time and place, and made intelligible, the design of God for man; and the eternal, risen Christ, of whose body his followers are members, “plays in” every human individuality that is true to its intuitions of the good.

To *play* has a fine variety of meanings: to enact a role, to perform on an instrument, to be in motion, as light plays on a surface, and a good many others. What it clearly does not mean here is to sport or trifle, though the phrase “lovely in limbs and lovely in eyes not his”, together with the association of the Son with the Father, may well call up the image of children at play, happy in freedom. The prime sense here (especially in the light of the prose comment already quoted) must be “to act out in real life”. Christ is made manifest through the actions of faithful members of his body; and it is his indwelling grace that makes the actions of just men lovely and acceptable in the sight of God. Man redeemed, activated by grace, perpetuates the image of God as Christ disclosed it, and fulfils his true destiny.

Or should do so. The difference between what we might be and what we actually are was perfectly clear to Hopkins, priest and teacher. He was under no illusions about the estrangement from God caused by indifference and sin, nor about the destructive elements at work in society—especially in an industrialized society:

Generations have trod, have trod, have trod,  
And all is seared with trade; bleared, smeared with toil;  
And wears man's smudge and shares man's smell . . .<sup>20</sup>

Had Hopkins confined his attention to the discernment of divine activity in manifestations of beauty, he would be a lesser poet—too much the aesthete. (Pater was his tutor at Balliol.) As an exponent of the Christian faith, too, he would be far less adequate. But Hopkins did grapple in his poetry (as well as in his spiritual life, as his notebooks abundantly testify) with the disclosure of God's love in times of stress and terror. Years of meditation on Christ's Passion underlie *The Wreck of the Deutschland*; as does prolonged experience of the agonising pressure of God's demands—loving demands—for total self-surrender. The tempest at sea is described in the context of inner storms and buffetings, endured and survived, and it is from his own knowledge of the unpredictability and subtlety and apparent cruelty of the workings of divine love that Hopkins can write:

Thou art lightning and love, I found it, a winter and warm,  
Father and fondler of heart thou hast wrung:  
Hast thy dark descending and most art merciful then.<sup>21</sup>

Years later, in one of the “terrible” sonnets expressive of his spiritual desolation and temptation to despair, Hopkins uses the analogy of Jacob wrestling with the Angel. His ghostly adversary is at first described as terrible, ruthless, darksome, devouring; yet the fearful pressures are seen to effect a winnowing, “That my chaff might fly, my grain lie, sheer and clear”. The apparent enemy, mighty and compelling, is finally recognized, and the poem ends with the disclosure of his true identity. Appalled yet thankful, the

poet looks back on

That night, that year  
Of now done darkness I wretch lay wrestling with (my God!)  
my God.<sup>22</sup>

As a poet of sheer pain, Hopkins has very few equals. He knew the anguish of frustration and the loneliness of being ignored and misunderstood, not merely as a poet but (more importantly to him) as a preacher and scholar. Towards the end of his life he wrote the heart-rending sonnet "Thou art indeed just, Lord", echoing the psalmist but breaking into the cry

Why must  
Disappointment all I endeavour end?  
Wert thou my enemy, O thou my friend,  
How wouldst thou worse, I wonder, than thou dost  
Defeat, thwart me?<sup>23</sup>

This protest was wrung from him by a profound discouragement involving far more than his lack of recognition as a poet. It is true that during his lifetime only a handful of friends showed any interest in his poems; but Hopkins himself commended them to the keeping of Christ, writing to R. W. Dixon: "Now if you value what I write, as I do myself, much more does our Lord. And if he chooses to avail himself of what I leave at his disposal he can do so with a felicity and a success which I could never command".<sup>24</sup> Rather, it was his failure as priest and academic that undermined him. The feeling that he had not, as a dedicated servant of God, accomplished all that he might have been expected to do was a peculiarly haunting misery to the man who believed that *What I do is me: for that I came*.

To posterity, of course, the achievement that triumphantly vindicates that belief is the poetry; poems startlingly idiosyncratic in language, whose rhythms and diction are geared to communicate impressions and concepts registered with great intensity by their originator. Hopkins's theological and metaphysical position was in the main a traditional one, and he appears never to have doubted his credibility; but the fervour with which he made the Catholic

faith rationally and imaginatively his own lifts his devotional poetry quite above the category of pious verse.

Its linguistic originality is such that Hopkins has proved a bad model for aspiring poets. The superficial features of his technique are easily imitated—dislocations of syntax, interjections, inner rhymes and assonances, compound epithets and so forth; but without the driving force which made them, for Hopkins, inevitable and authentic, such devices are apt to produce affected verse that rings hollow. Hopkins was accused by Bridges of both affectation and obscurity. He indignantly denied the former charge, admitting and defending an unavoidable degree of obscurity when his subject-matter was complex or recondite. It is Hopkins's individuality of language which reveals to us the identity of the man. His impassioned intellectuality, his susceptibility to beauty, terror and pain come across the intervening years with startling force. His poems and his prose record many disclosures; by being what they are, they disclose their maker.

And he, by being what he was, may be said to have made manifest in a microcosmic way the divine energy that creates and sustains and endures. Towards the end of his life, Hopkins wrote a splendid poem on the theme "That Nature is a Heraclitean Fire and of the comfort of the Resurrection". It begins by evoking the impressions of incessant change in air and earth, water and fire. The tone grows more sombre as the poet dwells on Nature's perishability and man's mortality, inevitable and terrifying. Then the key changes:

. . . Enough! The Resurrection,  
 A heart's clarion! Away, grief's gasping, joyless days, dejection.  
 Across my foundering deck shone  
 A beacon, an eternal beam. Flesh fade and mortal trash  
 Fall to the residuary worm, world's wildfire, leave but ash.  
 In a flash, at a trumpet crash,  
 I am all at once what Christ is, since he was what I am, and  
 This Jack, joke, poor potsherd, patch, matchwood, immortal diamond,  
 Is Immortal Diamond.

Those last two words are inscribed on the stone in Poets' Corner which was dedicated to God's glory and the memory of

Gerard Manley Hopkins on 8th December 1975; one hundred years to the day after the “Deutschland” was wrecked off Harwich, and the Jesuit priest found his other vocation of poet.

#### Notes and references

1. *Sermons and Devotional Writings*, ed. C. Devlin (Oxford, 1958) p. 129.
2. *Journals & Papers*, ed. Humphry House & Graham Storey (Oxford, 1959) p. 146.
3. See *Science of Aspects* by Patricia Ball (Athlone Press, 1971) in which she compares the Notebooks of Coleridge, Ruskin & Hopkins, and the use their compilers made of them.
4. *J & P.*, p. 204.
5. *S. & D. W.*, p. 195.
6. *J. & P.*, p. 127.
7. *J. & P.*, p. 175.
8. *J. & P.*, p. 223
9. *ibid.*, p. 230.
10. *Poems*. 4th edn. Eds. W. H. Gardner and N. K. MacKenzie (Oxford, 1967) p. 78.
11. *Poems*, p. 53.
12. Remonstrating with Bridges, Hopkins remarked that whereas his friend took a mystery to be “an interesting uncertainty”, for Catholics it was “an incomprehensible certainty” (24. x. 1883).
13. *Poems*, p. 79
14. *Sermons & Devotional Writings of GMH*, Ed. C. Devlin (Oxford, 1959) pp. 338–351.
15. *New Verse*, April 1935.
16. *S. & D. W.*, p. 349.
17. *Dublin Review*, Vol. 215 (October, 1944).
18. *S. & D. W.*, p. 154.
19. *S. & D. W.*, p. 239.
20. *Poems*, p. 66.
21. *Poems*, p. 54.
22. *ibid.*, p. 100.
23. *ibid.*, p. 106.
24. *Letters*, Vol. II, p. 93.

#### POSTSCRIPT

Since this article was written, Bernard Bergonzi’s biographical study, *Gerard Manley Hopkins*, has appeared (Macmillan £7.95). In the course of assessing Hopkins’s achievement, in the final chapter, Bergonzi compares him as a poetic formalist, with Mallarmé; both “lonely innovators and explorers of the universe of language”. He

quotes Donald McChesney on Hopkins's non-utilitarian use of language; "his poetic purposes stretch beyond . . . into the realm of pure 'play', pure pattern, pure energy of spirit". Such comments are relevant to Margaret Masterman's hypothesis about the emphasis-based, rhythmic and reiterative nature of language, and the fact that it is made up of words and not of terms.





## Prototypic organisms XV

### The rat

MICHAEL MORGAN

A rather insensitive undergraduate once wrote in his essay: "The rat is the psychologist's favourite guinea pig." The expression of this sentiment was a bit garbled, but one can see what it meant. An enormous quantity of research in so-called "comparative psychology", which purports to treat of similarities and differences in behaviour between different members of the animal kingdom, has in fact concentrated exclusively on a single species, the Hanoverian Brown Rat, *Rattus norvegicus*. A distinguished comparative psychologist, Frank Beach, once expressed the fear that comparative studies in the proper sense of the word would disappear under predation from the rapacious rodent, and that psychologists would end by acting out the story of the Pied Piper in reverse (a cartoon in his article shows a giant rat playing a pipe, and leading to their destruction a collection of white-coated savants, carrying foolish smiles and an assortment of Skinner boxes, running wheels, mazes etc.). The purpose of the present article is to review very briefly certain features of the Natural History of the rat, and to consider some implications for laboratory studies of learning.

The appearance of the Brown rat in Europe is comparatively recent. It seems to have migrated westwards from central Asia early in the 18th century and is believed to have reached England by ship in about 1730. According to the rather lurid account by Hogarth (*The Rat: a world menace*, 1929): "Owing probably to their huge increase in numbers and the failure of their food supply due to famine, in 1727 they swam the Volga and emigrated in huge

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swarms into Russia, whence they gradually overran Europe, Paris having been reached in 1750". The invaders all but supplanted the Black rat (*Rattus rattus*) which itself had entered Europe from Asia several centuries before (dates for this earlier influx differ, some authors putting it in the 13th Century; Hogarth mentioning the Norman conquest or even earlier). Intraspecific conflicts such as the Seven Years War have distracted historians from paying too much attention to the struggles between *R. norvegicus* and *R. rattus*, in which the former usually prevails, perhaps because of its superior weight. Average weight for the Brown rat in the field or sewer is 9–14 oz, but it is related that one John Jarvis, a London rat catcher, was attacked by a specimen of 1 lb 9 oz in the Gaiety Theatre.

Our undergraduate might have added that rats breed like rabbits. They produce 5–6 litters a year and the females of *R. norvegicus* have 12 teats. Gestation period is about 3 weeks and the average litter size is 6 or 7, though larger litters are not uncommon. The young pups are blind and helpless and do not begin to venture from the well-insulated nests until their eyes open at about 2 weeks and they become capable of regulating their body temperature. Both species of rat live in colonial groups, *R. norvegicus* typically in elaborate underground burrows, *R. rattus* more usually in nests above ground. Despite their different typical habitats, both species are capable of excellent climbing and burrowing. Both are also accomplished gnawers, and although there have been claims that *R. rattus* is the superior in this respect, visitors to the Natural History museum in Cardiff can see an impressive array of iron and lead pipes perforated by *R. norvegicus*. Manipulation is also highly developed and *R. norvegicus* uses its hands to hold food and to scoop up liquid; it also carries food and sometimes inedible objects like stones or bits of glass back to the nest (hoarding). Photographs have been published showing *R. rattus* pulling up bits of food on the end of a string while balanced on a "high wire", and of brown rats managing to get a large dish of food over an obstacle *en route* to the nest.

The long scaly tail can be used for balance and is held off the ground when the animal is running. Rats are primarily nocturnal, and although there is some dispute about the matter, it is unlikely

that they have any significant degree of colour vision. The sense of smell, on the other hand, is excellent. A very delicately balanced metabolic cycle ensures that the animal eats more than its energy requirement by night in order to have stores to mobilize during the day, when it eats less. The nocturnal nature of the animal should not be exaggerated, however, since it is not uncommon to see rats during the day, and I can recall shooting at some during the morning as they went along the well worn trail leading to the tool shed.

The most striking feature of eating behaviour is that both *R. rattus* and *R. norvegicus* are polyphagous: almost any food eaten by man will be sampled. If given corn flakes, cheese, chocolate biscuits, and peanuts in addition to a chow diet, laboratory animals will become quite obese (personal observations.) This means that rats and men are often in competition for the same food. During the 1st World War the following letter appeared in the "Daily Mail":

**RATS THAT EAT THE BREAD RATION**

A letter to farmers.

FROM VISCOUNT CHAPLIN AND LORD LAMBOURNE

In your buildings, stackyards, and granaries you have an underground enemy who destroys our food supplies almost as much as the submarine. That enemy is the brown rat. In 1908 Sir James Crichton-Brown estimated the yearly damage done to food by rats in England alone at £15,000,000. The value of that quantity of food to-day would be close on £40,000,000.

The polyphagy of rats may have evolved partly because of their association with man, although Barnett considers that there is evidence for its having been present beforehand. Association with man certainly had one important consequence. Because of its economic destructiveness, the rat has been poisoned, trapped, hunted, flooded, fumigated, and gassed in every conceivable way. It will be obvious that by favouring any species with his uniquely ingenious and persistent capacity for destructiveness, *Homo sapiens* encourages it to become his equal in intelligence. There has thus been enormous selective pressure in the rat for cunning, and for caution. As for the latter, Barnett describes as "neophobia" the tendency of rats to be suspicious of any change in a familiar environment. If a new food is introduced, or even if the container

of the food changes, there is initially complete avoidance, followed by sampling of progressively larger quantities. If the animal does not suffer from the food, the latter will eventually be accepted routinely; but if sickness from any cause (not necessarily the food itself) should supervene, the food will be rigorously avoided in the future. The ideal poison for a rat would thus be (a) tasteless (b) invariably fatal in small quantities (c) slow to begin its harmful effects. And, it must be added, harmless to domestic animals and children. The rat lives on.

We have seen that rats are at least partly colonial. They like to sleep together in huddles, and the young have elaborate patterns of playful behaviour, which involves a good deal of chasing and wrestling. There is a wide repertory of adult aggressive and amicable behaviour, in the development of which the juvenile play may well be important, although this is not yet proven. Living in colonies may explain the characteristic alarm squeal of the cornered rat, which would have the function of warning genetically-related animals to take cover. Beyond this there is no very strong evidence for altruism, and stories that rats cooperate in getting food back to the nest have been discounted after more careful observations.

In summary, the most important features of the Brown rat that are likely to be of significance for the laboratory student of their behaviour are the following: they have a long history of competition with man; they are primarily nocturnal with relatively poor vision and good smell; they are excellent at burrowing, climbing, manipulating and gnawing; they are polyphagous but suspicious of novel foods and objects; and they have an elaborate social life, which is not particularly well understood.

The laboratory rat is in some ways, as he of the guinea pigs might put it, a different kettle of fish. It has been selectively bred over numerous generations for two traits not immediately obvious in its wild cousins: docility and curiosity, with additional selective marks being added for the possession of unusually poor vision. The use of rats in physiological laboratories dates back to 19th century France, but according to Munn the first use in behavioural investigations occurred in the early 1900's in Clark University, where Small carried out the first maze-running experiments. A colony

of albino rats introduced by Meyer and Donaldson to the University of Chicago was the basis of the famous strain from the Wistar Institute of Anatomy and Biology. Nowadays Wistar and Sprague-Dawley are the most commonly used albino rats in behavioural research, but some workers prefer to use the less disastrously myopic hooded rat, so called after the black pigmentation of the head.

Why did psychologists turn to the rat? It is often said that since the early behaviourists thought the laws of learning the same in all animals, they chose the rat because it was in some sense simpler than man, and easier to experiment on. As one of the early students put it:

The answer is that whereas man's successes, persistences, and socially unacceptable divaginations—that is, his intelligences, his motivations, and his instabilities—are all ultimately shaped and materialized by specific cultures, *it is still true that most of the formal underlying laws of intelligence, motivation, and instability can be studied in rats as well as, and more easily than, in men.* (Tolman, 1945, italics added.)

And as Tolman half-jokingly added, rats do not go on binges the night before one has planned the crucial experiment. But this was not necessarily everyone's point of view, and it is dangerously simple-minded to attribute simple-minded points of view to people, even if they are behaviourists and invite you to do just that.

J. B. Watson, often termed the father of behaviourism, did not seem particularly committed to the view that the rat could be studied to find general laws of learning. Indeed, he maintained that study of the rat would be valuable even if such generalities could not be found:

... the range of responses, and the determination of effective stimuli, of habit formation, persistency of habits, interference and reinforcement of habits, must be determined and evaluated in and for themselves, regardless of their generality, or of their bearing upon such laws in other forms, if the phenomena of behavior are ever to be brought within the sphere of scientific control. (J. B. Watson, 1914)

The question whether there are general principles of behaviour, valid across many different species; and, if there are such general principles, whether they can be found in the rat, is much debated

at present. Part of the motive for seeking these laws was to put the practice of Education on a sound footing, and E. L. Thorndike was not only one of the most influential early animal experimenters, but also a prominent educational theorist. This hope has been largely disappointed, and animal psychology will have to make much more solid progress before it can make a really practical contribution to teaching methods. We shall return to this difficult question of generality after describing some of the things that rats do well and some of the things that they do not so well.

As would be expected from their labyrinthine habits, rats do extremely well in maze-solving tasks. An amusing cartoon in the "New Yorker" showed a rat in a maze hastening towards its doom in the shape of a Minotaur in the goal chamber. But this allusion was unfair to the rat, who does not require Ariadne's thread to find his way about labyrinths, especially when food is at stake. One recent test places eight bits of food in different locations of a maze and allows the rat to collect them all; this the animal does without making the mistake of returning to a place where the food has already been collected. This implies a formidable spatial memory, and would be a very hard task for people.

They are good at manipulatory tasks such as pressing a lever for food reward, and will work hard with a combination of paws and jaws to remove an obstacle that obstructs a passage leading to a food incentive. Object carrying can be exploited by training the rat to deposit tokens in a slot for a reward. There have not been many studies of climbing, but I found it easy to train rats to open a spring door while they were balanced precariously on the top rungs of a ladder. Their sense of time seems to be excellent, so that they can be trained to press on one of two levers following the sounding of a 3 sec tone, and on the other following a 7 sec tone. (The function of this temporal discrimination in the wild is a bit of a mystery.) Similar discrimination tasks have been used to investigate the rat capacity for discriminating between sounds (excellent) and between shapes such as circles and squares (not brilliant, but surprisingly good.) At avoiding poisons and eating what is good for them rats are masters, even after such long domestication. This has been exploited in the laboratory by the

technique of “conditioned aversion” in which the rat is fed a distinctive novel-tasting food, such as saccharine, and is subsequently made ill by injection of a poison or by having X-irradiation. Even if there is a few hours gap between injection and sickness the rat manifests aversion to the taste in a subsequent test. This work by Garcia and his colleagues passed the test of an original scientific finding in that it was initially disbelieved, and is now being flogged to death.

In conclusion, is it reasonable to devote a large portion of the resources of scientific psychology to the study of a species that was highly specialized to start with, and which has become even more eccentric as a result of selective breeding for traits that make for its convenience as an experimental animal? Criticism of rat psychologists come from two sources, which agree about little else. Students of complex human mental processes, such as language, pour cold water on the belief that a creature as humble as the rat can provide us with any principles of sufficient power to understand the human mind. They are given ample ammunition in the excessively simple-minded attempts of psychologists such as Skinner to describe “language behaviour” as if it were a simple matter of pressing a lever for food reward. At the other extreme, biologists who rightly stress the continuity of mental processes, and the evolutionary origin of man’s behaviour, have reservations about the rat psychologists’ typical ignorance of species differences, and they like to point out that “learning” is an adaptive process designed to suit the animal to its particular habitat: not a universal common process that can be studied willy-nilly in an arbitrarily chosen species. The one criticism stresses the simplicity of the rat, the other its extreme complexity. Both these criticisms are salutary, and there are some signs that psychologists are heeding them, and are developing the necessary humility to distinguish between knowledge and research.

The number of research publications devoted to the rat shows no sign of decreasing, however: quite to the contrary, several new journals devoted to rats (and to a lesser extent, pigeons and a few other animals) have appeared in recent years. A current trend is towards stressing the complexity of simple processes such as



Pavlovian conditioning, and to admit the use of previously banned terms like "memory". Meanwhile, other branches of psychology seem to have survived quite happily, rather than disappearing under the predation that Beach gloomily foresaw.

#### References

Beach, F. "The Snark was a Boojum." *Americal Psychologist* (1950) V, p. 115.  
 Barnett, S. A. *The Rat: a Study in Behaviour*. Chicago University Press, 1975.

*Journals*. There are a number of journals devoted to studies of learning in the rat and other laboratory animals. The *Journal of the Experimental Analysis of Behavior* is chiefly concerned with work in the Skinnerian tradition. *Learning and Motivation* and *Journal of Experimental Psychology: Animal Behavior Processes* adopt a slightly more general approach. *Animal Learning and Behavior* has just changed editors, and it will be interesting to see if there are changes in policy. For more biological studies the chief journals are *Animal Behaviour* and *Behaviour*. Physiological issues are dealt with in *Physiology and Behaviour* and a rather inappropriately named *Journal of Comparative and Physiological Psychology*.

## Self-enlargement and union

### Neglected passages of Russell and famous ones of Proust

JOHN KING-FARLOW

Most chapters of Bertrand Russell's short popular classic, *The Problems of Philosophy*, have been voluminously discussed ever since its appearance in 1911. They have been dealt with as they stand, and dealt with as restated by Russell elsewhere. I want here to bring forward to greater attention some passages in the final chapter, one which has recently fallen into a period of comparative neglect. I shall cite and try to interpret with charity some remarks of Russell's which seem rather too obscure, ambiguous or even oracular. But they fall within passages of great beauty where he tried, at what was for him a time of surging Revolution in Philosophy, to explain to cultured readers far beyond academia why he found analytical reasoning so important for mankind. The valuable, if puzzling, *spatial metaphors* of Russell's closing paragraph, as I hope to show without feigning great expertise on modern French novels, seem all the more striking and deserving of reflection when set beside the *spatial* imagery of self-enlargement which Proust employed towards the end of his novel's final volume, *Time Regained*. With both authors we reach something in their concluding uses of spatial metaphor which is like a closing burst to a massive oration, when a strange rhetoric is charged with its most memorable symbols.

Russell's texts in this chapter can reveal—as do a few, but much more guarded passages in “Mysticism and Logic”—that he long retained a serious measure of affection for *Monist Ontology*. At times he could still admire commitment to the universe as the unique Substance, although this was the position that his Revolution was

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meant to overthrow. In the chapter he oscillates away from the conclusions of his earlier arguments in the book in favour of the Pluralist's faith in many Substances. Proust's words consistently express loyalty to Pluralist vision of history, perhaps most dramatically of all in the paragraph which closes an immensely long work of fiction.

We learn from Russell's autobiography that he very briefly accepted a neo-Hegelian form of Monism at Cambridge, then eschewed it intellectually forever. We find him attacking Monism, as the pathetically inadequate product of anachronistic loyalty to Subject-Predicate syllogisms, in very early books like the *Philosophy of Leibniz* and the *Principles of Mathematics*, and often in his later writings. At least three influences are worth noting: the development by Frege and by Whitehead and Russell of calculi for capturing *varied relational inferences* in mathematics, science and practical life; the appeal of the British Empiricist tradition and its forms of Pluralist ontology; the influence of Moore, not least Moore's writings in the early 1900's on Idealism, relations and the many objects of perception.

In *The Problems of Philosophy* Russell offers several of his and Moore's earlier arguments against taking Monism seriously. His chapters on Universals add surprisingly many new Substances. But in his final Chapter XV, "The Value of Philosophy" Russell ends the whole book on an almost Spinozistic note. He concludes with these words: "Philosophy is to be studied, not for the sake of any definite answers to its questions, since no definite answers can, as a rule, be known to be true, but rather for the sake of the questions themselves; because those questions enlarge our conception of what is possible, enrich our intellectual imagination and diminish the dogmatic assurance which closes the mind against speculation; but above all because, through the greatness of the universe which philosophy contemplates, the mind is also rendered great, and becomes capable of that union with the universe which constitutes its highest good." (161)<sup>1</sup>

Throughout this very moving, but difficult chapter Russell deals in shifting metaphors which may indicate very varied approaches to man's extremely limited knowledge of the universe. Although he had no interest in Cartesian Dualism or any organized religion's *Dualism* of mind and body, Russell justifies philosophy partly as an activity of facing up to possibly insoluble *questions* for human

intellects “that are of the profoundest interest to our *spiritual life*”. (155—my italics.) Presumably it is more the making of some normative point, rather than an ontological remark, that the term “*spiritual*” is here meant to serve. Questions of profoundest interest to our spiritual life are likely to be the ones that a wise, open-minded, healthy human being will, in his own wisdom, find it most exciting to pursue. This “normative” interpretation is supported by the fundamental questions about good and evil, about whether the universe has a purpose, and the like, which Russell goes on at once to list. (155) It is further supported by his urging that philosophical consideration of what is possible enables a person to move out of dogmatic little systems, beyond petty interests in what is all too fragile, and away from the tyranny of custom or the pain of desire for the impossible. (156–158)

A) “All enlargement of knowledge is an enlargement of the Self, but this enlargement is best attained when it is not directly sought. It is obtained when the desire for knowledge is alone operative, by a study which does not wish in advance that its objects should have this or that character, but adapts the Self to the characters which it finds in its object.” (158)

B) “In contemplation—we start from the not-Self, and through its greatness the boundaries of the Self are enlarged; through the infinity of the universe the mind which contemplates it achieves some share in infinity.” (159)

C) “. . . greatness of soul is not fostered by those philosophies which assimilate the universe to Man. Knowledge is a form of union of Self and not-Self; like all union, it is impaired by dominion, and therefore by . . . the view which tells us that Man is the measure of all things . . .” (159)

D) “The true philosophic contemplation, on the contrary, finds its satisfaction in every enlargement of the not-Self, in everything that magnifies the objects contemplated, and thereby the subject contemplating.” (159)

In (A) Russell speaks of the Self as being enlarged by the enlargement of its knowledge in any way. Put less spatially and more gerun-

dively he tells us that in some way or other the dignity and beauty, the value of a person's mind becomes greater if he or she learns anything new. But the person is only going to grow *wiser*, to become more appreciative of what is *good* in important ways, when the person is open to accepting truth as truth appears, rather than to letting truth filter in through tribal shutters. (Russell aims his words, it seems, not only at attacking Protagoras and other Sophists, along with a few Renaissance Humanists. Russell is also lashing out at those who "follow" Kant and his assertion that natural phenomena must conform to the fixed "structures" of the mind as far as living humans are concerned.) At any rate, *the enlargement of the Self* is proposed as the *ideal* in spatial language.

In (B) the enlargement of the not-Self is proposed as the means to enlarge the Self. In contemplating the world or not-Self as something infinite, the Self somehow comes to receive an enlargement corresponding to the infinity of the not-Self. Presumably, however, it is not just by attending seriously to theses about the universe's spatial and temporal infinity that the Self is enlarged. What is being recommended, as is clear (on page 157) from his praise of *possibilities* for liberating minds, is that each person become interested both in contemplating "the world" or "the not-Self" as a vast totality of possible beliefs which are probably true and in considering the infinitely greater totality of possible beliefs which may be true. Moreover, if we exchange the spatial metaphors again in terms of moral and aesthetic counsel, we conclude that there are certain ways of contemplating certain particularly important sorts of propositions. These, it seems, will give us a proper sense of harmony with what exists in place of our typical attitudes of opposition to Nature. Since there are no physical fetters restraining the size of the physical cosmos, the man who becomes open to vast sets of possible answers to important questions becomes *like* the cosmos in a particularly noble way. But, at any rate, the ideal is no longer just the enlargement of the Self, but the enlargement by the Self of its "world" or "not-Self"—of the sets of probable and possible answers to important questions which appear before the open mind in intellectual as well as aesthetic contemplation.

In (C) Russell talks of a desirable state of mind, *knowledge*, which

he calls “a form of union of Self and not-Self”. He leaves the spatial metaphor of *enlargement* in favour of that of *union*. And that same term *union* appears most dramatically in those last words of the book: “The mind is also rendered great, and becomes capable of that union with the universe which constitutes its highest good.” If one is so metaphorically crude as to think of knowledge as primarily the *touching* by the knower of the known, such spatial talk of *union* makes some sense. If one thinks of the known as a sexual partner or a river in which the knower immerses himself, such metaphorical talk becomes still clearer. If one thinks of knower and known, or Self and not-Self, as united in dialogue we get still better sense. The person takes upon himself questions about bodies of probable and possible truths: by immersing himself in reflection on his own responding thoughts, on the speech and writing of others, on the observations of neighbours, he receives the answers of the not-Self. Yet this mode of reflection provides union between questioner and respondent.

In (D) we return to the metaphor of enlargement. Enlargement of Self and of not-Self by the free person who uses his liberty to ask *important* questions produces a wise adaptation to the universe. It is not simply the increase in enquiry considered that matters. It is the improvement in topics and in modes of reflection.

Russell’s words on philosophy in this chapter, and also his repeated warnings there against Humanist dogmatism, contrast agreeably with the narrowness of works like his best-selling *History of Western Philosophy*. Had he not been caught up so early with his local revolt against Neo-Hegelians, with his confusion of logic as calculus and “logic” as interpretation, he might have realized that all his favourite relational inferences can be *re-presented* in the language of a modest Platonism (limited to one-place predicates), or a highly ambitious Monism.<sup>2</sup> Of course, I may have leaned somewhat too generously in Russell’s favour by reconstruing his spatial metaphors in such gerundive ways. Russell did later speak at least once in belittling terms of man’s pitiful *size* compared to that of various spatial objects or fields. And a Cambridge colleague did at least once reply that Russell was confused about spatial and intellectual greatness.

First let me relate passages (A) to (D) of Russell to one more set of puzzling sentences:

E) "By . . . making a barrier between subject and object, such personal and private things become a prison to the intellect. The free (human) intellect will see as God might see, without a *here* and *now*, without hopes and fears . . . knowledge as impersonal, as purely contemplative, as it is possible for man to attain. Hence also the free intellect will value more the abstract and universal knowledge into which the accidents of private history do not enter, than the knowledge brought by the senses, and dependent, as such knowledge must be, upon an exclusive and personal point of view and a body whose sense-organs distort as much as they reveal. The mind which has become accustomed to the freedom and impartiality of philosophic contemplation will preserve something of the same freedom and impartiality in the world of action and emotion. It will view its purposes and desires as parts of the whole, with the absence of insistence that results from seeing them as infinitesimal fragments in a world of which all the rest is unaffected by any one man's deeds . . . through the greatness of the universe which philosophy contemplates, the mind is also rendered great and becomes capable of that union with the universe which constitutes its highest good." (Pp. 160–161)

Russell emerges from the last chapter as a curious sort of limited sympathizer with Spinoza's *Ethics*. The tone of these sentences suggests that the wiser a person might become, the less he will think of himself as a distinct individual opposed to a vast collection of other animate and inanimate beings. Russell seems to be suggesting that more and more, as he comes to understand what is important, a person sees himself less as an Aristotelian substance, more as a Spinozistic mode. He rejects the perspective of a self-seeker living apart and opposed. In rejecting that perspective he becomes capable of seeing the universe as the true subject to which his own desires and purposes belong as modest aspects. And so he becomes wise and his mind is capable of the union with the universe. His mind is not just capable of the union described before, but capable of a state in which Selfhood dissolves so that he sees himself harmoniously as a

mode of Nature. At the explicit trumpeting of such things, Russell might have quickly backed off towards Hume: luckily he let himself write what he did. Literary generosity and vision prevailed over an unduly confining brand of epistemology.

Here are some passages in which Proust teaches a far more Pluralistic form of wisdom as the consolation of luckier and more gifted mortals. The notions of Self-Enlargement and Union, with accompanying problems of how to interpret *spatial metaphor*, recur in rather different forms.

P1) “. . . And then a new light, less dazzling, no doubt, than that other illumination which had made me perceive that the work of art was the sole means of recovering Lost Time, shone suddenly within me. And I understood that all these materials for a work of literature were simply my past life . . . And thus my whole life up to the present day might and yet might not have been summed up under the title: *A Vocation* . . . In the same way my life was linked to what, eventually, would bring about its maturation, but those who one day would draw nourishment from it would remain ignorant, as most of us do when we eat those grains that are human food, that the rich substances which they contain were made for the nourishment not of mankind but of the grain itself and have had first to nourish its seed and allow it to ripen.” (268)

P2) “In this vast dimension which I had not known myself to possess, the date on which I had heard the noise of the garden bell at Combray—that far-distant noise which nevertheless was within me—was a point from which I might start to make measurements. And I felt, as I say, a sensation of weariness and almost of terror, at the thought that all this length of Time had not only, without interruption, been lived, experienced, secreted by me, that it was in fact my life, was in fact me, but also that I was compelled so long as I was alive to keep it attached to me, that it supported me and that perched on its giddy summit I could not myself make a movement without displacing it . . . I understood now why it was that the Duc de Guermantes, who to my surprise, when I had seen him sitting on a chair, had seemed to me so little aged although he had so many more years beneath him than I had presently, when he



rose to his feet and tried to stand firm upon them swayed backwards and forwards upon legs as tottery as those of some old archbishop with nothing solid about his person but his metal crucifix, to whose support there rushes a mob of sturdy young seminarists, and had advanced with difficulty, trembling like a leaf, upon the almost unmanageable summit of his eighty-three years, as though men spend their lives perched upon living stilts which never cease to grow until sometimes they become taller than church steeples, making it in the end both difficult and perilous for them to walk and raising them to an eminence from which suddenly they fall. And I was terrified by the thought that the stilts beneath my own feet might already have reached that height; it seemed to me that quite soon now I might be too weak to maintain my hold upon a part which already went down so far. But at least, if strength were granted me for long enough to accomplish my work, I should not fail, even if the result were to make them resemble monsters, to describe men first and foremost as occupying a place, a very considerable place compared with the restricted one which is allotted to them in space, a place on the contrary immoderately prolonged—for simultaneously, like giants plunged into the years, they touch epochs that are immensely far apart, separated by the slow accretion of many, many days—in the dimension of time.” (472–474).

The spatial figures of *enlargement* and *union* occur no less strikingly in Proust’s treatment of selfhood and wisdom. But they are introduced to express what is, by contrast with the Russellian passages’ bent, a strikingly Pluralist ontology. Proust is far more like C. D. Broad in contrasting the hard reality, the solid facts of the Past with the Future as a dizzying vacuum for growth. The hardness of past facts and the magic veracity, the epistemic splendour of Memory once fully aroused, are brilliantly suggested in fusillades of simile and metaphor: each event of our past is like a substance impacted in us that joins a swelling rank of substances; they are like ripening seeds which may grow in us until our changes make them available to others; at each moment we are enlarged by more past facts. Such talk will sometimes suggest that a skinny youth is healthily filling out in girth, is *most desirably becoming older as*

time passes—or that a plant is doing its teleological duty by waxing heavy with seed or fruit. But Proust also displays here a rival preference for the symbol of growth upwards in length by what is thin and frail, rather than growth outwards in the fatness of increasing strength. And such talk of limb-like stilts, which are part of a Self in its enlargement, and which constantly move upwards into a dizzying void, may remind the professional philosopher not only of Bergson (whom Proust read) but also of Russell's critic, C. D. Broad.

In *Scientific Thought* Broad replies to McTaggart that Time indeed provides us with an objective "A-Series" and not an illusion. History is a mounting slag-heap of actualized Events (mounting in the concatenated "Specious Presents" of objective experience). There can be *truths* about the substantial Past and Present. The Future, being a *void*, is the subject of Pseudo-Judgements. Broad's attack on McTaggart's view of Time soon leads him to take issue with Russell's.<sup>3</sup>

Thanks to the magic of Art, especially literature, Proust holds that the events of a person's life need not just constitute a "quantitative" enlargement of history. Thanks to the beauty not only of Art, but also of our most profound memories of our quite unique experiences as individuals, the profusion of biographic facts lends itself to the experience of what gives point to life. But the great *writer* is most likely to wrest a saving sense from his living and dying. With his second and rather less comforting kind of spatial talk Proust tells us that our past is somewhat like a growing appendage that makes our bodies less easy to move as we wish; that our past is less like girth and more like a force that makes our legs grow ever longer, more ludicrous, and more dangerously unwieldy. The wise persons among older people are presumably those who can accept their comical, fragile posture honestly and originally. For they will find that even out of such a terrifying Enlargement there may come a redeeming form of Union: the physical frailty of the old must not make us confuse their spatial legs with the miraculous extension of their temporal "stilts". They are "stilts" which enable us to "touch epochs that are immensely far apart, separated by the slow accretion of many, many days—in the dimension of Time."

To be reunited with some half-forgotten segment of one's past is to have a chance of finding Paradise: the few heavenly experiences persons may have, are always *former* experiences which can somehow be united with our present. Only what is richly recollected in our earthly heads deserves to be counted as celestial.

Thus we find in both Russell and Proust a use of conflicting spatial metaphors to express the belief that self-realization can come through an *enlargement* of the Self which permits it to find *union* with what makes it happy. But Proust's aesthetic individualism in *Time Regained*, with its exaltation of all those skilled at Art and of great writers in particular, belongs to a usefully compared, but dissimilar categorial universe far away from Russell at his most rhetorical in *The Problems of Philosophy*, Chapter XV. Russell was far more sympathetic to McTaggart than Broad could be, or Proust. Russell opts for a form of "B" Theory of Time, timelessly eternalizing temporal relations between events in cosmic history. The Future is real enough for Future judgements to admit the Law of Excluded Middle in ways alien to Broad and to the Proust of these passages. Proust rejoices in the startling individuality of each person's experiences and memories: that uniqueness must somehow be recaptured without any presentation's loss of being-what-it-is-and-not-another-thing. In the spirit of his book's two lavish chapters on timeless Universals, corresponding to Plato's one-place predicates and to those named by relational terms, Russell guides his wise man away from particulars to universals, away from individual pettiness to a state of "union with the universe". Then somehow the handy Pluralism of reified universals gives way to a Monist's joy in oneness.

Thus meditation on Russell's final chapter, "The Value of Philosophy", and not least on his use there of spatial metaphors, is extremely valuable for those interested in the topic of Wisdom and in the tension between Pluralists' and Monists' views of Wisdom. To make oneself more sharply aware of Russell's use of spatial metaphor in trying to articulate his view of Wisdom, one may turn with profit to Proust: why do we find something like, yet very unlike Russell's use, in connection with *Selfhood*, of spatial talk about *enlargement* and *union* when we turn to Proust? Why not learn from

sharp contrast with one of the world's greatest novelists just how close to Monism Russell's deepest impulses could really be?

### Notes

1. References are to the first edition, London, 1912. Russell's famous essay "Mysticism and Logic", first published in the *Hibbert Journal* for July, 1914, oscillates between a show of deep sympathy for "mystical" impulses, which result in doctrines like that of Monism and a rasping tone of hostility on behalf of "scientific" attitudes.
2. Compare John King-Farlow, "Quantification Theory and Ontological Monism", *Zeitschrift für allgemeine Wissenschaftstheorie*, 1972; Hector-Neri Castañeda, "Plato's 'Phaedo' Theory of Relations", *Journal of Philosophical Logic*, 1972; F. J. Pelletier and John King-Farlow, "Relations—Turning Russell's Other Flank", *Southern Journal of Philosophy*, 1975. Russell's lengthy sniping at Monism is illustrated in such works as *A Critical Exposition of the Philosophy of Leibniz* (1900; Second Edition, pp. 13–15); *The Principles of Mathematics* (1903; pp. 225–226); *The Problems of Philosophy* (1912, Ch. IX); "Logical Atomism" (1924), etc.
3. C. D. Broad, *Scientific Thought*, (New York, 1923). See especially Chapter II, "The General Problem of Time and Change". Time and human history have an objective, intrinsic direction: in the immediate present the totality of events is swelling *from the fullness of the Past into the void of the Future*. Proust's description of elderly persons meshes partly with Broad's basic imagery. For the elderly person, endowed with the weight of Memory, is a diachronic being that is shooting *upwards*—like a creature on stilts—through present experience into a dizzyingly empty space, the uncertain future. But Proust's expressed sense of dizziness results from a specially sharp focus on the past (and memories) of the individual rememberer taken largely in isolation from the mounting wall of Nature's history. This emphasis on *one person's past, remaining real in his or her memory*, encourages the image of a vertiginous perch on separate little stilts or stems, rather than the image of a safer seat on a rising wall. (Of course, others' intersecting memories of oneself might drive Proust eventually to the wall image. I discuss philosophers' varied images of Time in "Mr. Bradley and the Libertarians", *Australian Journal of Philosophy*, 1959; "Three Questions for Prior on Time", *A.J.P.*, 1961; "Truth Preference and Neuter Propositions", *Philosophy of Science*, 1963; "The Positive McTaggart on Time". *Philosophy*, 1974) Compare two passages from Broad in that Chapter: (a) "Whatever is has become and the sum total of the existent is constantly augmented by becoming. There is no such thing as ceasing to exist; what has become exists henceforth forever." (p. 68). (b) "The judgement which is grammatically about (the non-existent) 'Puck' is *logically* about the set of characteristics by which the assertor describes Puck to himself. Similarly the judgement 'Tomorrow is wet' which is grammatically about tomorrow is logically about the characteristic of wetness. The non-existence of tomorrow is therefore compatible with the fact that the judgement is about something . . ." (p. 70)



## Comment

### The philosophical interpretation of Steiner

The following short note was provoked by the discussion “Changes of Consciousness or Changes of World?” which appeared in *Theoria to Theory*, 10, iv. It is not intended as a substantial account of Steiner’s work, nor is it intended to provide an assessment of his work, and nor is it intended as a recommendation of this work. My only purpose is to introduce a point (Steiner’s role as philosopher, as opposed to his role as anthroposophist, seer, and cultural leader) which was not brought out in the discussions, and, in my view, should have been. I am very grateful to the editors of *Theoria to Theory* for allowing me the space to make this point.

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Rudolf Steiner’s work has, perhaps understandably, received very little critical or academic interest in this country. The recent recorded conversations between some of the Epiphany Philosophers and some Anthroposophists could, therefore, have been expected to produce some original ideas either for or against the work of an original man. What was attempted in these conversations was a *philosophical* discussion of Steiner’s *anthroposophical* ideas, and of the practical implications of these ideas.

Before the turn of the last century, when Steiner started to identify himself publicly with esotericism, he had produced several purely philosophical works.<sup>1</sup> These works were not discussed in any detail in the above-mentioned conversations. Steiner claimed

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<sup>1</sup> Some of the most important are: *A Theory of Knowledge* (1886), *Truth and Science* (1892), *The Philosophy of Freedom* (1894), *Friedrich Nietzsche* (1895).

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that his early philosophical books amounted to a justification of his later anthroposophical books. In the 1918 Preface to *The Philosophy of Freedom*<sup>2</sup> he writes,

In this book the attempt is made to show that a knowledge of the spirit realm *before* entering upon actual spiritual experience is justified.

I suggest that the individual results of Steiner's alleged spiritual perception cannot profitably be discussed philosophically. Philosophical techniques of analysis and argument do not seem to be appropriate for accepting or rejecting a specific "observation". It seems obvious that Steiner did not enunciate (for example) the working of the Archangel Michael as a *philosophical* proposition. I do not see how it is possible to prove or disprove a cosmic panorama of human and spiritual history as it is presented in Steiner, including the working of the Archangels as specific and real historical forces, in a philosophical way,<sup>3</sup> except as instancing a general possibility. It is possible to discuss this sort of idea philosophically as exemplifying a possible type of philosophy of history.

The *whole* programme of Steiner's spiritual science can be accepted or rejected for philosophical reasons. If it is accepted, if one accepts the general possibility of Steiner's type of spiritual imagination as a perception of something real, then there really is no alternative except to take Steiner head on and try to sort out *experimentally* the good results, if any, from the bad. The experimental procedure is no longer philosophy. Steiner would accept this,<sup>4</sup> and he intended books like *Knowledge of the Higher Worlds*

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<sup>2</sup> R. Steiner, *The Philosophy of Freedom*, London, (1970), xxv. The above sentence was written twenty-four years after the original publication of the book.

<sup>3</sup> Steiner's view of history is in structure similar, even to the dates of the Regencies, to the Archangelic historiography in Trithemius of Spanheim's *Von den sieben Geysten oder Engeln* (1534). But Trithemius is only in the broadest possible sense a philosopher. He ought really to be classified as a Christian cabbalist or mystic.

<sup>4</sup> See Steiner, *Philosophy and Anthroposophy*, London, (1929), and *Man in the Light of Occultism, Theosophy and Philosophy*, London, (1945), pp. 210–211.

to go *beyond* philosophy. That is precisely why he regarded *The Philosophy of Freedom* as important.

There seem to be four main places at which to confront Steiner, and to make a stand against a rapidly “thickening” metaphysics.<sup>5</sup> One can accept Steiner’s philosophy, emphasize the “coupure epistemologique” of c. 1900,<sup>6</sup> and reject the later Steiner. One can accept the later Steiner in principle, but reject certain portions of his work for “experimental” reasons.<sup>7</sup> Or one can accept in the later Steiner only what is necessary for what Shepherd<sup>8</sup> calls “applied spiritual science”, under which he includes, for example, Waldorf education and bio-dynamic agriculture. (He also ought to include Goethean science.) Or one can reject or accept Steiner altogether. Whichever course is taken, the minimal or “thin” Steiner of *The Philosophy of Freedom* ought to be the basis of assessment. The transition from philosophy to anthroposophy is fundamental. The “coupure” indicates at least an important change or development in Steiner’s work.

This change, which appears as a *discontinuity*, has not been stressed by those who are sympathetic to Steiner, perhaps because they feel that if his philosophical and anthroposophical studies are allowed to fall apart, the latter will lose one of their main justifications. The claim that anthroposophical ideas can be understood by healthy human intelligence without actual experience (which was probably at least in part a reaction to theosophical obscurantism and elitism), in just the same way that scientific ideas can be understood without actually doing the experiments, will accordingly be weakened.<sup>9</sup>

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<sup>5</sup> See William James, *A Pluralistic Universe*, London, (1909), p. 135ff.

<sup>6</sup> This phrase comes from Louis Althusser’s *Reading Capital*, London, (1970), pp. 309, and refers to the “radical break” between Marx’s early and mature work.

<sup>7</sup> See H. Poppelbaum, “Can Supersensible Facts be Proven?” *Journal for Anthroposophy* (U.S.A.). 11, (1970), pp. 1–14. This is a most important source in the discussion over Steiner’s claim to be “scientific”.

<sup>8</sup> A. P. Shepherd, *A Scientist of the Invisible*, London, (1959), pp. 174 ff.

<sup>9</sup> Although it is surely a mistake to equate the “healthy human intelligence” with philosophy!



Followers of Steiner have stressed that his philosophical works have to be read in an unusual way, actively, and that they can be regarded as training manuals in spiritual development.<sup>10</sup> Opponents of Steiner have stressed the discontinuity of his work,<sup>11</sup> perhaps because it releases them from the obligation of tackling a subtle and sophisticated epistemological argument.

A dilemma seems to be that if Steiner's philosophical and more obviously spiritual works stand together, they also *fall* together. His philosophy cannot independently validate his form of spirituality. If on the other hand Steiner's philosophy and his anthroposophy really are quite independent of one another, the former cannot do anything in the way of justification for the latter, and will, furthermore, also endorse a broad range of similar spiritualities, such as theosophy.<sup>12</sup> *This sort of dilemma seems to be equally acute for any form of spirituality which claims to be reasonable.* It is not peculiar to Steiner. It has family connections with Moore's paradox of analysis,

<sup>10</sup> See, for example, O. D. Wannamaker, *Rudolf Steiner's Philosophy of Spiritual Activity*, New York, (1963), pp. 6–8, and O. Palmer, *Rudolf Steiner on his book "The Philosophy of Freedom"*, New York, (1975), Ch. X, pp. 78–92

<sup>11</sup> For an extreme example, see W. Treher, *Hitler Steiner Schreber Ein Beitrag zur Phänomenologie des kranken Geistes*, Emmendingen im Breisgau, (1966). See esp. Steiner's "*Lebensgang*" und der mutmassliche Beginn seiner Krankheit", p. 42 ff. Treher thinks that Steiner was a schizophrenic, and thinks that the *title* of his doctoral thesis, "Wahrheit und Wissenschaft: Die Grundfrage der Erkenntnistheorie mit besonderer Rücksicht auf Fichtes Wissenschaftslehre. Prolegomena zur Verständigung des philosophischen Bewusstseins mit sich selbst", "sounds strange and suspect" ("klingt merkwürdig und suspekt", p. 43). The form of Treher's note (he quotes the title from Hemleben's biography of Steiner) suggests that he has not read *Truth and Science*, which is a most unexceptionable example of German post-Kantian philosophy. The title is long, self-absorbed and strange; but if this is evidence of schizophrenia, then the entire tradition of post-Kantian German philosophers, including Fichte and Hegel, must also be similarly afflicted. And this is in fact what Treher thinks! See his *Hegels Geisteskrankheit oder das verborgene Gesicht der Geschichte*, Emmendingen im Breisgau, (1969). If Steiner was sick only in the same sense as Hegel, and no doubt Christ and Plato as well, (delusions of grandeur, raging hallucinations, etc. etc.) then sickness is surely to be encouraged and cultivated.

<sup>12</sup> For a time (c. 1902–c. 1911) Steiner's philosophy did seem to endorse a form (admittedly an unusually precise and characteristically Steinerian form) of theosophy.

and the consequence of empiricism expressed in Hume's dicta that "reason is perfectly inert" and "wholly inactive".<sup>13</sup> The dilemma derives from a certain conception of reason, not from spirituality.

A very important strand which runs right through Steiner's work is the observation that thinking is a substantive activity of perception. Even when we try to think about thinking itself, we seem to have to *look* at it. Steiner argues in some detail that it qualifies as a spiritual form of perception. In *The Philosophy of Freedom* this takes the form of a straightforward philosophical argument.<sup>14</sup> Right or wrong, this is one important example of a continuity in Steiner's work; it is a continuity of *content*. A possible interpretation of Steiner's statement that

It seems to me that in one sense this book (*The Philosophy of Freedom*) occupies a position completely independent of my writings on actual spiritual scientific matters. Yet in another sense it is most intimately connected with them.<sup>15</sup>

is that there is continuity to his work in respect of *content*, of *what* he says about the basic relation of man to the world, and discontinuity in respect of *form*, of *how* he says it. Steiner's early work (c. 1880–c. 1900) is philosophical in form, and his later work is mainly spiritual and esoteric.<sup>16</sup>

The discontinuity of form does not, however, parallel a discontinuity of method. The motto on the title page of *The Philosophy of Freedom* is "Some results of introspective observation following the methods of Natural Science". This was a deliberate reaction to the methodological motto on the title page of Eduard von Hartmann's *Philosophy of the Unconscious*:<sup>17</sup> "Speculative Results according

<sup>13</sup> Hume, *A Treatise of Human Nature*, ed. Selby-Bigge, Oxford, (1958), p. 458.

<sup>14</sup> Chapter III.

<sup>15</sup> From the 1918 Preface to *The Philosophy of Freedom*, xxv.

<sup>16</sup> "The fact that I had not yet used the term 'anthroposophic' was due to the circumstance that my mind was always striving first to attain perception and scarcely at all after a terminology." R. Steiner, *The Story of My Life*, London, (1928), p. 178.

<sup>17</sup> Eduard von Hartmann, *Philosophy of the Unconscious*, trans. W. C. Coupland, Connecticut, (1972). Von Hartmann read *The Philosophy of Freedom*, and wrote some notes about it. At least one of Steiner's 1918 Additions is directed specifically to one of von Hartmann's criticisms.

to the Inductive Method of Physical Science". Steiner substitutes "introspection" (or in some translations "soul-observation") for "speculation" and "observation" for "induction". The method of soul-observation is basic to *all* Steiner's work, early and later.

Steiner's philosophical work is, accordingly, central to the assessment of his later work. He said of his philosophical work that it "may be acceptable even to some who, for reasons of their own, refuse to have anything to do with my researches into the spiritual realm". *The Philosophy of Freedom* does not contain any "results of spiritual research", "any more than it contains special results of the natural sciences".<sup>18</sup>

This should not be forgotten. A *philosophical* discussion of Steiner should be about his philosophy, and only about the *possibility* of his anthroposophy.

It would be disingenuous, however, not to add that few people would concern themselves with Steiner's philosophy had he died in 1900, and had he not produced his later anthroposophy. I believe this is true in spite of the fact that his work up to that time was at least as interesting as that of some less clear and less original thinkers of the period.<sup>19</sup>

A few of some of the more important points in Steiner's philosophy, which may be of interest to people concerned about his anthroposophy are:

- i) The analysis of thinking in Chapter III of *The Philosophy of Freedom*. Thinking as an activity. The transparency and self-supporting character of thinking, (when I characterize an object conceptually, I say nothing about myself), and the reasons given for rejecting thinking as a brain process. Thinking as vision.
- ii) The account of the (non-substantive) ego, and of consciousness, in Ch. VI of *Truth and Science*. ("Consciousness as a reality exists only if it produces itself.")

<sup>18</sup> Steiner, *Philosophy of Freedom*, xxiv-xxv.

<sup>19</sup> I should mention, perhaps, that the well known Idealist philosopher R. F. A. Hoernle (1880-1943), thought it worth while to translate *Philosophie der Freiheit und Wahrheit und Wissenschaft* into English while he was Professor of Philosophy at Harvard.

- iii) The description of knowledge, which is a partial consequence of Steiner's idea that the demand for knowledge is a demand of *people*, and not of problems or the world. This appears in Ch. V of *The Philosophy of Freedom*.
- iv) Steiner's final word on perception, in Ch. V of *The Philosophy of Freedom*, pp. 76–77. (The percept only has the properties it is *perceived* as having, and so, if they are subjective, they must be *perceived* to be subjective. The question, "What is a percept?" is absurd. The answer can only refer you to the concept corresponding to the percept.
- v) The discussion of freedom and morality and their intimate connection with cognition in Ch. IX of *The Philosophy of Freedom*.

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## Comment

### Old age in an Ecuador village

From time to time in *Theoria to Theory* people have written about old age. Your readers may be interested to hear about a visit I made to a village in Ecuador in the summer of 1974. The village is called Vilcabamba, and it is in the province of Loja in the southern part of Ecuador near the Peruvian border. There are old people there who think that they have lived for well over a hundred and thirty years.

Indeed, I talked for a whole morning to one old man who claimed to have been a soldier in the campaign of Simon Bolivar which liberated Ecuador in 1824. He told me, in a quite specific way, about the battles in which he had fought. Some of the details, I should say, were historically accurate. He spoke fluently and quickly, without pausing for recollection. He spoke a very old-fashioned Spanish, although the language of the village is of course different. My acquaintance also said he had fought under Sucre, who was Bolivar's general in charge of the campaign in Ecuador.

It seems that the villagers of Vilcabamba had at some point deliberately cut themselves off from the rest of the country, and subsequently lived mainly by subsistence farming. The women produced beautiful pieces of cloth which they bartered with visiting traders. The diet of the villagers was not unusual, at least for this part of the world. They were not vegetarians. They apparently get up regularly at 4.30 a.m., and go to bed at 8.00 p.m. My friend said to me, "We don't want to miss the most beautiful part of the day".

He continued to speak. The whole community, he said, met for religious worship at this time of the morning. During the service there was an opportunity for mutual reconciliation, in which people

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freely voiced grievances, and apologized to one another for any hurts or misunderstandings. I got the impression that they used this opportunity to resolve difficulties in the life of the community, and to prevent resentments from older disagreements building up.

Their religion is a mixture of Roman Catholicism and the indigenous. I was unable to check in any direct way whether the people in the village who claimed to live into their middle hundreds were in fact right.

Each group in this part of Ecuador has its own form of religion, with its own priest, who is called the *Mamu*, and its own form of worship. The people in Vilcabamba were very peaceful; it seems there are almost never any quarrels. The people listen to one another in their early morning discussion, and if they can't find a solution by this form of reconciliation, they say, "Just forget it".

A number of outsiders have tried to visit the village. Rich Americans are said to want to build villas there. But, said my friend, the inhabitants don't want to be disturbed. They are now in fact receiving physical protection from the Government of Ecuador.

My friends and I visited these people in connection with a group of interested "secular missionaries", which calls itself "USUMI". This group wants to defend people all over South America from the sort of cheating and exploitation which, perhaps naturally, occurs when one culture meets another.

The Government and ordinary people are indifferent to the indigenous population in all Latin America, and our movement is trying to overcome this. We are concerned to preserve the fine qualities which there are in the indigenous traditions, and to learn from them what they may teach us.

ALBALUCIA CÁLAD DE ROSERO  
*as from Carrera 6a, no. 16-88*  
*Ipiales*  
*Colombia*

[An article on Vilcabamba, "A Shangri-la in Ecuador" by Dr. David Davies, lecturer in zoology and member of the gerontology unit at University College London, appeared in *The New Scientist*, Feb. 1st, 1973. Dr. Davies comments on the low calorie diet as a possible factor in this longevity. He mentions that they drink two to four

**mugs of unrefined rum a day. We showed the article to Albalucia Cálad, who commented that the “rum” was a fermented maize drink without much alcoholic content. She questioned his statement that most of the Vilcabambans were of Spanish descent. Ed.]**





## Comment

### Imagination and mysticism

In the last paragraph of her review of my paper on Eckhart in *Theoria to Theory* 10 (3) Amy Clarke opens the question of Christian symbolism as contrasted with mystical experience, not much liking my neglect of this. Although I should not presume to illuminate Christianity there is more I might say on symbolism and mysticism.

Most of us brought up in the Christian tradition tend to think and talk of religion in terms of belief, which obscures differences in experience; but to the mystic there is a fundamental opposition between his imageless experiences and his symbolic. It should clarify the situation if we agreed to confine the term “mystical” to the imageless sort, and used “imagination” as St. John of the Cross does, for the symbolic, thus classifying them according to their most obvious contrast. I suggest “imagination” rather than “symbolism,” in order to include images not carrying a symbolic charge, the distinction between which can be ticklish on the border line.

Both these types of experience are found in the dawn of history, suggesting their universality in man. The Sanscrit Scriptures have both, and the *Bhagavad-Gita* defines the difference precisely. The symbolic sort characterizes religion as a social occurrence, ritual and myths (which may have originated in ritual) creating an imagined awareness of one’s basic significance lying within the community, embedded in a cosmos. On the other hand mysticism without either concrete or spoken image is necessarily an individual experience. And since any community depends on its institutions, perhaps particularly its rituals, for cohesion, the mystic since he

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finds his basis within himself is nearly always felt to threaten its authority; an authoritarian can hardly approve the implications of mysticism. Nevertheless I agree with Amy Clarke's view that there is no necessary incompatibility, and indeed it is the community, not the victim, who creates and defines heresy. Moreover, as she points out, many, possibly most, mystics experience in both ways, although it must be said that they place mysticism as the further stage.

Jung in his study of *Transformation Symbolism in the Mass* (in volume XI of the Collected Works) made a very thorough and also moving analysis of the Mass as religious experience. No one who knows that could doubt the efficacy of imagination. And it is undeniable, as Amy Clarke implied, that sometimes it can lead on to a mystical experience. As a rare exception the Mass may be arrested in the middle by the officiating priest being so caught away. And that imagination is not a merely ritual and verbal artefact is proved by those natural scenes which act as symbols. I think I shall never forget, when motoring in the western highlands of Scotland one heavily overcast day with the hills hidden in mist, a gap suddenly opening high in the sky, out of which in an eerie light a great peak appeared like something without base in earthly reality. The external sense-experienced world, took on a quality that does not belong to common day. Such apprehensions should certainly not be denigrated. Mythology and theology lose their credence when they cease to result in them. Nevertheless this is not to say that an imaginative experience is the same as a mystical. They are different sorts of consciousness.

These differences are easy to distinguish as concepts. One uses images, whether concrete things seen in the material world, or a recombination of them in memory, the other has no describable content of any sort. But just to say so conveys no realization at all of them as experiences. Wordsworth's poetry, however, is unique in including both. And he wrote with a clear understanding of what he was doing, starting from actual experience, describing it stage by stage as it developed, occasionally ending with a conceptual statement of precisely what has occurred. I hope I may be allowed space to quote in full his poem *The Simpton Pass*:

Brook and road  
 Were fellow-travellers in this gloomy Pass,  
 And with them did we journey several hours  
 At a slow step. The immeasurable height  
 Of woods decaying, never to be decayed,  
 The stationary blasts of waterfalls,  
 And in the narrow rent, at every turn,  
 Winds thwarting winds bewildered and forlorn,  
 The torrents shooting from the clear blue sky,  
 The rocks that muttered close upon our ears,  
 Black drizzling crags that spake by the wayside  
 As if a voice were in them, the sick sight  
 And giddy prospect of the raving stream,  
 The unfettered clouds and region of the heavens,  
 Tumult and peace, the darkness and the light—  
 Were all like workings of one mind, the features  
 Of the same face, blossoms upon one tree,  
 Characters of the great Apocalypse,  
 The types and symbols of Eternity,  
 Of first, and last, and midst, and without end.

Here we have imagination at its most potent. It is patently the recreation of actual experience. And the poet characterizes its action at the end as symbolic, which is to say charged with a strange mode of experiencing that points to a beyond, the symbol being an emotive known reality that suggests an unknown that cannot be grasped as a concept.

The experiences he writes about in *Tintern Abbey*, which also were recollections from scenes actually observed, are quite different, “The landscape with the quiet of the sky.” These lead to a mystical awareness, which he characterizes as “another gift”, in which we are led on “gently”,

Until, the breath of this corporeal frame  
 And even the motion of our human blood  
 Almost suspended, we are laid asleep  
 In body, and become a living soul.

A soul has life without sense-reality. I was on the point of summing up by noting that to obtain his sublime imaginative effect he piled sense-impression upon sense-impression, quality upon quality in a vast accumulation, whereas the mystical experience is a thing of pure spirit without other content than itself. No sooner had I

written this sentence than I was shocked to recognise the final tautology. The word "spiritual" has gathered associations of Christian beliefs and attitudes in its progress through the centuries. It has come for instance to indicate a dual view of the universe. But if one strips "spirit" and "spiritual" of their theological and community associations, the actual, uninterpreted experience can be nothing other than mystical, concerned with and influenced by neither sense-experience, imagery nor thought. It is a fourth mode of experiencing.

I avoided dealing at length in my papers with imagination, or other aspects of Julian of Norwich and Eckhart than their mysticism since to do so would have been irrelevant. I indicated in them that my aim was to show powerful imaginations throwing up mystical experience in Julian, and mystical experience influencing Eckhart's theology. In both papers I was interested to look at this natural mode of experiencing in living individual situations, acting according to its unchanging nature, modifying the environment in which it appeared far more than being modified by it. This is the way in which one expects instincts to work—as I see it, an important consideration, that deserves more attention. My eye was on this, rather than on Christianity, which apart from this was irrelevant to the theme, but not in consequence to be denigrated.

KATHARINE M. WILSON

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## Comment

### Two reactions to *T. to T.*

As a former scientist who works for the publishers of *Theoria to Theory*, I am moved to send you a few comments on the content of the journal, and I hope you may find them helpful. I should make it clear that these views are my own and not necessarily those of my colleagues in Gordon and Breach.

I enjoy reading *Theoria to Theory*, but I feel that its contents are too diverse and occasionally verge on the superficial. I doubt that in its present form the journal can really be compulsive reading for the professionally qualified thinker, whether he is a theologian, philosopher or scientist. Would it be practicable to include more articles by leading scientists or accounts of discussions between them and members of your group, to emphasize that first-class scientists do have an understanding of and opinions on the parascientific and philosophical questions which *Theoria to Theory* continually poses? I have in mind such contributions to the journal as 'The Neural Basis of Conscious Decision' by John Griffith, and the discussion with Jacques Monod. By publishing more such material, you would not provide more answers to your questions—you would probably find even more problems to discuss. But you would almost certainly illustrate that many research scientists of high calibre do actively appreciate that there is more to their work than conventional extension of the frontiers of knowledge. For example, the first-class physicist must today have feeling for metaphysics, although he may have little philosophical knowledge and no religious faith, and at least know of the existence of parapsysics, although he may discount Kirlian photography and psychokinesis.

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In my view, *Theoria to Theory* could usefully develop into a journal which scientists read to gain insight into how their colleagues see problems of their work that are barely covered in their formal research papers, and which philosophers and theologians read to gain insight into current scientific work that bears directly on their deliberations. Readable though the journal undoubtedly is, it probably provides at present too little of substance to make it a natural publication to find in the library of a university faculty or of a research laboratory.

CHRISTOPHER T. RIVINGTON

*The Flint Howl  
Great America  
Warr  
Herts*

I have been looking again at some of the recent issues of *Theoria to Theory*, and am much impressed by the range of subjects covered; and it is no ground for criticism that I find some of them hard to follow—e.g. the one on physical and biological time. Of all the periodicals that descend upon us, *T. to T.* is the one we most look forward to and devour most avidly. But on re-reading some of the Discussions I realize how superficially I have studied them in the first place, and that I must obviously have another go. The one which appealed to me least is the one about *Shardik*, but that is because I had already tried to read the book. I loved *Watership Down*, but the characters in *Shardik* did not come alive for me, and I found it rather boring and in places repulsive. I felt that Adams had over-reached himself in setting out to be another Tolkien.

At the beginning of the discussion about Time there is a reference to John Bennett. I suggest that you ask Bob Smith to follow up his own remark with a major article.

What I do admire about *T. to T.* is that you really keep control.

**and have not allowed it to become an outlet for the people who write theses or deliver lectures and long to see themselves in print.**

**May you keep your full head of steam for many more years!**

**DICK MILFORD**

*1 Kingsman Lane  
Shaftesbury  
Dorset*





## Comment

### Changes of consciousness

In the Discussion of this in *T. to T.* Vol. 10 No. 4 Owen Barfield says "We have to watch our language rather carefully on this subject." Would that Margaret Masterman shared O.B.'s caution!

Is it not common knowledge that priest-kings are the rule rather than the exception in ancient cultures? As for Tutankhamen's relics as a source of Sekeeta's experiences in Joan Grant's *Winged Pharaoh*, this is nonsense, and not only because J.G. had no interest either in writing (novels or anything else) or Egyptology at the time she tried to psychometrize a scarab for a sick friend; from which, by dribs and drabs, the book developed. The story is sufficiently told in her *Time out of Mind*.

During the twenty years of our marriage I made a study of "I to I" identification and conclude that each individual has several hundred previous personalities with any or all of which identification is in theory possible. This involves a shift in the level of consciousness which in turn requires an extra dimension within which each level has its own space-time field. To that extent a shift may amount to a change of "world".

CHARLES BEATTY

*Ghuznee House  
Hart Hill  
Hythe  
Hants*

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*Theoria to Theory*  
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## Sentences

### From Gerard Manley Hopkins

#### GOD'S GRANDEUR

*The world is charged with the grandeur of God.  
It will flame out, like shining from shook foil;  
It gathers to a greatness, like the ooze of oil  
Crushed. Why do men then now not reckon his rod?  
Generations have trod, have trod, have trod;  
And all is seared with trade; bleared, smeared with toil;  
And wears man's smudge and shares man's smell: the soil  
Is bare now, nor can foot feel, being shod.*

*And for all this, nature is never spent;  
There lives the dearest freshness deep down things;  
And though the last lights off the black West went  
Oh, morning, at the brown brink eastward, springs—  
Because the Holy Ghost over the bent  
World broods with warm breast and with ah! bright wings.*

---

*As kingfishers catch fire, dragonflies draw flame;  
As tumbled over rim in roundy wells  
Stones ring; like each tucked string tells, each hung bell's  
Bow swung finds tongue to fling out broad its name;  
Each mortal thing does one thing and the same:  
Deals out that being indoors each one dwells;  
Selves—goes itself; myself it speaks and spells,  
Crying What I do is me: for that I came.*

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*I say môre: the just man justices;  
Keeps gráce: thát keeps all his goings graces;  
Acts in God's eye what in God's eye he is—  
Christ—for Christ plays in ten thousand places,  
Lovely in limbs, and lovely in eyes not his  
To the Father through the features of men's faces.*

---

*THAT NATURE IS A HERACLITEAN FIRE  
AND OF THE  
COMFORT OF THE RESURRECTION*

*Cloud-puffball, torn tufts, tossed pillows<sup>1</sup> flaunt forth, then  
chevy on an air—  
built thoroughfare: heaven-roysterers, in gay-gangs<sup>1</sup> they throng;  
they glitter in marches.  
Down roughcast, down dazzling whitewash,<sup>1</sup> wherever an elm  
arches,  
Shivelights and shadowtackle in long<sup>1</sup> lashes lace, lance, and  
pair.  
Delightfully the bright wind boisterous<sup>1</sup> ropes, wrestles, beats  
earth bare  
Of yestertempest's creases;<sup>1</sup> in pool and rut peel parches  
Squandering ooze to squeezed<sup>1</sup> dough, crust, dust; stanches,  
starches  
Squadroned masks and manmarks<sup>1</sup> treadmire toil there  
Footfretted in it. Million-fuelèd,<sup>1</sup> nature's bonfire burns on.  
But quench her bonniest, dearest<sup>1</sup> to her, her clearest-selvèd  
spark.  
Man, how fast his firedint,<sup>1</sup> his mark on mind, is gone!  
Both are in an unfathomable, all is in an enormous dark  
Drowned. O pity and indig<sup>1</sup> nation! Manshape, that shone  
Sheer off, disseveral, a star,<sup>1</sup> death blots black out; nor mark  
Is any of him at all so stark  
But vastness blurs and time<sup>1</sup> beats level. Enough! the Resurrection,  
A heart's-clarion! Away grief's gasping,<sup>1</sup> joyless days, dejection.*

*Across my foundering deck shone  
 A beacon, an eternal beam. <sup>1</sup> Flesh fade, and mortal trash  
 Fall to the residuary worm; <sup>1</sup> world's wildfire, leave but ash:  
     In a flash, at a trumpet crash,  
 I am all at once what Christ is, <sup>1</sup> since he was what I am, and  
 This Jack, joke, poor potsherd, <sup>1</sup> patch, matchwood, immortal  
     diamond,  
     Is immortal diamond.*



## Notes on contributors

OWEN BARFIELD read English at Oxford just after the first World War. For most of his life he has practised as a solicitor, but with a continuing interest in changes in the meanings of words as illuminating the evolution of consciousness. Among his books are *Poetic Diction*, *Saving the Appearances*, and *What Coleridge Thought*.

COLIN BLAKEMORE, last year's Reith Lecturer, holds a research fellowship from the Royal Society. He is pursuing research in the Department of Physiology in Cambridge on the brain mechanisms which underly vision in animals and man. His book "The Mechanics of Mind", based on the Reith Lectures, will be published later this year.

MARGARET BOTTRALL read English at Lady Margaret Hall, Oxford and Yale University. She teaches for the English Tripos in Cambridge, is Fellow Emeritus of Hughes Hall and acting chairman of trustees of Lucy Cavendish College, Cambridge. Her publications include books on George Herbert, and Autobiography in 17th century England, and she has edited Case Books on Blake and Gerard Manley Hopkins in the Macmillan series.

R. B. BRAITHWAITE was Knightbridge Professor of Moral Philosophy at Cambridge. Author of *Scientific Explanation* (1953) and *An Empiricist's View of the Nature of Religious Belief* (1955).

ALBALUCIA CALAD DE ROSERO was one of the first three women graduates in Accountancy in the University of Antioquia, Colombia. She is now studying English in Cambridge.

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KATHLEEN RUSSELL is a choreologist who teaches part time at the Benesh Institute of Choreology and is secretary of their technical committee. She trained for three years with Marie Rambert.

JOHN DAVY studied Zoology at Cambridge and Freiburg: was science correspondent of the *Observer* from 1953 to 1969, and has been Vice-Principal of Emerson College, Sussex since 1969.

NICK HUMPHREY is an Assistant Director of Research at the Sub-Department of Animal Behaviour in Cambridge. Originally a neurophysiologist, he is now concerned with broader issues to do with the evolution of mind.

JOHN KING-FARLOW was educated at Oxford and Stanford, and is now Professor of Philosophy at the University of Alberta. He is Vice-President of the Canadian Philosophical Association, and Executive Editor of *The Canadian Journal of Philosophy*. His books include *Reason and Religion* (London 1969) and *Faith and the Life of Reason* (Dordrecht 1972). He has published poetry in *Poetry* (London and New York) and in a pamphlet *The Dead Ship* (Advent Books, London 1968).

MARGARET MASTERMAN studied French language and literature at the University of Paris and Moral Science at Newnham College Cambridge. She is Director of the Cambridge Language Research Unit, and has been a lecturer in the Moral Science Faculty in the philosophy of language. She is Pro-President of Lucy Cavendish College, Cambridge.

MICHAEL MORGAN is Lecturer in Experimental Psychology in Cambridge. His principal interests are in animal learning, the development of social behaviour in animals, in human visual perception, and in cerebral dominance and handedness. His forthcoming book, "Molyneux's Question" (C.U.P.) is concerned with philosophical and psychological issues in the relation of touch and vision.

**JONATHAN WESTPHAL** studied philosophy at Harvard and the University of Sussex. He teaches at the British Campus of New England College and at Emerson College, Forest Row, Sussex.

**YORICK WILKS** has worked for some years on problems of natural language structure and artificial intelligence at Cambridge, Stanford, U.S.A., and now the University of Essex, where he is Reader in Theoretical Linguistics.



## Note on cover design

*The cover design for this number is by Bob Smith. Kathleen Russell has supplied the following note explaining the Benesh Movement Notation.*

Bob Smith's cover design shows one bar from Act II of *Giselle*. (Music by Adam, choreography by Perrot and Coralli). The top stave shows the melodic line, the bottom stave the dance movements written in Benesh Movement Notation. Between the two staves is a pin-figure drawing of one of the postures that the dancer moves through in the short extract.

The Benesh Movement Notation is a kind of conventional drawing not only of the postures but also of the movement into the postures. The stave gives the height from the floor in terms of the dancer's own upright body. Thus the bottom line of the stave is floor "height", the first line up is knee height, the middle line waist height, the next line shoulder height, and the top line the height of the top of the head.

The postures and movements are written as from behind the dancer. For postures of straight limbs it is only necessary to record the position of the hands and feet. For bent limbs, as well as the position of the hands and feet, the positions of the bent knee and/or elbow have to be noted. A bend is always recorded by some kind of cross: bends and twists in the back and head fill the whole of one space in the stave, bends of elbows and knees are smaller than one space of the stave.

There are three different signs used for hands and feet, and three different signs used for bent elbows and knees.

The sign for "level with the body" (usually referred to as "level sign") is a horizontal line for hands and feet; for bent elbows and knees a cross formed on a horizontal line. A limb is "level with

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*Theoria to Theory*  
1977, Vol. 11, pp. 147-149

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the body” when it is to the side, that is when it is in a plane defined by the spine and shoulder girdle for the arms, and by the spine and hip girdle for the legs. If you were to stand against a wall so that the whole of the back and the limbs were all in contact with the wall, any position of the limbs that maintained contact with the wall would be described as level with the body.

The sign for “in front of the body” is for hands and feet a vertical line; for bent knees and elbows a cross formed on a vertical line. A limb is “in front of the body” when it is in front of the “level” plane described above.

The sign for “behind the body” for hands and feet is a dot; for bent elbows and knees a cross like a multiplication sign. A limb is “behind the body” when it is behind the “level” plane described above.

When recording positions and movements, the “level” plane (in effect) becomes the plane of the paper. In the example of standing flat against a wall, the position of the limbs could be recorded exactly by noting the location of the hands and feet and any bent knees and elbows as they appear on the wall. For positions outside this plane, the co-ordinates necessary to fix the position exactly are given by the horizontal distance from the centre line of the body as seen from behind, the vertical distance from the floor, as shown by the stave lines and spaces, and the fixed length of the limb.

### THE EXAMPLE SHOWN ON THE COVER

Before the bar line the second of two running steps is shown (there wasn't room for the first!) During the running step the arms sweep down to a point about half way between the waist and knees. Directly after the bar line (on the first beat of the bar) the dancer is in mid leap, in the posture shown in the pin drawing; the upper back is bent back, the head is turned to the dancer's left. The dancer lands as the second dotted crotchet of the bar begins. As she lands, the head, back and arms don't change their position, so they are not recorded. She lands on the left leg, with the right leg bent behind (in the position known as “attitude”.)

Unfortunately there wasn't room on the cover for a longer extract, or else it would have been possible to show a fairly common but interesting relation between dance and music reiterations. The music repeats a two bar holon (with variation), the dance movement repeats a one bar holon (with variation) so that in the bar immediately following that shown on the cover the music is different from that in the example, but the dance movement is the same as that shown in the example.

In this particular example alternate leaps are aligned with a sforzando chord. The dancer alternates between facing the audience, and backing the audience on the leaps; those leaps facing the audience are aligned with the sforzando chord, the leaps with the back to the audience are aligned with flowing quavers. This is an example of a layered pattern, the music and dance each forming their own reiteration patterns, and combining to form a further pattern.

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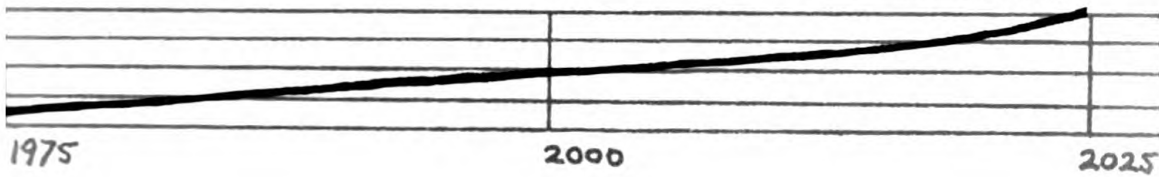
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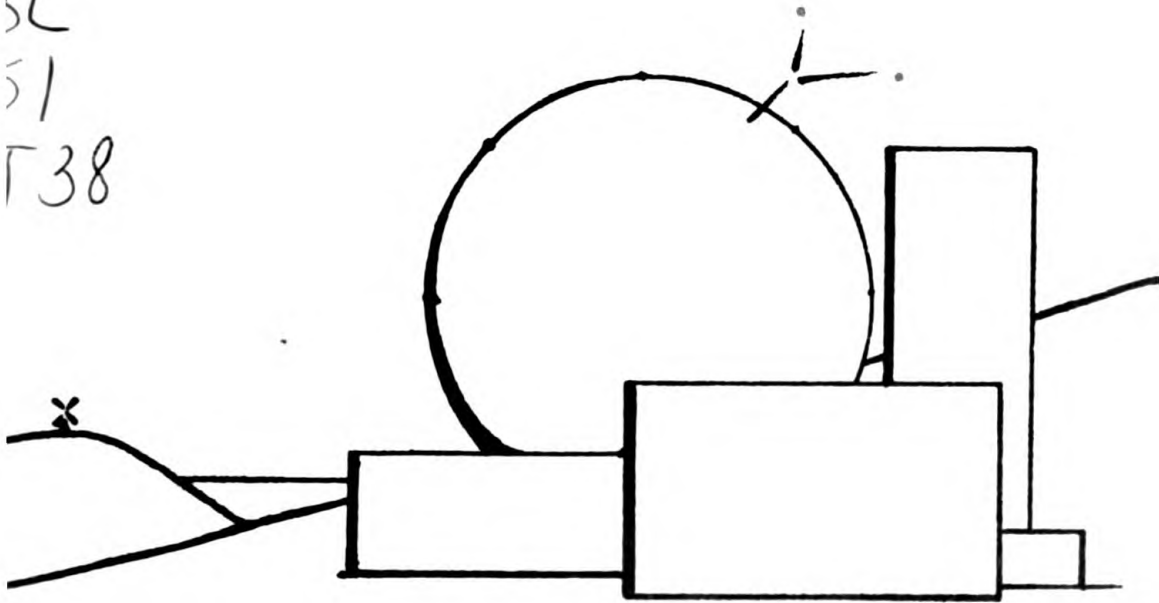
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## Editorial

In this number we have a discussion on some of the problems over whether this country should go ahead with a policy of developing nuclear energy for peaceful purposes. One reason for carrying this was that we were asked to sign a copy of the open letter to President Carter which the "People for a non-Nuclear World" were about to publish in the national press in May. We thought the case made in this letter was too simple, but we did not just want to be negative about it, so decided to hold and publish a discussion of our own. As participants we invited Professor John Butterfield, who was concerned with medical investigations during the nuclear tests of the 1950's, Sir Kelvin Spencer, who was Chief Scientific Officer at the Ministry of Power at the time, and Jim Garrison, who is concerned with research into problems of nuclear policy for the Jesuit Order in the United States.

Our interest is, of course, partly that of any responsible citizens over what is one of the most difficult policy decisions our Government has to face. But we were not just concerned to produce another mini Windscale enquiry. We think our discussion uncovers a question of more general concern over such enterprises, which is why we have called it "Research and Non-Research in Nuclear Energy". This is the difficulty of prediction, not seeing, when tests were made in the 1950's, what the problems of risks and particularly over waste might be. There is also the problem of the interpretation of statistics and that of interests working against as well as for getting the relevant research done. Moreover, a continuing concern of *T. to T.* has been the question of proper and human uses of technology. If waste from nuclear processing is indeed presenting a threat to the environment, then what about alternative sources of energy? "Alternative" is a word used of "alter-

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native technology”, “alternative culture”, “alternative London”. Peter Harper wrote two articles on “Soft Technology” in *T. to T.* VIII ii and iii in which, among other such technologies, he mentioned power from windmills. He was, however, only seeing this as one of the devices which were being suggested by people who were dropping out of the mainstream of our technological society. Now its development is being advocated as a serious contribution to meeting the energy crisis (see Martin Ryle’s article in *Nature*, May 12th, 1977, “The Economics of Alternative Energy Sources”, and the pamphlet “An Alternative Energy Strategy for the U.K.”, edited by R. W. Todd and B. J. N. Alty, June 1977) and a strong case is being made for government sponsored research. An advantage of wind turbines is that the wind blows most strongly in the winter when the demand for electricity is strongest. Calculations of what the energy gap is likely to be around A.D. 2000 vary considerably from authority to authority—another instance of the difficulty of prediction—and on some of these calculations any feasible nuclear energy programme would fall grossly short of filling the gap. Thus, even given the desirability of a nuclear energy programme (which can be challenged unless there can be more assurances that the problem of waste can be satisfactorily tackled), there is an overwhelming case for the development of “alternative” sources in a serious sense.

\* \* \* \* \*

We also carry a review article of the widely publicized book *The Myth of God Incarnate*. The main impression the book leaves on us is its philosophical poverty. It is an in-group discussion among theologians who want to see how they can go on using traditional Christian language when they have cut away the metaphysical supports that this language has had in the past. Sometimes this leads them to persuasive definitions, using a word in a different sense while carrying over the emotional associations of the older sense. This may be legitimate if you say it is what you are doing, but it is not legitimate to say this is what the word “really meant”. An instance, not from this book, is given in “Life against Death: the Psychoanalytic Meaning of History” by Norman O. Brown:

“The question confronting mankind is the abolition of repression—in traditional Christian language, the Resurrection of the Body” (p. 307). “The resurrection of the body is a social project facing mankind, and it will become a practical political problem when the statesmen of the world are called upon to develop happiness instead of power, when political economy becomes a science of use-values instead of exchange values—a science of enjoyment instead of a science of accumulation.” (p. 317).

What the authors of *The Myth of God Incarnate* indeed do is challenge the triumphalism connected with the uniqueness of Christianity as based on theological arguments which no longer commend themselves. In this they have absorbed the negative side of modern critical thought. A negative attack can attract publicity and is easier than the work needed to arrive at a positive alternative. The alternative suggested in their book is imaginative myth. But the authors show little readiness to struggle with the philosophical question of the truth behind its interpretation. This is an old question; the Epiphany Philosophers, the group which launched *T. to T.* was struggling with it twenty years ago in a series of broadcasts. We are publishing (with permission) part of one of these, “The Problem of Religious Belief”, since this was concerned particularly with the question of the interpretation of myth, and it indicates some of the lines of thinking and hard empirical investigation which need to be undertaken; what about the theologians doing some of it?

\* \* \* \* \*

In the next numbers we shall have further articles pursuing the discussions of the foundations of language started last time.





## Discussion

### Research and non-research in nuclear energy

JOHN BUTTERFIELD, KELVIN SPENCER and JIM GARRISON,  
with representatives of the *Theoria to Theory* Editorial Group (Q).

K.S. I think we'd like to hear from you, Dr. Butterfield, something about the medical aspects of nuclear waste. I'll tell you something about my background. I was a scientific civil servant in the Ministry of Power when the two bombs were dropped. At the time the decision was taken to drop these bombs, Churchill, Attlee (as stated in his autobiography) and Truman did not know that there would be any harmful side-effects. Since then three of the major biological effects which have come to light are cancer, mutagenic effects, and heart disease. These have been played down very much, and you get the top people in the nuclear energy lobby shooting the line that because they have a good record on accidents and safety during the last two and a half decades in which we've had a civil nuclear energy industry in this country, because of a good two and a half decades of good behaviour, all is well. Now you'll know that the latency period for morbidity and mortality caused by exposure to radiation can be of the order of thirty years. So that to say that nothing much has happened in twenty-five years doesn't imply that we need not worry. Also, one of the most dangerous man-made substances which is a by-product of nuclear energy is plutonium, which didn't exist until man made it. When plutonium gets into a very big fire it then becomes vaporized and you get particles of about one micron size, which go into the alvioli of the lung; you can't detect them from the outside. The radiation has a very long life. All you know is that

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you had a whiff of fumes of burning plutonium and twenty or so years later you get lung cancer.

*J.B.* I suppose I'd better give you my background too. I was originally interested in burns, and I became involved in the flash burns from nuclear weapons dropped in Japan, and from there became involved in the nuclear weapons tests that were conducted in '52 and '56. The 1952 Operation Hurricane explosion was in fact fired in a small boat and simulated a sneak attack on a harbour, and of course the flash burn element wasn't very great. When the photographs and the film made were released, they revealed that the explosion was much more like the Bikini Baker test with the radio-activity being passed into the air and coming down as fall-out. So at that point I had to readjust my experimental design and take a greater interest in the effects of fallout. One very important feature about that particular explosion, which I think ought to be put in the record because it's equivocal in its bearing about what we're talking about, was that in this particular explosion which was in a small ship the fallout came back to earth volatilized on the metal of the ship. It was in fact locked up and largely biologically unavailable, so to say crystallized in iron filings, in very small particles of iron. The inhalation hazard from the fallout that we recorded in Operation Hurricane during the 1952 attack was, in the event, negligible. We did obtain samples of the fallout from the cloud, by a now very famous doctor flying an aeroplane through the cloud with filter paper on its wings. The main scientific question that I had to answer in those days was whether the iodine isotopes were present in the fission products on the ground, because iodine is an element which when made hot volatilizes, and the question was, would the fallout contain any iodine or would it go straight up into the outer atmosphere? I was able to show, and this was for the first time, that there was a substantial amount of iodine present in the fallout, as it's 20% of the total fission, and in the early days after the explosion that was quite an important thing to be able to demonstrate.

However, as I say, there is one element of a nuclear factory explosion which came out of the 1952 British tests which is, as far as I know, unresolved and I don't know whether it's even been

very much discussed. That is, if the explosion is in circumstances like the metal surrounding the ship and you get a fire of nuclear proportions and the metal of the factory traps the fallout and the plutonium, so just because of the circumstances of the envelope surrounding the explosion, the effects may be safer than if you just had it in a lightweight bomb-case. The metal around the explosion will, as it were, absorb some of the punishment. In the fifties one of our uncertainties about the effects of nuclear fission was we didn't know how local circumstances could influence the biological effects. Indeed, the circumstances may be those of a particular day. Let me tell you more about the particular explosion that I witnessed in '52 which exemplifies it again. We had an extraordinary wind shift sheer over the test site, and this was such that the fallout drifted first in one direction, until it got to a certain altitude, and then sheered in another direction, so we had a sort of zigzag radioactive cloud. Now, in exactly the same way, if you have an accident where there's heavy rain locally, it will almost certainly result in a lot of the radioactivity being trapped by the rain wherever you have your accident, and carried in high quantities into the local drains, whereas if the whole thing happens in dry, fair weather, it might deposit itself on the ground, at a much smaller distance away from you. I'm saying all this because one of the problems is prediction, and prediction is very difficult without experiment. We had no idea, when we were planning what happened in 1952, that the radioactive fallout would, in fact, be hardly biologically available at all to biological systems; we had no idea what was going to happen to the metal around the two plutonium cannonballs that were shot together. And that seems to me to be one of the most difficult parts of the whole debate.

*Q.* Well, it might have gone the other way, mightn't it?

*J.B.* It depends what you mean by the other way, and as I say, if you have an accident in some weather you have a different result from an accident in other weather. In other words, for any particular nuclear accident or explosion there is a surge of possible outcomes. We really need to know what the range of those outcomes is as part of the nuclear debate. Otherwise it is very difficult

to set risks against potential advantages. *If* the risks from ingesting fission products after a factory explosion are less than after a mistake in the venting procedure we need to know it.

*Q.* Have there been any other unexpected outcomes?

*J.B.* Oh, I'm sure there have. That happens to be the one I know about.

*Q.* What do you think about the problem of the risks produced by nuclear waste?

*J.B.* Well, I can't answer your question as satisfactorily as you might have wanted me to. It is clear that man is terribly energy-hungry. He is also incredibly casual in the face of risk. Not less than thirty-five or forty thousand people are dying each year from smoking; and they still go on doing it. Now the great difference between the radioactivity situation and the smoking is that in the latter case when they bury you you're not necessarily going to be a problem to the next generation if they don't want to smoke, so I think it's important to point out that these radioactivity hazards are taken by particular people but that they are a biological hazard over a longer term.

*K.S.* In the case of smoking, an individual may give it up, but in the case of actual environmental contamination we have no freedom to give it up at all.

*J.B.* Well, I wouldn't dispute that. What I think is rather difficult in this matter is the physical scale of the problem which I haven't completely appraised myself of. I don't know whether Sir Martin Ryle's windmills, coupled with double-glazing, solar heating, the "Friends of the Earth" approaches, will satisfy people. I've just been in China, and their economy is shored up by an oilfield in Taching in the North which will soon be producing as much oil as Saudi Arabia. So everywhere you look it's clear that man is very energy-hungry. I'm not really competent to answer the question of the size of the nuclear waste problem if, for example, it's put in glass at a geological fault in the bottom of the ocean and is rolled by geological activity into the earth core. I'm not really in a position to know whether the size of the risk there is worth accepting, but certainly very few people are happy to accept the risk of nuclear waste because of its long duration, unless there is fairly good evidence that there is possible research

progress. Another very important point is that we live in a nuclear world anyway. There is an enormous amount of background radiation from rocks, from radon in the atmosphere, from naturally occurring radiopotassium in our bodies, from cosmic radiation, from naturally occurring  $^{14}\text{C}$  and so on. In the fifties when we were first worrying about safety, in quite an arbitrary way it was assumed that doubling the background radiation would be safe.

*K.S.* May I get you to say something following on what you said? You pointed out that there is already a lot of background radiation. I don't know whether you followed any of the research reports of the National Radiological Protection Board?

*J.B.* I have, indeed, yes.

*K.S.* I wonder if you have got report no. R 24 by G. A. M. Webb because this is a disgraceful bit of non-science and yet it has the imprimatur of the National Radiological Protection Board, a member of which, Sir Edward Pochin, is one of the assessors to the Windscale enquiry. Now this report is unscientific and disreputable. It assumes that the total background that we are now subjected to is 100%. Then by making a great number of assumptions the Report states that that portion of the radiation which is coming from the nuclear power stations and reprocessing plants is .07%. Now why this is scientifically disreputable is that the probable error by the time you get all the assumptions you make is far greater than .07%. For instance, one comment on the 100% to which that unmeaningful .07% is related is that the 100% includes 13.5% due to medical irradiation. Yet some of us endure much more medical radiation than others—some endure none. And the concept of an "average radiation exposure" for the population as a whole is meaningless because of the varying types of radiation, and the different routes followed by radioactive contaminants in the environment and within the body. Yet this disreputable report was not only issued under the imprimatur of the National Radiological Protection Board, but it was one of the few papers they put to the Flowers Royal Commission, and the .07% figure I criticize was quoted with approval in the Annual Report of the Atomic Energy Authority for 1974/5.

*J.B.* I think it is very important to remember that the sum of

natural radiation which I think came to 0.3 rads. per week was based on the average radiation and didn't take any cognisance of the fact that some people may not have any dental or medical X-rays in their life, nor did it take cognisance of the fact that some people would be living in very much lower radioactive background areas. I am sure that it's like the man preaching that all sin is bad; I am sure we are in a very grave problem about radioactivity and I also accept the point that the errors and the individual variations are much greater than the power station figure suggests but I must confess I hadn't studied that report.

*K.S.* I wonder whether Dr. Butterfield will comment on the following: when a nuclear power station is working correctly, if nobody makes any mistake at all, it is well recognized that there is a certain discharge of radioactivity into the environment. This increases of course the total pollution, but admittedly only to a very small extent at present; although I derided a figure of .07% this is a small contribution. A certain proportion of cancer is due to background radiation. If we go ahead with an enlarged nuclear programme gradually, that proportion of background radiation will increase, if only to a small extent. If these statistics show a correlation between increased nuclear-generated electricity and increased incidence of radiation-caused morbidity, then about another decade will be needed to show that the correlation is causal. To be able to show that increase has got a health hazard, first of all you have to collect statistics, which will take about two decades.

*J.B.* Well, that certainly is true. I think the problem we're skirting round is that biology has not yet come of political age. The number of biologically knowledgeable people who have an influence on national policy has gone from very few, a number which included Lord Zuckermann, to a very small number indeed.

*Q.* All that you say about the statistical "non-science", as it has been applied in this field, is perfectly true and should be brought out into the light. There are also other facts, though, about differing people's differing sensitivity to radiation. A case is known to us of a patient with Hodgkin's disease who was given 30 times the lethal dose of radiation but did not die (at least not until some

time later, and of the disease) and so on. The trouble is that the people who are aware of all this are the people concerned about human health, whereas to get anything done, we are going to be dependent, not on the people who are concerned about health, but the people who are concerned about politics. It is to them, not to the doctors, that the point has to be rammed home that one acre of radioactive waste preserved even in glass is one acre too many: and when medical support for this political assertion is sought for, and because of the political pressures to do nothing, you tend to get the situation that the medicos who speak don't know, and the medicos who know don't speak.

*J.B.* It does seem to me that is really one of our major problems. It is interesting that Mr. Carter, who served in atomic submarines, seems to be more sensitive about this than many other political leaders, and it is a great truth that the full impact of the concept of biological variation, which comes to us as a concept from the statisticians and which is vital for Darwin's theory of evolution, has not really been absorbed by the political philosophers. The glory of individual variation is swept under the carpet by the desperate demand that all children are about the same; it's a very comfortable idea but incorrect. The notion of biological variation is making gradual inroads into the public consciousness. I agree with you that there are not many people who are in a position to say very much and there are not really so many places they can ventilate their views.

*J.G.* One of the things which has been coming out of the United States is the work of Sister Rosaly Bartel. She was the leading researcher in a New York State Cancer Research Institution, and she was studying the biological implications of nuclear radiation. Her conclusion, based on all the available data, was that one rad's exposure per year is the equivalent to one year's ageing. This is the subtlety involved in the debilitation of nuclear radiation. It just goes and incubates in your lungs, and then it can manifest itself in a variety of ways, including something you didn't mention before, leukaemia and even diabetes.

*J.B.* I am not sure that you ought to hitch it specifically to the lungs.



*J.G.* She was asserting that the debilitation could take the form of heart disease, cancer, leukaemia, diabetes or any variety of things.

*Q.* The thing they are hushing up about Windscale is leukaemia. It's not all the different forms of cancer which I would have thought it would have been.

*J.B.* Well it's the Strontium-90 story of bone seeking isotopes again.

*Q.* I have the feeling that people will learn from this by getting cancer rather fast.

*J.B.* Have you ever had a chance of reading Lord Ashby's Ditchling Park lecture of about two years ago, which was about the whole question of pollution, and the concatenation of events needed to get a significant improvement in a serious ecological problem? He took the Alkali Act as his example, pointing out that had the ICI factory making chlorine not dropped their chlorine on leaves of the trees of Lord Derby, who was in a position to speak in the House of Lords, and had there not also been a way in which you could get the chlorine out of the smoke by putting water through the smoke in chimneys, and so on, and had there not been enough people who had been to school and learnt some chemistry to produce an Inspectorate, then probably you would not have had the Alkali Act. Now in the case of radioactive waste I cannot escape the conclusion that John Hershey's book about Hiroshima produced a definite mutation in thought. Until then, people had been frightened of it but Hershey's report made it very difficult for thinking people to contemplate accepting nuclear war as an extension of their own country's politics. I think until then people had thought the army was for further expression of your politics. I don't think that's possible now. I do not think there has been a comparable startling event on the energy problem. The argument is with those who feel that western society, and indeed world society, is going to need nuclear energy as part of a bridging operation. Their argument is bound to be that as we haven't had a big accident yet we must do our best, and be careful, and hope we can get away with it. I hope, therefore, we will have to whistle for a very long time before we get some dramatic examples of

accidents from radioactivity. But much the most likely way will be through patient examination of vital statistics, the demonstration that the wind blows in this direction and in that direction from a radioactive power station, and that with the passage of time, many years, abnormal death rates from cancers which are attributable to radioactive material are down wind.

*K.S.* And you agree with my time scale, do you?

*J.B.* I am afraid the time scale is long, but that doesn't mean to say that you should not look at statistics down wind from nuclear power stations.

*K.S.* But what follows from this, and what I would like you to say more about is, that as a member of the Medical Research Council you bear some responsibility for this concept of the maximum permissible dose, which of course stems from international agreement.

*J.B.* Let me say straight away I do bear some responsibility, but as you know about Councils, members change and the members twenty years ago accepted the maximal permissible radiation dose and we are stuck with observing it until something happens to make us change.

*K.S.* What you and your predecessors are implying, when you say that the maximum permissible dose is so and so, is deciding for us how many deformed babies and what increase in cancer is permissible. Now as a simple minded man, I think that no increase, if we can avoid it, is permissible and I think, therefore, that the concept of a maximum permissible dose should go the same way as the previous concept of a maximum credible accident rate. I don't know if you remember the day when maximum credible accident rates figured very largely in the nuclear industry, and that's been thrown overboard by everybody, because they say that it is a concept that makes no sense. Now I put it to you that the concept of maximum permissible dose makes no sense, and the sooner the Medical Research Council states that, the more credit they will have with the general public.

*J.B.* My pause is because I'm trying to see how I can explain to you the current Research Council kind of difficulty. To re-examine the concept of maximum permissible dose will mean the

setting aside of some resources to do this. This is probably going to require either the re-examination of a lot of research information which will mean hiring people to do it, or more difficult, it may mean setting aside some money to do some more research on it. Now one thing is fiendishly difficult at the moment, and that is to find people to do research which is going to be expensive, adding information but not necessarily producing any startlingly new information: this is always the problem that the administrator has in getting the sort of statistical surveys that you and I have been discussing.

*Q.* This isn't very clever research. It's not the kind of thing you'd have to train for years to be able to look at. It's evident it's a silly concept. It just sticks out a mile what a silly concept it is. It's one of these things which is really a statistical formula and then they go and tag a piece of language on to it.

*J.G.* I think not only is it a ridiculous concept, but according to the information I have, it's flat out not true that there is any such thing as a maximum permissible dose. As I understand it, *any* radiation is potentially harmful. Without ozone in the upper atmosphere, the radiation coming from the sun would be harmful to living organisms.

*K.S.* Excuse me, I do think the Medical Research Council are on the spot. When you say you need a lot of research, frankly I do not agree with you. It needs common sense and uncommon courage from a research body, not more research.

*J.B.* Yes, well . . . .

*Q.* What Professor Butterfield means is that he can't do a flipping thing.

*K.S.* It's common sense that if we are doing anything which does increase cancer, we should not do it. We should not contribute to naturally occurring cancer if we can avoid it.

*J.B.* Yes, I can see that.

*Q.* Who made up this concept? Was it the medicos saying, "Oh, there is all this radiation in the atmosphere anyway, so obviously we can put up with a certain amount because we don't all die of cancer". What's the history of the thing?

*J.B.* I'm not really in a position to comment on the history, but my guess would be that there was a genuine and not unreasonable desire to explore the possibility of nuclear energy, either fission or fusion energy, and I suppose that the further this argument goes the more likely the fusion people are to become the Sir Galahads, rescuing us from the energy crisis. But in the fifties the Medical Research Council had atomic bomb explosions in Japan which gave some estimates of the acute load for men—about 450 rads. in a single dose. Bearing in mind that there was going to be a fuel problem, the Medical Research Council knew that they needed all the time they could get to examine its biological implications. Furthermore, they had to set up some rules for Marley at Harwell and the other radiation protection people, who needed to know the sort of levels at which people couldn't go on working.

*Q.* People were saying, then, that any dose is permissible, and the Medical Research Council came down and said, "Above this, no, it is not permissible".

*J.B.* It was an attempt to draw just such a line, and it was, as you say, obviously not necessarily completely safe—it was the permissible risk exposure. But at least the Medical Research Council said this is permissible and we may have to put up with it. But I think your point is well taken and it is time for review with the object of pushing the line downwards. As a member of the Medical Research Council I am ready to accept responsibility but at the moment I don't know of new evidence or pressure that is going to have a significant effect on the MRC's decision on where they draw the maximum permissible dose line. I don't know of any new evidence which is going to suggest that they should move it down. It was not intended that this should imply that it was a safe dose, but it was the dose that they felt they would allow. Maybe this is where such a body as Friends of the Earth may be able to help by a voluntary analysis of statistics. The MRC is going to need a piece of paper before it which has got some evidence which contests where the line is drawn.

*Q.* We have a friend, who is retired, who lives in the Windscale

area and his wife come from the district. They say that the local people know that people are dying of leukaemia; is this due to Strontium 90 and how does it get into the water at Windscale?

*J.B.* Strontium 90 is one of the long lived fission products from uranium. It persists a long time as a half life, therefore it is a tracer of where the fission products have got to in the last twenty-five years.

*Q.* Why has it caused leukaemia?

*J.B.* Well, it is of the same chemical group as calcium and so while the body can recognize the electron cloud around the nucleus it cannot tell the weight of the nucleus, so that it ends by putting the strontium into the bone along with calcium. And the bone calcium is very near the marrow, and that is where the radiation effect has its bearing on the cells that produce cancer in the blood.

I think it is up to your friends to work out what the prevailing wind is from Windscale and move down wind and do the age adjusted mortality rates for leukaemia and if the ideal result (that is what they got in Minnemata, the Japanese harbour, when the mercury poison was coming out in Japan—where the further you went away from the factory, the less the effect was) could be found in exactly the same way for Windscale, it would be highly convincing and everyone would have to say “Yes, that’s proved it”, if you could show that if the wind was coming from the south-west, the rate of leukaemia was 10—one mile, five—two mile, two—four miles, and so on down wind. You will also have to trace where people who used to live in that district have gone to, in case their leukaemias have later come out.

*Q.* What they would have to find out is whether they have the Strontium 90 type of leukaemia.

*K.S.* Less than 12 months ago the National Radiological Protection Board, because of the pressure of public opinion, started precisely the demographic survey you have described, and have gone to town saying “What wonderful people we are to have done it”, but they ought to have started it 10 years ago, and the Medical Research Council ought to have started it back in 1952.

*Q.* Is there any way of tracing Strontium 90 in dead bodies?

*J.B.* I suppose clever people might be able to do an analysis of their bone ash and find out how much radioactive strontium their bones were carrying.

*Q.* Even after cremation?

*J.B.* I do not know about after cremation, but I would not be surprised if you could take the ash when it is interred and test it for radioactivity; I think it is a very good question; you would have to ask the forensic medicine people.

*Q.* They put the bones into some sort of pulverizer.

*J.B.* Well in that case that kind of study could be made, and it would not need all the bones to do the analysis. If you can show from bones of the people who had lived down wind different distances from Windscale that there are various amounts of Strontium 90 in them, then surely you've got very convincing evidence of leaks.

*Q.* So if they are interred, they have got to give a bone to be burnt for testing.

*J.B.* This would be a good MRC kind of experiment.

*K.S.* Does Strontium 90 appear as a natural product?

*J.B.* Yes, in very very minute quantities.

*Q.* The trouble is that the local people are keeping mum because they are wanting employment.

*J.B.* You would be open to criticism if you traced where Danny Boy who died of leukaemia had gone to, but you didn't look at what had happened to all the others who didn't die of leukaemia.

*Q.* If you could show that the people who died of leukaemia had died of the Strontium 90 kind, then this would be significant whatever happened to all these others. But if you were tracing all kinds of leukaemia then it would not be significant. Our friend near Windscale says that there would be an awful lot of local politics against your doing this.

*J.B.* It is an irritating fact that whatever might turn up as Strontium 90 is much more likely to come from the processing plant at Windscale in the past rather than the very radioactive waste of the present.

*J.D.* I would like to ask a question. In a 1000 megawatt reactor, about ten billion times ten billion new radioactive nuclides are

produced every second. While it is theoretically possible to design a reactor with zero emission of this radioactivity, no one has yet done so. Some of the radionuclides come out of the reactor smoke stacks in gaseous form, and some leak out of fuel elements and are carried away into the ecosystem through the water cooling system. In every nuclear plant now operating radioactivity is escaping into the environment. The concentration of plutonium 239 and 240, for instance, in the sea near the Windscale discharge pipe is twenty-six times higher than that found in the waters around one of the Pacific islands used by the United States for testing nuclear weapons. In comparison to the open oceans where no testing has been done, the sea around the Windscale discharge outlet is 2600 times higher in plutonium content. This is a loss into the environment of a dangerous carcinogen that will be radioactively potent for several hundred thousand years. Isn't it a fact that this is true, that the caesium which penetrates the woman's ova, the iodine 131 which goes to the thyroid, the Strontium 90 that attaches itself to the marrow of bones, and the Plutonium 239 which locates itself in the lungs and reproductive system are carcinogenic and debilitating to the body?

*J.B.* In the case of Plutonium the radioactive disintegration produces a track which looks rather like a hawser compared to a piece of string, so that as it passes through the tissue it has a much higher probability of causing a break or a change in any of the nucleo-proteins which it goes past. This means that if this kind of element lodges in the ovary or the testes, you have a much higher probability of getting a mutation. Plutonium is about 100 times more dangerous than radioactive iodine.

*K.S.* If a pregnant woman is subject to background radiation, then her children may be perfectly normal, and their children perfectly normal, but if these grandchildren marries someone with the same recessive gene, it is not until then that one gets the effects.

*Q.* It is difficult to get people worrying about an effect that depends on a hypothetical marriage. Part of the horror is that radioactivity is long term and politics is short term. If you are going to take up the time of specialists, you have to show that something constructive can be done. When people say that we

know *a priori* that solar energy won't really help in the energy crisis, we know from the past that prognostications have so often been wrong. We are not allowed to say that the accepted view about oil, that it is a fossil fuel which will run out, may very well be false. We haven't got to be scared.

*J.B.* I think that is very important. In this particular emotive situation there are people trying to get nuclear programmes started in other parts of the world, and it is being said "Wouldn't it be much better if trustworthy people like ourselves were doing it?"

*Q.* I don't trust them, not because they are individually wicked, but because this serendipity is still going on.

*J.B.* The interesting thing is that the energy count comes up with different answers to the financial count. Sometimes it comes up the same, and sometimes it doesn't. I believe a big push to get more energy accounting done is the best way to start. I think the political people are more likely to be carried along by brand new information which is not coming back to them by Letters to the Editor; as on the very simple point of why do you talk about a permissible dose of radioactivity.

For a time I was chairman of the East Midland Economic Planning Council. We were going through a rather difficult time of switching from unrestrained growth, and I gave a paper at the Royal Society on "How Do You Bend the Exponential Growth Curve?" At the end of the day you have to change people's point of view. Changes of attitude are much more easily won over by the application of a new technique than by the intelligent coming forward with information about nuclear risks. There is an immediate resistance to influence from young people among old people. But if the young come forward with a new way of looking at things, well, that might get a different response.

*J.G.* I think one of the things that has been happening in the United States to bring down that exponential curve has been voluntary restraint on the part of the citizens. In the last two winters they have managed to turn these exponential curves, by people just keeping their thermostats down.

In the United States where the overwhelming percentage



of the economy is privately rather than publically owned, companies in the business of producing and providing energy from hydroelectric to coal, oil, and natural gas are all experiencing record profits. The companies involved in atomic energy production, however, are in serious financial trouble, even in spite of well over two decades of intensive federal subsidization. According to the Nuclear Regulatory Commission, of the 170 reactors planned or under construction as of June 1977, 145 have been deferred from one to four years, some indefinitely. In 1973, utilities ordered thirty-five new reactors; so far this year there has not been a single new order. Rather, since 1974, there have been twenty-nine complete cancellations of reactors already ordered. There have been many reasons for this, among them the growing opposition on the part of the church and the public as well as the coordination and increased sense of solidarity on the part of the anti-nuclear forces in the different parts of the world where the struggle is going on. The *fundamental* reason for the demise of the nuclear industry though is economic. An average reactor costs about one billion dollars to build, to say nothing of the cost of something like the fast breeder. The nuclear divisions of most of those companies involved in the nuclear field operate consistently in the red. Even a giant like General Electric, who with Westinghouse Corporation controls 70% of the world reactor market, recently threatened to pull out of the nuclear business because of severe and sustained financial losses.

The problems involved in nuclear power are *sui generis* in the field of technology. The further into this energy source scientists explore the *greater* the problems become rather than the more easily solved. It is not like other technological developments where over the years the bugs are worked out. In the generation of nuclear power you have a situation in which the industry is facing not only rising costs—in 1973, for instance, nuclear costs were running from 50–200% higher than estimated by the corporations involved—but a continued increase rather than diminishment in the problems to be solved, particularly in terms of the storage of the waste—all this in a plant that has to be operated at 100% efficiency to be safe. Nuclear power, therefore, is faced

with virtually unsurmountable technological problems in the context of soaring costs and the ever growing opposition of the public and scrutiny of the environmentalists.

As an indication that the problem of waste has not been solved, I was talking to the head of the Energy Development Commission of the United States and he agreed that it will not be at least until 1985 that they would even have a prototype, or model for solution to the containment of waste. The waste that is being generated is being put into temporary receptacles.

*K.S.* America still pays lip service to private enterprise, but in fact the exploitation of nuclear energy for both war and “peace” uses is largely financed from public funds. This is done by lavish research contracts to industry, ostensibly for defence work.

An important factor in the decision taken by Government in the early 1950’s was the need to diversify the sources of primary energy. Reliance on coal was thought to be unwise because coal mining could be interrupted by industrial action; and a quarter of a century ago North Sea oil had not appeared above the horizon, and imported oil contributed a much smaller proportion than now to total energy supplies. Hence there seemed good reason to develop nuclear energy which was represented as promising a clean and almost inexhaustible source. The first generation of nuclear stations were (and still are) a success—the “Magnox” stations. But the need, as seen by successive Governments, to reduce dependence on coal quickly led to the start of a second programme of nuclear stations—the AGR—prematurely, before operating experience and further research had prepared the ground. Furthermore, by then a “nuclear lobby” had come into existence: scientists, technicians and engineers who knew much about their narrow speciality but lacked wider experience. These AGR stations were pushed ahead relentlessly. In the result, they have proved less reliable, more expensive, and more time-consuming to build than the estimates on which Government made the decision. For instance, the over-run in construction time and cost of three of these AGR stations was given in Parliament (10 February 1977) as Wylfa: 41 months and £6m; Dungeness “B” 94 months and £104m; Hinkley Point “B” 43 months and £33m. Yet statements

are still made that the cheapest electricity comes from (selected!) nuclear power stations. If the over-run costs, and the R and D paid for by the taxpayer, were taken into account as they would be in a commercial concern, the true cost of nuclear electricity would be much greater.

The nuclear lobby assures us that nuclear energy is safe and will leave no legacy of long-life environmental pollution for generations to come. And they justify this by assuring us that R and D will turn up solutions to all the problems now known and yet to be discovered, and will do this in time.

The nuclear lobby has schizophrenia: unrealistic reliance on R and D in nuclear matters, and equally unrealistic disbelief in the possibility that R and D will enable renewable energy resources to be developed and harnessed in time to fill a postulated “energy gap” by A.D. 2000. Yet the atomic bomb itself grew from a pipe-dream to reality in less than a decade; and much the same is true of other developments such as the low temperature transport in liquid form of natural gas, and the exploitation of North Sea oil. Given the will and the resources in finance and brains, some of the renewable resources—waves, wind, geothermal heat, etc. have, in my view, a *better* chance of being successfully harnessed on a significant scale than has nuclear energy of being made safe for us and our descendants.

The “energy gap” with which the nuclear lobby frightens us as looming ahead is a product not of scientific forecasting but of something uncomfortably akin to scientology. It postulates exponential growth of energy usage from now until A.D. 2000, and assumes the lowest probable rate of increase to be 2% a year. According to Professor Weinberg of London University (*The Times* July 12) to fill the “gap” in A.D. 2000 with nuclear energy would, in multiples of the contribution made in 1975, be *half* that, or five times, or eleven times, according to three exponential growth rates: 1½, 2% and 2½% a year.

The credibility which the giants of nuclear energy gave to it in its earlier years has been eroded by their successors. Could it be that those innovating scientists and engineers had a wide background of experience to draw on, whereas their successors have spent so much time learning and practising a narrow discipline that they are woefully ignorant of wider issues?

## Discussion

### The problem of religious belief

R. B. BRAITHWAITE, ERIC HOPKINS and DOROTHY EMMET

*R.B.B.* The problem of religious belief? The trouble is, there are a terrible lot of problems all mixed up with one another. Where shall we start?

*E.H.* Don't let's talk about the problem in general. Let's start with some specific form of belief.

*D.E.* Of course, belief can be something we use quite simply, as when we say, "I believe it is going to rain in a few minutes. We'd better take the chairs in". Or it can be something much more complicated.

*E.H.* Let's take belief in its most extreme form: faith.

*D.E.* Surely religious faith as belief is not just an all or none state. Suppose a person who has had a strong unquestioning religious faith which he then has lost. He may come to a further stage when he is finding that a more critical kind of faith might be possible for him.

*E.H.* What's going to happen to him? What will happen is that gradually he will realize that his total doubts are as irrational as his total faith once was, and at the same time his attention will be drawn to ranges of fact which seem to him to require further investigation—ranges of empirical fact which naive materialistic philosophies of science tend to ignore. Worse still, they won't even realize that there's anything to investigate.

*R.B.B.* You mean things like parapsychology?

*E.H.* No, no; that's only a small part of it. People always

behave as if the only queer facts in the world are those investigated by parapsychologists. There are all the facts about asceticism. Why do we assume that dieticians have all the data for deciding how much food is required to support life? Why do we leave it to the Research Units to define the limits of human endurance to extremes of heat and cold? Why should it be taken as an axiom that man must be an aggressive and predatory animal, so that it is biologically impossible for groups of people to learn to live together in charity?

*D.E.* So you think there are a lot of things we don't know?

*E.H.* We know hardly anything. We don't know the basic principles of living as individuals, or of living in groups, or of sleep, or of growth, or of life, or of death. In fact all we know are things like Gauss's Theorem.

*R.B.B.* But can't you investigate queer things without dragging in religion?

*E.H.* I think the connection of this sort of investigation with religion comes in at two points. First, a great number of these ranges of fact are those which have been held to be important by religious people—in fact they've been held to be the most important facts *about man*. This is, of course, not surprising, for the religious tradition is much older than the scientific one, and it would be surprising if there were not certain pieces of wisdom which religious traditions have got hold of. The second point where religion comes in is very difficult to explain. The person who makes a sustained effort to do nothing more, really, than to admit of no barriers to scientific enquiry while interesting himself also in these ranges of fact in which religious people are interested, seems to end by getting habits of reacting—sometimes in quite trivial matters—which are disconcertingly like the ways in which religious people act. When this similarity of reacting has shown itself sufficiently strongly, it constitutes a reason for joining in with people in a religious tradition, which is quite independent of any process of affirmation. For example, there is that most unaccountable feeling of being completely at home in the house of a religious community, just where you might expect to feel most strange. Of course I don't want to claim that this is the only possible pattern of religious behaviour. All I do say is that it

provides a reason for joining in with the practices of a religious tradition which is congruous with the pattern. And it is a kind of reason which people who discuss the nature of religious belief never seem to allow for.

*D.E.* Yes, I'm sure what you are saying can happen, but you will find yourself joining with people who use certain expressions for making affirmations that *they* think important; and how are you to take *this* when you join in with them?

*E.H.* Yes, I quite see that such a person will have to go into the nature of doctrinal statements, but all I wanted to say was that such an approach doesn't depend on having any special attitude to them. Now let me ask you: how do you propose that people with my piecemeal approach should investigate the traditional doctrinal statements?

*D.E.* Perhaps we've tended to assume too much that the only approach to this problem is either that by way of deductive theory, or this very piecemeal approach where the patterns of behaviour begin to come out before you have really started to think about the problem of the existence of the traditional language. Many people will find themselves up against the problem of how to take the traditional language. Let's imagine someone going to morning service, and let us record the jumble of verbal impressions he might get. . . . "And that we should not dissemble or cloak them, before the face of Almighty God our Heavenly Father . . ."; "The Lord is my strong rock and my defence: My Saviour, My God and my might in whom I will trust, my buckler, the horn also of my salvation, and my refuge . . ."; . . . "And it came to pass after these things that God did tempt Abraham, and said unto him, Abraham, and he said Behold here I am. And He said Take now thy son, thine only son Isaac whom thou lovest and get thee into the land of Moriah, and offer him there for a burnt offering upon one of the mountains which I will tell thee of . . ." . . . "Then Jesus called His twelve disciples together and gave them power and authority over all devils and to cure diseases, and He sent them forth to preach the Kingdom of God and to heal the sick . . ."; . . . "The approach of Ascensiontide provides a good occasion for asking what religion is about. For all religion is a form of reaching upwards . . ."; . . . "Almighty and Everlasting

God who alone workest great marvels: Send down upon our Bishops and Curates and all Congregations committed to their charge the healthful Spirit of Thy Grace . . .”; . . . “The Lord bless and keep you. The Lord make His face to shine upon you and be gracious unto you. The Lord lift up the light of His countenance upon you and give you peace now and for evermore . . .”.

Suppose now someone remembers this series of phrases from what he has heard, and wants to find out what they mean. Almost certainly he will be referred back to a series of stories in the Bible. For instance, a primitive cosmological story of the beginning of the world; a story of how a nomad patriarch became uneasy about the institution of human sacrifice, and the story of an historic person who gave a charge to other historic persons to go out and heal people the causes of whose diseases we might describe in medical terms but which were then called devils. For the sermon he will be referred to a story where this same historical figure is described as being seen by a number of people ascending into the sky. For the words of blessing he will go back to an Old Hebrew source called the Book of Numbers, and the words suggest to him a picture of a sun emitting rays of light which generate strength in the bodies which absorb them: and in the context of the New Testament he will find this is called Grace. And so far, so good. The trouble is that when our man has been told about all this, then he might want to say “Yes I think I can see the kind of thing that comes into a service but why, at a point about two-thirds through, did some people take a half-turn and did we all say together, intoning on a single note, that we believed in it all?”.

*R.B.B.* Yes, it’s very strange. But most churchgoers don’t seem to find it so. Why it’s so strange is that in the case of most non-religious beliefs there is something pretty definite (call it a proposition) which is what is believed. Sometimes the proposition is one which is true or false as a matter of logic, but usually the proposition is an *empirical* proposition which is true or false as a matter of empirical fact. If I say “I believe that it will rain tomorrow”, what I am believing is that it will rain tomorrow—which will be true if it rains tomorrow and false if it doesn’t. I know what

is meant by the statement "It will rain tomorrow" because I know what empirical fact would make it true and what false. So there is something for me to believe or to disbelieve. But in the case of such a religious statement as "God created the World" what is it that is offered me to believe or to disbelieve?

*E.H.* What about taking it as a myth?

*D.E.* Let's look at that suggestion—but of course the notion of myth isn't at all a clear one.

*R.B.B.* What would you say about it?

*D.E.* What I want to say is that, however many senses can be given to the word "myth", there is this in common to all of them, that a myth is something which can't be taken at its face-value. Thus, in trying to make an analysis of the idea of myth, you always end up with two exceedingly unclear but related ideas: that of the *myth* and that of its *interpretation*. And this is why it is that when we consider traditional religious language, taken as a whole, people often feel inclined to say that it can't be taken at its face-value because it contains myths of which we have to find the interpretation.

*R.B.B.* Do you think we can talk of religious language *taken as a whole*?

*D.E.* I think we've got to try if we are to make a start on the problem. The kind of thing we've got to say is that traditional religious language is ancient, concrete, highly pictorial, so that there's likely to be a large gap between it and its interpretation. It is constantly said that we must take the language as symbolic, but this doesn't help unless we can say more about how it is symbolic. It is constantly said too that religious language tends to take the form of stories. But that doesn't help either, until we know how to interpret the stories. Of course a lot of these stories may originally have been told and taken quite literally (though now no-one would profess a literal belief in them)—stories like the accounts of the origins of the world based on genealogies of the gods. But if we look at the most important ones—important, that is, in the sense that they survive in religious use—they don't seem to be straightforward stories, they seem to be myths. When a story becomes a religious story and gets set forth in a liturgy, it



cannot be just taken as a literal story. To start with, imagery collects around it; it becomes stylized. While it may look back to something that happened in the past, this is not recounted only or represented only. The original events or stories become paradigmatic.

*E.H.* What do you mean by that?

*D.E.* I mean that the story becomes a way of setting forth and emphasizing some experience or pattern of life which has to be re-enacted in the telling of the story and worked out afresh in new settings in the lives of the people who enter into the liturgy. For instance, people might light fires in a ritual associated with the story of a Prometheus who stole the first fire. Thus the myth is supposed to empower those who hear it to perform an action analogous to that which it sets forth. But there is another sense as well in which religious myth is something which cannot be taken at its face-value. It not only sets out a pattern of action which can be copied, in a changed context, by the people who use the myth. Myths contain, as it were, metaphysical overtones in the sense that they set out dramatically certain convictions about themes like birth, death, guilt, reconciliation, deliverance, especially as they affect the life of a community, and we can try to see why this should be so.

*E.H.* The meaning might be something that you have to discover completely afresh for each myth separately. Do you think there is anything general you can say about the interpretation of myth?

*D.E.* There are two current theories widely held about the interpretation of myth: so obviously there are some people who think that something general can be said about it. First, there is the projective theory maintained by many psychologists, which holds that myths, like dreams, are imaginative projections of basic needs, fears and desires, and that myths can be completely accounted for in this way. The second theory holds that while there may well be a projective element in every myth, there is, at any rate in many myths, a cognitive element too which is given in a symbolic form. Thus for instance we can ask ourselves "What lay behind all the mythical stories of the Flood?"

*E.H.* I should say a flood. I don't think the interpretation of that myth is very difficult.

*D.E.* I daresay, but the fact remains that when we want to refer to that myth we don't say "a flood" but "the Flood". The localized flood which may have occurred in history becomes in the myth a universalized, metaphysical, retributive Flood. Thus the myth focuses attention, in a form in which it can influence the will and the feelings, upon something which may subsequently be discovered to have been an actual historical event, but it is an event which has come to express a universal human theme, for instance, deliverance.

In such cases it is fairly simple to find an interpretation for the myth. But in other myths, and above all in those rituals which pre-date myths and which are completed by them, the problem of interpretation is a great deal more complicated. A myth or ritual, for instance, may point to, and celebrate, events which have been the means of making some fundamental discovery, like the use of wheels, without ever saying what the discovery is. Then the problem of interpreting the myth becomes much more difficult. One line of approach would be to compare the myth in question with analogous myths in one of which the actual discovery is mentioned. And besides this, we also need in each case to try to see how the particular myth functions in the context of the society in which it appears.

*E.H.* Then your position is that some, at least, of the Christian religious myths, such as for instance that of the Resurrection, embody fundamental empirical discoveries?

*D.E.* Well, of course, that raises the question of what may have happened, not only its celebration in myth. In general I would prefer to say that *if* you believe that some parts, at any rate, of Christian religious language embody some discovery or discoveries presented in pictorial form, then there is a sense in which you can affirm the relevant myths. You are not only using these as a way of satisfying your psychological needs. But of course the difficulty is that in religious ceremonies we are confronted with symbolic language taken from the myths, not with the interpretations of the myths, and we have as yet no

clear criteria for getting from the myths to their interpretations. I think too that a further trouble about most theological language, as used for exposition or instruction, is that it is a mixture of a theoretical analytic language and the mythical language of the religious story, so that we don't know how to take it. We have to be prepared to find that there is a much longer and more tortuous way to travel from the religious story to its interpretation than either Christian apologists or social anthropologists will readily allow for. And we may have to be prepared to find in the end that some of the stories are in fact the projection kind of myth. Nevertheless, I have a conviction that some of them aren't only this. Perhaps, as you imply, this conviction must be owned to be a matter of faith. But it is a faith that invites us to investigate; not a kind of faith which precludes investigation by urging us, in all these difficult questions of interpretation, to rely on authority.

*R.B.B.* Of course all this about myths needs investigating. But there is a very serious difficulty which you have not sufficiently emphasized. These mythical statements, as you call them, are all made assertively, and sometimes, as in the creeds, we are expected to assert them too. But assertion involves belief. What on earth is the sort of belief which is appropriate to such assertions?

I learnt what "I believe" means in connection with statements which straightforwardly describe empirical states of affairs. I think my question can best be answered by approaching the whole subject from another angle? Why should religious statements be taken as describing anything at all? If they don't describe anything, believing them—whatever that may be—is not believing that what they describe is true.

*D.E.* Do you take the view that they only express feelings?

*R.B.B.* No, I don't think that's very plausible. The view that the primary function of religious statements is to express feelings—a view which can be put politely by saying that religion provides *consolation* and impolitely by saying that it's a *drug*—is the view taken by many people who are not religious and by a few who are, but it's not a view which would seem satisfactory to most religious people. But there's another possibility, more hopeful, I think. Statements are frequently made neither to describe things

nor to express feelings, but to proclaim intentions to behave in certain ways. If I say "I intend to visit Mr. Smith tonight" I am not using the sentence descriptively—to describe a specific "intending" state of my mind—nor am I using it to express any feeling. To intend to visit Mr. Smith is quite different from looking forward to visiting Mr. Smith. What I am doing in making the statement is telling you of my intention to do something. At least some theological statements can be taken as statements of a general intention. A person asserting that God is our Heavenly Father may be taken as to be proclaiming that he intends to follow a certain policy of behaviour—that of treating all men as his brothers. And if his way of proclaiming his intention is by making such a statement as "I believe that God is our Heavenly Father" he is using "believe" in a way which is in one way analogous to saying "I believe that it will rain tomorrow", in that, in both cases, his belief will commit him to behaving on suitable occasions in appropriate ways.

*D.E.* But where do truth or falsity come into this account?

*R.B.B.* What might correspond, for this sort of belief, to the truth or falsity of ordinary statements would be the sincerity or insincerity of the announcements of intentions. If a person really has the intention he says he has, his intention will be shown in his behaviour under appropriate circumstances—how, for example, he would behave if he met a man set upon by thieves on the road to Jericho. Behaviour will be the test of the genuineness of his intention, and hence of the sincerity of his "belief" in the statement by which he expresses his intention. Christianity, like all the moral religions, has always emphasized the relevance of the way of life led by the believer to the sincerity of his religious belief.

*D.E.* Might not a Buddhist have exactly the same policy for living as a Christian? If so, how would your view be able to distinguish their religious beliefs?

*R.B.B.* It's here that your stories and myths (or whatever you like to call them) come in. One can allow a secondary function for religious statements, that of expressing stories which are thought of as assisting the carrying out of the intended policy of

behaviour. It is an empirical psychological fact that many people find that they are better able to carry out a behaviour policy which is contrary to their natural inclinations if this policy is associated in their minds with thinking of certain stories, and in many people the psychological link is not appreciably weakened by the fact that the story which they associate with the behaviour policy is not believed but is only entertained in thought in the way in which the statements about fictitious characters which occur in novels are not believed but are only entertained in thought. This is shown by the enormous moral influence that has been exerted by such novels as *The Pilgrim's Progress* and *The Brothers Karamazov*. To take a theological example: I suspect that there are a great number of Christians who don't at all believe the ransom theory of the Atonement who, nevertheless, do sometimes think of the Atonement in terms of a story of an actual man A offering himself in the place of another actual man B who is in the power of a third actual man C, and who would take this way of thinking, which they would agree to be purely mythical, as being of assistance to them in their following a Christian way of life.

*D.E.* Do you really mean by "purely mythical thinking" pretending something is true that isn't?

*R.B.B.* My view is more sophisticated. It is not that the religious believer is acting as if he believed in the stories involved in his theological assertions: it is, on the contrary, that he acts in accordance with the policy which is proclaimed in his assertions. If a story which helps him to carry out his policy is associated in his mind with the theological assertion, so much the better; but the story's function is secondary. There is no pretence, since his course of action is one appropriate to the policy proclaimed in the assertion but is usually quite inappropriate to a belief in the story which he associates with the policy. For him the policy is the important thing: the story is only a psychological aid.

*D.E.* Yes. It is quite true that myths as I talked about them are so closely connected with practical attitudes that it's a real help to consider one function of them as being a way to announce

policies. Nevertheless I think they must have a further function—a cognitive one—and we must try to find out what that is.

*E.H.* If we describe theological language as either narrating myths or expressing assertions derived from these myths, we may be convinced that these myths cannot be explained simply as projections of human needs. This conviction, of course, can lead to faith—a faith that there really is something behind theological statements to investigate. But the disadvantage of this approach in our present state of knowledge is that it is very vague, and it is difficult to see what sort of investigation is being advocated.

An approach, which I personally favour and which also has its advantages and disadvantages, recommends a more definite kind of investigation, an investigation into those uncomfortable ranges of fact which the sciences, with their present procedures, commonly ignore. Such an investigation into religious material may well lead the investigator to discover in himself religious patterns of behaviour. But this is a piecemeal approach, and it might be said that it does not directly attack the problem of religious belief.

Another approach provides a pragmatic account of the use of religious statements in terms of announcing behaviour policies. Now this approach is important because it might be said that the use of every statement is to announce a policy, so that this analysis assimilates religious to other statements. But some religious believers will feel that they cannot be satisfied with a view which does not allow more room for an element of knowledge in religious faith.



## **African tradition in theatre and liturgy**

PEGGY HARPER

Theatre is communication: a company of skilled specialists actively convey an idea, or experience to a receptive audience by the use of dramatic skills. This is essentially the skill of acting which uses the voice in verse, speech and song, and the body in expressive movement and dance accompanied by music and enhanced by lighting and scenic effects. Dramatic presentations may bring together the full range of expressive arts as in African tradition where literary, musical, visual and kinetic arts are inseparable in performance; or the arts may have become emphasized in specialization as in the traditional theatre of the West with its distinct balletic, operatic and literary theatres.

All theatre is rooted in the celebration of religious ritual: in exploring or stating man's relation to the spiritual world. In contemporary Western culture many of the forms of theatre are totally secular in content and repetitively uncreative in form; but we trace its origin to the epic dramas of the Greeks which etched the heroic and tragic relationships between men and their gods: and the Morality and Mystery plays which preached the Christian message of the Medieval Church to illiterate congregations and celebrated the experience of a vital Christian culture. In India and other Eastern cultures the traditional theatre continues to express the relationship between the natural and super-natural in mythological dramas which give expression to an archetypal level of experience: man as he faces the Universe in which he finds himself with the traumas of life and death, the agony of suffering, the joy of release in the meeting of another being in

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love. The dramatization of such myths enables men to distance the weight and thrust of reality and gain a perspective on a level of experience of which the paradoxes can become unbearable if not clothed in the particularities of dramatic or satirical form.

Many African cultures offer a rich variety of myths which place man in his Universe, and legends which illustrate this in more immediate and comic terms. In the majority of African religions man is seen as controlled by spiritual beings or forces which both punish and protect and appear to express a tension between the spirits of earth and a remote transcendental sky God. These mythological histories voice the beliefs of various African cultures which collectively express the immediacy of the spiritual world. This is expressed in terms which convey attitudes which are fundamentally African. To me as a choreographer, these attitudes imply concepts of time and space. In my study of dance, I have found it possible to identify basic features which can be immediately recognized as African. Within this wide generalized framework there is an endless variation of form emerging from the vast number of diverse cultures and expressing distinct cultural attitudes towards space and time.

Throughout Africa the main formal emphasis in all dance is on the time element of percussive rhythm. A repetitive motor rhythm which relates the dancer to the earth on which he moves, a rhythm through which the weight of his body, his posture, his gestures, even his attention regularly returns to the earth as a statement of his continuous relationship with the earth as the source of life; and in many religious systems, the element of the all powerful mother in whose domain the ancestors and the earth spirits have their being. This is in sharp contrast to the resistance to gravity seen in the space bound gymnastic movements of Western dancers for whom rhythm is traditionally based on melody rather than on the physical shift of weight which builds into the repetitive motor rhythm of an African dance. I would go further to say that this central emphasis on rhythm applies to the full range of arts in Africa. Rhythm is the very material in which the aesthetic vision lives, breathes and has its being. In the theatre it is the vital point of relation for the arts of the voice and body. Thus the formal emphasis is different to that in a Western artistic experience.

The discipline in African dance lies in rhythmic precision, whereas in Western dance the performer is more concerned with creating exact geometric patterns in space. This rhythmic experience of time in African dance results in what I would describe as a sculptural use of space in which the spatial movement grows out of the time rhythm to form movements which are not designed to take up exact spatial positions but to pass through spatial shapes in accenting precise rhythmic patterns. Thus a choreographer should be sensitive to the spatial and temporal character of the art he is interpreting, or using as a springboard in creating new works. He must necessarily refer to traditional concepts of time and space in order to use the stage in a way that offers a celebration of a contemporary African experience. Obviously no vital form of artistic expression is culturally pure but continuously responds to extraneous influences, adapts to social change and new artistic trends, but the interpretation of these "foreign" influences should be recognized by the contemporary artist in terms of the essential elements of the original art form; as happens in a traditional village context, when the dance leaders add new elements to a time honoured dance and the members of the communal audience are sharply critical in judging their suitability. It is, for example, aesthetically disastrous to impose the unison of the team movement and the geometric ground plan of an English folk dance on a Yoruba traditional dance, in which everyone makes his individual creative contribution to the whole, while moving freely among his fellow performers: the point of relationship being the dancers' skill in following the rhythms of the drum.

In purely aesthetic terms it is understandable that leading thinkers in Nigeria are now calling for a return to the worship of the African Gods. With the popular civic Arts Festivals reaching an all high in FESTAC<sup>†</sup> there is a strong move towards the secularization of the arts which have been traditionally rooted in ritual; ritual is treated as a feature of entertainment with libations poured, incantations voiced and masquerades worn with little reference to their original meaning in order to provide a

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<sup>†</sup> The All World Festival of Black and African Arts and Culture held in Lagos 1977.

theatrical effect. The step from actual ritual to ritual drama which celebrates the rites of passages of the deities demands of the director a deep sensitivity to the meaning, and the rhythmic and spatial overtones of such an experience. Ritual dance seldom survives an abrupt transplant by a civic official as an "example of African culture". The horrors perpetrated as ritual dance on the patriotically coloured stages of Arts Festivals cry aloud for a return in sympathy and understanding to the essential intention of the ritual masquerade, the dance of the priest in possession and the arts of the diviner.

A formal alternative to a return to the inner experience which motivates the expressive forms of a specific culture is to move in the direction of abstraction, as I have attempted in building a foundation for my work in Nigeria theatre. This involves creating theatrical dance patterns by abstracting from the movement themes of a wide range of cultures and using the results dramatically with no reference to their ethnic origin. In this way the artist may regard the traditions as a springboard for the creation of forms to express the dramatic intention of his work. This is obviously not a conscious process of addition and subtraction but requires a mastery of traditional skills used with creative intuition in forming a new work. In this way it is possible to build a skill which could be called African rather than Igbo, Swazi or Yoruba, and could be regarded as an expression of the general move from the separation to the relation of cultures within a modern African state.

In a recent theatrical work I set out to create a dramatic setting for the dances, music and poetry traditional to a ritual society of a single culture in an attempt to solve the problems of staging ritual dances in a modern theatre for a cross cultural audience unfamiliar with the original form. In the process of rehearsal, the production grew into a celebration of the rites of passage of Ogun the Yoruba God of Iron, based on the ritual festival of Ogun in Ire-Ekiti. The poetry and incantations were so close to the original that the members of the cast insisted on a hen being sacrificed as part of the dramatic action. With the challenge coming from the Colloquium of Festac to artists in Africa to find their roots in the worship of African Gods, I find myself forced to re-assess the

concepts which I have expressed and the form I have used in my work. I am repeatedly surprised at how much more is expressed in a work than the artist consciously realizes at the time of creating it. Thus not only must a director be sensitive to the form he creates but the implications of the ideas expressed and its relation to the form.

What is the position of an artist who is a committed Christian working through traditional beliefs and traditions? I find that Orisa worshippers and Christians regard me with equal suspicion. Are there meeting points between their diverse world views? If so, at what level of experience and action? Is it my responsibility to attempt to relate them or simply to express one or the other?

The religious myths of all cultures are surely the collective wisdom of men courageously searching for meaning underlying the diversities of life. Mythology reveals depths of understanding of the human condition which gives to the seeker, particularly the artist, a priceless source of understanding and inspiration. I find that Christians in Nigeria are apt to underestimate the value of the traditional sources of the wisdom of their ancestors and so stand in danger of cutting themselves off from their historical and cultural roots. I suggest that this way lies spiritual sterility and psychological suicide. The myths and legends of Africa echo with the realities of the spiritual battle between forces of good and evil, man's fall from a state of innocence resulting in suffering, confusion and fear; the cyclical rhythm of death and resurrection; the flowering of new dimensions of life from the roots of despair and rejection. From a Christian evangelical standpoint this could be viewed as the groundwork or preparation for the Divine Revelation of Christ. I see it as providing a matrix of imaginative understanding which can bring fresh vitality to the experience of Christianity. For the Christian the revelation of the Gospels carries the power of supernatural love to renew all men and their cultures here and now and not in some remote heaven; and thus the Christian experience should breed insight and sympathetic understanding for beliefs growing from cultures differing radically from those of Western oriented Christianity of today. What are the meeting points which may enable Christians to relate to the world view presented by

the wealth of traditional African wisdom? We obviously agree at the most fundamental level with the vision of the immediacy and power of the spiritual world and that man is a spirit incarnate in material form. This concept gives to the earth as the element of our material life a sacred significance, and affirms the fact of life after death. There is no dichotomy between spirit and body in African tradition, nor in the Catholic tradition in which they are inseparable in earthly life and in the final resurrection which reveals man as complete in his body. Surely Christianity relates man to this earth even more securely than the African belief in reincarnation in which the spirit of a man discards old bodies for new in a cyclical process. The belief in reincarnation present one of the basic differences between Christianity and African religions, but a bridge may be found in the fact that both recognize a balance or tension between transcendental and immanent being. Within the three persons of the Christian Trinity, God is the transcendental Creator who relates to man as an immediate and loving Father; Christ reconciles the extremes as God and man; and the two are one in the life of the Spirit as the third person of the Trinity. Those who accept the saving power of the death and resurrection of Christ are brought into the living experience of this unity. Christians do not seek to escape the material but to live through it in the experience of the Incarnation, which offers the cycle of death and renewal in daily life. I suggest that the Christian world view centres on two immediate spheres as summed up by Augustine in the "City of God" and "City of this World": both of which relate life on earth to life after death—A man may choose to live in the former by faith through the acceptance of God's love or in the latter by placing the image of his own ego at the centre of life and so rejecting the divine life within him. In death he faces the result of his choice. The idea that Christian salvation is an upward linear pattern of escape from the earth, as Wole Soyinka would have it in his "Myth Literature and the African World" (Cambridge, 1976) misses the essential point. Christianity does not in fact present the world view of a particular culture, but Christ's Incarnation is the focal point in the history of the Universe for all Christians in that they may find their personal and hence

their cultural identity through Him. They must need accept and value themselves in their particular historical and cultural situation which can be “saved” or salvaged through them. I find a parallel in the life and work of an artist.

Christianity has been described from the rostrum of the Festac Colloquium as a foreign religion imported by the colonial powers of the West in their quest for political power. I do not wish to discuss this beyond to point out its wild inaccuracy, as Christianity flourished as a people’s religion in North Africa from the first century. It was from North Africa that Christian theology and mysticism was taken to Europe. However, the present expression of Christianity amongst the elite of Nigeria certainly feeds an impression of the foreign nature of their faith in the character of the music, songs and verses through which they praise God. The sooner the Christian Church in Africa becomes the Christian Church of Africa the better—which implies the meeting of Christ in African terms and through the expression of African arts.

The theatre offers a platform for the expression of the world view of the culture in which we live. As I have suggested, the theatrical expression of such concepts is essentially in terms of space and time. I have discussed the African sense of space in dance which I see as sculptural rather than geometrically linear, and the emphasis on the use of rhythm as the time element which binds the arts together. In religious ritual, space and time become sacred in that they house the sacraments, but possibly also in that the movements, words and songs of the celebrant create spatial and temporal patterns with power to convey spiritual energy to the participants. In Africa the design of a church which shapes the relationship of priest to congregation could reflect traditional spatial arrangements which would allow for empathy in a setting with familiar overtones. Similarly theatre space may be regarded as sacred. Through the authority of his skill the dancer-actor commands the space in which he stands and moves which gives him a power of communication. It follows that the way in which a choreographer designs the movements of the performers on the overall space of the stage, and the movements through which the performers relate are vital to the expression of the theme

of a work. Together with the rhythm of the voices these movements speak to the unconscious as much as the conscious understanding of the audience and may carry a real formative power. Thus it is important not to impose the spatial and vocal rhythms of unsympathetically foreign cultures onto a theatrical situation, as this can stifle talent and inhibit the growth of creativity. The proscenium theatre of Europe kills the creation of dance drama in African terms; and similarly the architectural shapes and musical rhythms of Western worship inhibit the growth of an African liturgy. Fortunately the stages of African theatres are now thrusting into the audience and bodies may be seen in the round and not as two dimensional figures in a Western eighteenth-century picture frame; and, with the development of the appreciation and understanding of other cultures, the theatre of the West is fast absorbing features from the traditions of Africa. In popular Western song and dance there is a growing awareness of rhythm; in the theatre there is a strong move towards using theatre in the round and thrust stages, and relating the arts of voice and body in performance. With the growth of a self-confident African Christianity, the tired Church of the West may find a source of renewed energy.

All forms of artistic expression are in a continuous state of change and exchange as new features are absorbed and the people accept unfamiliar elements into their lives. No culture is static and each has its own character emerging from tradition and history which are in turn deeply influenced by the physical circumstance of life. These physical and cultural influences are basic for the development of artistic form; they are the source of distinctive shapes and rhythms of relationships which find their expression in the specific forms of the theatre of a people.

As far as the ideas and themes expressed in theatre works are concerned, these too are rooted in a way of life. I would like to see the development of skilled Christian theatre in Nigeria. This could make a vital contribution to the understanding of the way in which events of the Old and New Testaments relate to African life and tradition and may be experienced in Africa. But it will necessarily grow out of a Christian way of life: a Christian community of people sharing a common life with the aim of "renew-

ing” the African Church through the use of the arts which express their brotherhood in Christ. But I do not think that individual Christian artists in the theatre should limit themselves to explicitly Christian themes. On reflection I feel that I must stand against criticism from my fellow Christians as I see no danger in exploring African mythology and ritual—the more insight we have into its depth of meaning, the nearer we shall come to a fuller understanding of ourselves and our spiritual experience.

In fact, the creation of Christian liturgies has begun in Nigeria, principally in the rural village communities of homogeneous cultures, where the rhythms of a talking drum may praise Christ as well as they may praise a traditional deity, and worshippers do not suffer inhibitions about picking up the rhythms in the movements of their bodies. Thus traditional arts may be renewed with a deeper intention rather than destroyed by the coming of Christianity. In an urban church with a cross cultural congregation the method of creating forms based on conscious abstraction from a range of African cultures may form a model. Again, the theatre may have set a precedent for the church.





## Teaching what comes naturally

TIM EILOART

A new type of teaching has emerged in the last thirty years. Students can be taught a variety of “natural” abilities such as body-language, creativity, relaxation, and social skills—how to deal with a bullying landlord or foreman. There may be no sharp division between some of these subjects. A course which teaches people to achieve, may include brainstorming sessions in which groups of people try to come up with ideas without criticism of each other’s suggestions; though brainstorming is really an approach to creativity. Dealing with your bullying landlord needs skills of body language; and moral perception needs the same grasp of shades of meaning as empathy, or for that matter, literary criticism.

Many of these skills have been taught experimentally, with considerable success, to small numbers of people. After an initial run of success the teacher starts to research on a new topic and, as a rule, the teaching is neglected. There are some exceptions: De Bono has sold a Thinking course to about half the secondary schools in Britain. Kohlberg’s work on moral perception appeals to teachers, and is a more usable set of developmental stages than those of Freud, Piaget or Erikson; in the 1960s McClelland’s work on the Need-to-Achieve had some effect on teaching in America and is now quite commonly mentioned in courses and text books. But although it is quite widely understood it is not widely taught. In this country ICI ran a few Achievement courses for middle-level executives and then stopped. It was reported that the people who really learned from the course found themselves stifled in ICI, and left. Among courses which have been used very narrowly, and

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by devotees of a system, are the Parent-Adult-Child teaching for delinquents or the mentally retarded. This was an offshoot of Transactional Analysis and probably the scepticism that people felt for T.A. would result in rejection of parent-adult-child no matter how effective such work is.

### BODY LANGUAGE

Body Language is the ways people communicate by position, gesture, expression, tone of voice, and involuntary movements. It has long been practised by actors but only recently have people made a deliberate study of the signs of harmony, unease, affection, interest and so forth. Much of the work has depended on the use of film or video tape which can be analysed frame-by-frame to reveal the synchrony in peoples' movements, the twitches that show alarm when some words are mentioned and so forth. As a result of studies of this type it has been possible to teach people to control their bodies in a way that produces better results for them.

For example, a young girl suffered from crippling shyness and anxiety. She had never been attractive to men and as a result of perpetual anxiety and rejection she was physically quite ill—her periods had stopped and she found difficulty in eating. During her treatment she would be asked, for example, to encounter a man in a café-setting. She would, as usual, wince when he spoke to her, turn away when passing him the sugar, smile stiffly if at all, cross her legs away from him and show him in another dozen ways that she was afraid of him. The scene would be recorded on video tape. Then she would be shown a re-run of the meeting and told all the ways she had let herself down. "You didn't look at him, you didn't even glance, you crossed your arms, then turned your chin away a little". She would then be asked to do the same scene again and without the off-putting gestures. After six such lessons, lasting an hour, she had a boy friend and her periods had returned. Not all such lessons were as dramatically effective, but the notion that using your body is a skill just like weaving or dancing has now been

widely accepted. Moreover, control groups of shy people were reported to make less progress after twice as much psychotherapy.

Where can such teaching be effective? I find it very depressing that teachers are trained without learning anything about the way an authoritative teacher controls a class as much by gesture as by voice; though such training has been found to be effective. The leader of a group is almost always the most relaxed and a teacher who cannot appear to relax is well on the way to being harried without mercy. Politicians have become very aware of the need to present a convincing image and they *do* take training.

It may be thought unethical to teach shy people to be attractive, teachers to handle children well, politicians to conceal their true reactions, or interviewers to put job-candidates at ease. Such skills, like knives, can be abused. However, insincere dissimulation is also found among those that learn body language naturally as infants. Should we refuse to teach physics teachers about plutonium because of the obvious dangers? I doubt it.

Many teachers of General Studies now teach their pupils to “read” but not to perform body language. I once introduced a class of apprentice mechanics to a class of caterers (girls), using videotape and a café scene with coffee. The effect seemed magical, under the eye of the camera so many people made friends so quickly, many of them apparently lacking in social grace. In my excitement I pressed the wrong buttons on the video machine so my deep analysis of the encounter was lost. If, now, I walk into a room of very noisy students, yawn, sit down, put my feet up and start to read a paperback, this has a calming effect. Is it dishonest or manipulating to do so, because I was told about it by another teacher?

### EMPATHY TRAINING

Those who find body language teaching dishonest will be equally disgusted by the deliberate inculcation of empathy—the ability to understand the thoughts and feelings of others, while remaining yourself. This is helpful to all the person-to-person activities:

teaching, counselling, nursing, negotiating, and interrogation. A hill-billy customer looking at some new cars remarked, "Ah sure do hanker to sell some of these heh cahs". Since the garage owners were scientifically searching for salesmen they asked him to take a written test. He scored very highly on empathy and ego strength (calmness and self-possession), the two character traits that matter in salesmen. The man's results were shown, jokingly, to the researchers who employed him. In two weeks he had sold more cars than any other salesman in the group that month.

Empathy training has followed two lines. Rogerian (or "client centred") therapists are taught to ask empathic questions. These are questions which accurately reflect the feelings and statements of a client.

At the same time such questioning must be accompanied by "unconditional positive regard". This may sound easy enough, but I well remember a prison-counsellor, Judy Miller, telling me of the difficulties. She lived in Pennsylvania, Roger's home town, and was under great pressure to adopt the system. "This chap tells me 'I want to get the governor of this prison, kick his bollocks to jelly and gouge out his eyes with my bare hands' and I am saying 'Gee, but that's terrible' but I *should* be saying 'Oh, so you'd like to really hurt the governor, would you? You'd be glad to maim him'." The questions are required to be "congruent" too, that is, they must be sincere. The purpose of Rogerian Therapy is to truly allow people to be themselves. After they have found that their most terrible ideas are not frowned upon, there is the possibility of personality development.

A more gentle system for increasing empathy was developed by Natale. Student teachers were trained in the skills of critical thinking which includes: logical deduction, distinguishing strong arguments from weak, deciding what conclusions can probably be drawn from a given set of facts. Students were also asked to judge what would be the outcome of video-taped interviews, required to counsel school children, and given other practical exercises. The result was a considerable rise in empathy on a practical counselling test when compared with a control group that had studied the Greek classics.

Natale's book *An Experiment in Empathy NFER* includes a

helpful summary of such previous work in the United States and some very depressing findings about how little empathy the average teacher shows.

### MORAL PERCEPTION

Moral perception has been explained in great detail by Kohlberg and others following his lead. He has devised pencil-and-paper tests which seem to discriminate very well (though not perfectly) between obedient and humane people ("obedient" people being willing to subject others to very severe shocks as part of an experiment, while humane people refused to do so). Kohlberg distinguishes six stages of moral growth and related each to more than a score of basic moral dilemmas.

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|---------------------|---|
| <i>Expedient</i>    | 1) Belief in: punishment, obedience, self-preservation, trouble-avoidance, deference to power and prestige.                       |
| <i>Calculating</i>  | 2) Belief in: trouble-avoidance by calculation, reciprocity, exchange, and self-seeking, judgement by results.                    |
| <i>Conforming</i>   | 3) Belief in: approval, stereotype behaviour, good-boy role, helping others, judgement by intentions.                             |
| <i>Rule-abiding</i> | 4) Belief in: duty, respect for law-and-order, the value of the social order, the earned expectations of others.                  |
| <i>Principled</i>   | 5) Belief in: social obligations, the rights of others, consensus, the majority will, the need to agree.                          |
| <i>Enlightened</i>  | 6) Belief in: conscience, self-consistency, mutual trust and respect, avoidance of dogma, unselfish principles for moral choices. |

N.B. I have chosen the italicized terms on the left, and Kohlberg should not be blamed for any oversimplification.

Kohlberg's test takes the form of moral problems such as this:  
 "A man needs money which he can neither afford nor persuade

anyone to lend him for a rare, overpriced drug. He steals the drug and saves his wife's life. Was he right to do so?" There are six "yes" answers, each representing a different stage of moral perception and six (equally valid) "no" answers. Most people will reply to such questions with mixed-level responses but predominately with one level and its two neighbours. Many adults never progress beyond the stage of rule-abiding morality and some cultures are almost entirely bound to this level and below.

It has been found that children can be raised through the levels of morality by explaining situations to a class in terms of the next level up. Quite rapid gains can be made, and follow-ups have shown that the gains seem to endure. Many teachers spend quite a lot of time trying to teach their pupils rule-abiding morality, ill-aware that it may not be adequate to deal with some of the more difficult problems. There are other complications. In one student sit-in it was found that those who chose to join the demonstration were almost all stage 6 people *or* stage 2. Some had decided, from the highest motives, that they should take action to increase student representation in the University, but others simply saw the sit-in as a way to put pressure on a disliked administration, without much likelihood of punishment. Such unwitting alliances are probably more common than we realize. Should people be ignorant about such matters? I can see no disadvantage at all in this training.

## ACHIEVEMENT

The need to achieve ( $N_{ach}$ ) is another characteristic that *can* be trained with considerable success. However, it is a two-edged approach. Children who understand how  $N_{ach}$  operates will soon come to despise the teaching of most teachers, which depends on an authoritarian stand described in the jargon as  $N_{pow}$  (need for power). A school which decides to teach  $N_{ach}$  may well find that many teachers won't abandon a power-based method.

$N_{ach}$  people, the high achievers, are noticeably different from low achievers in a lot of ways.

- 1) They seek “goals of excellence” (self-improvement, long-term mastery, unique achievement or competitive goals) in preference to power and friendship.
- 2) They seek difficult but achievable goals, rather than easy or impossible ones.
- 3) They are much more keyed-up about their goals and they feel much more disappointment or satisfaction.
- 4) They think far more about the future.
- 5) They plan more, seek feedback on results, and act on it.
- 6) They seek ways to deal with obstacles, whether by self-improvement, seeking the help of others, or different approaches.
- 7) When they are asked to fantasize about other people, they imagine that others share similar goals, hopes, cares and resourcefulness.

David McClelland of Harvard University was the first to characterize the high achievers. He found that it is a trait that normally remains stable after the age of four but it also varies immensely between races and even for one race over the centuries. A leader such as De Gaulle or Mao can make a climate of achievement for a race. Moreover, it was found that a one-week course in  $N_{ach}$ , for the owners of small businesses, would result in those people planning more realistically for the growth of their firms. New employment was created at a training cost of about £100 per person employed at present values. Control groups—showed no comparable growth. These courses were successful in Mexico, India, Harlem and the American South.

In the classroom  $N_{ach}$  students set their own goals, work at their own speed, are rewarded at first on a points system, and commonly achieve two years work in one. It is a system which appeals to common sense, but may need a lot of preparation. Moreover, it will perhaps suit introverts, who work better alone, better than extroverts, who work better in groups.

The system has, regrettably perhaps, become identified with competition. I know of no work that considers  $N_{ach}$  in teams, or



the type of classroom  $N_{ach}$  which is encountered in China: weaker pupils are helped by stronger. Only one of the four types of goal of excellence requires competition, and the other types could all be acceptable to the most uncompetitive society—self-improvement, long term mastery, and unique work.

## **Myth and Faith: Some reflections on "the myth of God incarnate"**

ROWAN WILLIAMS

Of course, the word "myth" is misleading: both the writers of this book<sup>†</sup> and their critics have complained bitterly that many readers will fail to realize that "myth" does not mean "fantasy" or "fiction", but is a term with sophisticated technical meaning. It is hard to see what else they expected, given the book's provocative title; and, in view of this complaint, one might reasonably expect that one side or the other would enlarge upon this "sophisticated technical meaning"; yet there are no signs of this, no reflection of the fact that myth has been the subject of a lively debate among social anthropologists for a good fifty years. Maurice Wiles, having admitted (p. 148) that myth "plays an important role in the work of anthropologists and sociologists, of many psychologists, literary critics and historians", proceeds (p. 150) to produce a typology of myth drawn from D. F. Strauss and (p. 153) a definition of myth from Baden Powell, which he shows no signs of wishing to question at all radically in the remainder of his essay. The substance of this view is that there are "truths"—historical, moral or psychological—and there are illustrative stories about them, some historical, some "mythological" (i.e. not-literally-true; a phrase actually employed by Professor Hick on p. 178); and this distinction is regarded as basic to the discussion.

What the authors of this book are suggesting is that myth is a

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<sup>†</sup> "The Myth of God Incarnate". Edited by John Hick, S.C.M. Press 1977.

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translatable or reducible statement about realities that can adequately be described in other terms. Mythical narration is a “poetic” inflation of factual report, an imaginative or metaphorical way of conveying information about neutral facts. It is not clear precisely what such “facts” are: sometimes they appear to be important historical events or processes, sometimes truths about God, the soul or morality (for the authors have a happy confidence that these are somehow pretty readily available, independently of any considerations about revelation and its attendant problems). Myth, by means of its attractiveness to the imagination, may suggest more clearly than bare reportage what responses are appropriate to the facts. The language of myth is *evaluative* (they would maintain): it proposes an assessment of the seriousness or significance of a certain area of fact, and invites the hearer to share in this. Such seems to be the assumption of most of the writers, and it is this assumption which seems to me to be the most radical weakness of the book, the greatest obstacle to taking it seriously. Myth is not like that. The kinds of misunderstanding about religion, society and language embedded in the supposition that it *is* like that are so far-reaching that it becomes hard to see how the arguments of the symposiasts have any real bearing upon what not only Christians but all practitioners of what may loosely be called “traditional” religion *think they are doing* in talking about God or the gods.

It is certainly not within my competence to summarize and assess the discussions of myth which have been conducted over the last half-century among anthropologists and others, but it is worth noting a couple of general points, evident even to the amateur. Firstly, myth is not a literary form, it is not a kind of fiction. I use the word “literary” admittedly loosely, to designate, I suppose, an exercise of conscious and more or less controlled image-formation (such as we usually understand by the word “fiction”). Secondly, following from this—myth is not metaphor. That is to say, it is not what we might call a substitutionary discourse, a displacement of one set of concrete and discrete designations by another. Thirdly, myth is not decorative; it is not an optional excursion into a realm of fantasy tangential

to or wholly alien to diurnal reality. All these points were long ago made by Hocart in his celebrated essay on "The Life-giving Myth"; and without accepting the over-simple account of the function of myth which he proceeds to give, these negative points about its nature may be allowed to stand. And on the basis of some such negative delimitation, we may begin to acquire a more satisfactory comprehension of myth. Lévi-Strauss has insisted repeatedly that "myths have no authors", and has spoken of myth as discourse from which the conscious, speaking subject is radically absent; and this is to put in a very strong form the distinction between myth and fiction. A nineteenth-century liberal romantic typology of myth will inevitably assimilate myth to fictional parable; which means reducing it to one linguistic option among many open to the speaker or subject (this holds even if we consider that the artist's untrammelled liberty of invention is in large part another romantic illusion). Myth is not one way of describing a set of "neutral" facts: it is that kind of discourse which is dictated by a certain kind of fact, by certain structures of the experienced world. It is the *only* appropriate response to some sorts of fact, and it is interesting that Lévi-Strauss and some of his disciples believe that to write an adequate account of myth is itself to adopt a kind of mythical language. The patterns and connections perceived will be grasped only by the selective rearrangement, relocation of data in a new general perspective such as characterizes myth itself.<sup>‡</sup>

Well, what sorts of fact? The answer seems to be—allowing that the words are highly unsatisfactory—spiritual reality. If the term did not seem even more misleading than "spiritual", we might say "mystical" reality. What myth is supposed to be doing is reporting, accurately but not exhaustively, how the world of men is related to the way things ultimately are; how the conflict and contradiction of the human world can be borne by being related to statements about reality-as-such. Myth-telling is a reconciling process, insofar as it provides a means of living with the potentially

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<sup>‡</sup> See "The Raw and the Cooked" in *Mythologiques* I, p. 20, where Lévi-Strauss describes the work as a "Myth of Mythology".

destructive tensions of reality. There are purely tragic myths (Prometheus, Ragnarok) where the reconciliation is *only* in the making tolerable of a meaningless universe; there are others which report states of affairs in which proper, healing or saving relations are established between man and the ultimate order of things (and it is in this sense that Marxism is strictly mythical thinking). Myth is not an index of the "importance" allotted to certain things, persons or patterns of behaviour, though this may be how it is read by the uninstructed (and uninterested) observer. Evaluation depends on the myth, not the other way round. Myth does not arise when certain configurations are vaguely thought to be significant (this might be a better account of legend), but when particular possibilities and experiences of "spiritual" life are *seen* to be bound to a controlling story or model concerned with "the way things ultimately are", "the total environment", or, in a theistic myth, the will and activity of God. Seen to be: myth is not an inflation of fact, but an imperfect response to fact—not more but less than the reality. Hence the powerful element of paradox in myth. Conflict and contradiction are not smoothed away (they may indeed be intensified, but relocated in an overall act of acceptance or faith: paradox proves to be the only adequate way of speaking faithfully about a reality which evades our normal categories. The myth which looks for cosmic reconciliation beyond tragedy has to express the hope of a final unity or continuity in things without softening the reality of tragedy and destructiveness; and any language which attempts this will inevitably be under strain.

Of course this is not, and is not meant to be, a non-controversial point of view. To argue that myth is a non-reducible discourse is hardly congenial even to those anthropologists most eager to deny the myth-as-parable thesis. If there are no inter-subjective or trans-subjective "spiritual" states of affairs, myth cannot be reporting them; therefore it must be (unconsciously) reporting something else—as some anthropologists would say, patterns of reconciliation immanent in a society elevated to the status of general ontological truths. For such observers it would be true to say that understanding myth is incompatible with believing it or

living by it: only by detachment from those conditions in which myth is generated does it become possible to understand its function. Of the contributors to this book it seems to be Mr. Cupitt who comes closest to this position, though the astonishing superficiality of his historical analysis somewhat obscures his argument. But here we encounter one of the toughest epistemological tangles in the whole question: whether the anthropological observer's account of function can dispense absolutely with the practising subject's account of what he believes himself to be saying. To allow that it can is to allow a degree of privileged inclusiveness to the observer's viewpoint—which is itself massively question-begging. Maintaining, on the other hand, that mythical discourse has a proper autonomy need not involve us in holding that all myth is invulnerable revealed truth and that there can be no standards of critical rationality; but it will involve a certain seriousness about what myth *purports* to be doing, and about the whole business of “spiritual states of affairs”, in the sense outlined already. Given such a seriousness, it is easier to see how myth may be the single and untranslatable appropriate discourse for the kinds of reality under consideration. Critical assessment of myth will then be a possible, though complex, process; it will require a readiness to understand the professed function of myth in human life, because only by such an understanding can a myth's *adequacy* to its supposed purpose be assessed.

The symposiasts, in fact, with the possible exception of Frances Young, seem very little concerned with considering whether the professed function of myth, any myth, is a proper or necessary function in human living. That is to say, they are not particularly interested in the questions of reconciliation or liberation or salvation to which mythical discourse addresses itself. (A Christian of a certain tradition might perhaps say that they have no sense of sin.) Certainly they are by no means exceptional in this among twentieth-century North Atlantic academics. Yet so long as human beings continue to experience the world as tragic or deeply fragmented, so long as the overcoming of “alienation” *matters* to people—and it is not easy to imagine a distinctively *human* world which such questions do not arise—myth continues to have a

function. Our symposiasts are not concerned to offer an alternative “life-giving myth”: what they seem to be proposing is purely and simply commendations of certain rather vague ideas about God or “the transcendent” and of particular patterns of behaviour. Well and good; but it is no use pretending that this is in any way faithful to the imagined “content” of the myth, that it provides a translation without remainder. Indeed, the point is not that their “translations” are weak or inept, but that the assumptions governing the kind of translation being attempted are inappropriate, because they rest upon the myth-as-parable or the myth-as-fact-plus-illustration model. Myth *itself* is no longer permitted to report how things are; its truth is—and the inevitable term comes up with sad predictability—“poetic”.

The notion of poetic truth is more used than examined. A Great Work of Art (*King Lear*, *War and Peace*) is, we are told, “poetically” true, although its characters and its detail are largely invented. Apart from the fallacious identification of myth with fiction which seems to be lurking in the background here, it is hard to see what *special* kind of truth is involved in fiction. The “truth” of *War and Peace* certainly doesn’t depend upon there having been such a man as Pierre Bezukhov (and this is, presumably, the point which advocates of “poetic truth” have in mind); but it is no help to the understanding of the work to say that the reflections or acts attributed to Pierre are “poetically true”. They may be verisimilitudinous, they may be “true to” what we understand of Pierre’s character and so on, but it is not at all clear what would be added to such descriptions by saying that they are “poetically true”. The truth of a serious fiction is certainly a statement about the way things are, made by means of the creation of a secondary framework of reality whose structures reflect on (rather than merely reflect) those of primary reality; the whole framework lays claim to some sort of metaphysical accuracy, but it moves towards this by an internal fidelity to that framework. It is metonym *and* metaphor. It is, on the one hand, an account of reality, a description, and, on the other, an extended substitution for reality, an *oblique* description.

Do we then need an expression like “poetic truth”, if the final

truth of a fiction is properly metaphysical? The use of “poetic truth” seems commonly to reflect a residual desire to make something of a myth’s truth claims; but if these truth claims are serious, the term is redundant. Even if some sense could be made of “poetic truth” in the context of fiction; it is still the case that the truth of myth *does* depend upon some accurate reference to the primary world in a more direct sense than does the truth of fiction. Marxism, for instance, would be incredible if its account of history ran counter to an (admittedly flexible and disputed) area of worldly fact; even Buddhism in its less purely apophatic forms could be said to have a similar sort of dependence upon certain points in the world or in history (this is certainly true of most forms of Mahayana Buddhism). But this accuracy is not a sufficient condition for the truth of myth; worldly fact is incorporate in a structure of non-worldly affirmations. And this is *not* seen as the addition of “poetically true” statements to “literally true” ones. The whole unitary process of re-locating worldly fact lays claim to truth in a sense which, although not simple, is at least not vague.

(The large questions raised here about *how* an accurate re-location might be made possible—about how knowledge of “the way things ultimately are” becomes accessible; about revelation, for a theistic or supranaturalist myth—need more discussion than I can begin to undertake here; but I recognize that this is a fundamental and highly vulnerable part of establishing the acceptability of any myth—even, again, Marxism.)

If the process is seen as literally true statements plus “poetically” true statements, inter-faith understanding is far more seriously jeopardized than it is by more traditional accounts. *Strictly* true description is limited to supposedly uncontroversial statements about historical and psychological fact (the “religious consciousness”, and so on); and what this means is that *all* “mythical” religious utterance must be reducible to such terms, to empirical discourse as defined by one strand of post-Enlightenment European thought. Thus inter-religious dialogue in the proper sense is abandoned in favour of a new cultural imperialism (commonly masquerading as “scientific” discourse). Christianity’s superiority to other religious traditions is affirmed on the basis of



its being the first to respond to the challenge of post-Enlightenment, urban, technological civilization. Don Cupitt, in another book (*The Leap of Reason*, 1976), has argued that Christianity is uniquely well-adapted to modern, urban society; and John Hick unguardedly lets fall some remarks which suggest that he too wishes that other religions would hurry up and join Christianity (or, at least, his revisionist Christianity) on the far side of the Enlightenment (interestingly enough, Hans Küng's *On Being a Christian* voices similar views). But once we have succeeded in establishing revisionist Christianity as a suitable ideology for urban technocracy, it should be evident that we have defined ourselves out of the inter-faith debate. For it is not at all clear that other traditions will or should respond to post-Enlightenment culture with the self-dismantling eagerness of liberal Christianity; and these may have a keener awareness of the difference between scientific language and the clichés of popular "scientism", and less inclination to regard the urban West as a cultural absolute. It is paradoxical that the quite genuine concern of John Hick to avoid Christian exclusivism leads to a far sharper exclusivism, which precludes any real discussion with anyone—Muslim, Buddhist or Marxist—which does not begin from a shared academic tradition.

Classical Christianity at least had its doctrine of the Logos to qualify any tendency to exclusivism. John Hick touches on this doctrine (p. 181) only to bury its implications under a further mass of relativizing vagueness. But in fact the Logos doctrine enables the Christian to say that, while the Logos is *normatively* present in Jesus of Nazareth, it is not exclusively so. From a Christian point of view, inter-faith debate is about where the Logos, the self-impartment of God, is definitively found, and the degree in which the Logos can be said to be present in "non-definitive" manifestations. The myth of the Logos is a myth which provides accommodation for others, but which nonetheless does not attempt to smooth away the particularities of others; the possibility of this accommodation has not yet perhaps been fully explored, but it is undeniably a significant aspect of the tradition. And at the same time it is more or less valueless as an interpretative framework without its reference to the historical singularity of Jesus

of Nazareth. Christianity locates the Logos definitely in the detail of a human life and, most importantly, a human *death*. That is, it affirms the presence of God's self-expression in human extremity—not any kind of death either, but a death comprising betrayal, abandonment, condemnation and violence, endured without consolation. The gospel would be *fundamentally* different if Jesus of Nazareth had died in his bed. The gospel, the good news, is precisely this, that God takes violence and death to Himself and overcomes and transfigures them: He is not “exhausted” by them, but transforms them into resources of new life in resurrection. So “non-obvious” is this, that the myth insists upon its reference to a particular human life as the historical enactment of this, without which the transfiguration of violence and extremity does not become a possibility within history. Reconciliation, the possibility of union with God abiding in pain and horror, is created by the unqualified “abiding” of the Logos in the pain and death of one man. Thus for the Christian it could be said that the criterion whereby the reality and degree of the Logos's presence is assessed is the extent to which a religious tradition is serious about the *transfiguration of pain*—not the “conquest” only, not the obliteration of, not the indifference to or the deliverance from pain, but its transfiguration (Beauty's transformation of the Beast, as Simone Weil put it).

Without the standing objectivity of a historically enacted paradigm of this kind, the Christian understanding of salvation, of the life of grace and of contemplative prayer, of sacramental communion and “kenotic” compassion loses its ground. The myth of the Incarnation relates a kenosis, an emptying or displacement of God's selfhood (a divine “ekstasis”, in the words of Pseudo-Dionysius), whereby human suffering and death are received into the life of God, so that this life is made accessible even in this death; and such accessibility is realized, according to the mainstream of Christian contemplative tradition, by man's grace-aided or spirit-aided self-emptying, his trusting acceptance of God's fidelity and closeness in humanly intractable situations (St. John of the Cross's “night of faith”)—human kenosis answering to God's and grounded in God's. The myth both presents a

paradigm of life-in-death and, in providing a foundation for sacramental articulation of this in baptism and the mass, offers a “means of grace” for the living-out of this paradigm.

All this may be labouring the point rather; but it is important to see how incarnational dogma in its classical form does serve as a life-giving myth, a map of reconciliation. What if the Christian now says, “As a *story* about God, indicating that He is characterized by kenotic compassion, and moving me to practise it in imitation, there is nothing wrong with the dogma, but I am no longer in a position to believe that it is a *report* of God’s activity”? In that case there seems no particular reason to affirm this story rather than any other, except subjective appeal: it is one among many possible stories (or many possible “locations” of the Logos) and there is no controlling ground outside of the subject’s preference. And if this is so, we have a system in which reconciliation or liberation can only be self-generated: faith is faith in faith (or choice, or preference). However disguised, this can only be a form of moralism: it may be attractive to a certain kind of European intellectual, but this attractiveness should not be allowed to obscure the fact that it is a phenomenon radically different not only from what Christians have commonly understood by “faith”, but from anything that can reasonably be called “religion”. Religion as a means of saving access to the divine offered by divine initiative is irreducibly a matter of myth; faith as the act of appropriating the divine offer is an acceptance of, an incorporation into, mythical structures, socially and ritually mediated. Our symposiasts are offering not only a devitalised theology (one has, alas, got used to that), but a deracinated and immeasurably enfeebled religious life, which has no rational place for sacrament or contemplation, and precious little gospel for those condemned to die.

## Comment

### Robert Lithown on philosophy and traditional culture

I would like to reply to several points in Robert Lithown's recent "Comment"<sup>1</sup> on my "A Philosopher's Approach to Traditional Culture".<sup>2</sup> In the first place, I disagree with the conception of philosophy he attributes to me. Lithown argues that if I am in favour of the philosopher's "direct participation"<sup>3</sup> in such traditionally non-philosophical areas as anthropology, I am countermanding both the *critical* and the *second-order* nature of philosophy. Furthermore that by making my philosopher into a social scientist I effectively abolish the division between the two fields, yet involve myself in a hopeless as well as defenceless muddle when I continue to speak as if there is one.

I cannot agree. Especially when the alternative he proposes is that philosophers should be justified in adopting the methods of any empirical science, if it suits their purposes (which are to be defined "pragmatically").<sup>4</sup>

I do support the idea that the primary business of philosophy is to be *critical* and to concern itself with things from such a point-of-view. The choice of this as the business of philosophy is one Lithown evidently thinks I am denied once I refuse to limit myself to the second-order, analytic tradition. Surely the idea of a critical philosophy is not so narrow, in fact is an essential element of the "pragmatic criterion" on which he himself seems to rely. And I think it is this broader sense of being critical which *T to T* has espoused in the past and with which I sought to ally myself.

I believe the philosopher should concern himself with the

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*relationship between* a people's concepts, ideas or beliefs *and* their experience as well.<sup>5</sup> More importantly, that he should approach these relationships primarily on the basis of reflexive accounts and explanations which that people themselves provide. He may then expect statements of the general form, "It is because the following ends or values are important to me, or because I am faced with the following physical conditions, that I find it reasonable to believe x".

It is precisely because the business of philosophy *is* to be critical in such terms that the philosopher is in any sense qualified to analyze these kinds of explanations. Obviously, such discussions with his traditional colleagues (as I sought to describe them) may involve the philosopher in doing some sort of collecting and reporting of other cultural opinions as well as analyzing them. And if that is what Lithown means by doing anthropology, I acquiesce! But from a tactical point-of-view, as well, I think it would be dangerously misleading for the philosopher to use this as a reason for abolishing the distinction between philosophy and anthropology in the manner he advocates.

It *is* anthropology that has defined certain cultures as essentially "traditional" precisely because they are assumed *not* to be characterized by processes of critical reflection upon their own beliefs. Many of contemporary social anthropology's methodological techniques are based upon this conviction.<sup>6</sup>

It was this methodological predisposition on the part of anthropologists that first tempted me into taking a look at such cultures.<sup>7</sup> The conclusion to which I have come, based upon my own research, is that there can be no such absolute distinction between critical (or reflective) and non-critical (non-reflective) cultures.<sup>8</sup> Processes of analysis and reflection do take place in traditional cultures (admittedly not on as extravagant a scale as in academic philosophy) and it is precisely the hypotheses and explanations provided by such reflections that will be of interest to the academic philosopher.

I would therefore prefer to build my bridges between philosophy and anthropology on this kind of support. I justify the philosopher's return to the marketplace by claiming he will find other philosophers there rather than ignorant swineherds.

## Notes

1. *Theoria to Theory*, 10, No. 2 (May, 1976), pp. 161-66.
2. *Theoria to Theory*, 9, No. 4 (October, 1975), pp. 259-77.
3. *Ibid.*, p. 261.
4. If philosophers became *so* flexible methodologically, one wonders whether any distinctive purpose would remain.
5. "As philosophers our interest in the religious masters lies not simply in the theories in terms of which they have explained their experiences but also in their experiences . . ." (*Theoria to Theory*, "Editorial", 8, No. 4, October, 1974, p. 282).
6. One justification of the famous "fly on the wall" approach (that the anthropologist should be seen and heard as little as possible while observing a society) is that if he were to introduce foreign viewpoints into his remarks he might unwittingly expand the consciousnesses of his subjects and thereby lead them to talk on a different level than they do "traditionally".
7. Robin Horton makes some remarks along these lines in his "African Traditional Thought and Western Science", Part II, *Africa*, XXXVII, No. 2, April, 1967, pp. 155-87.
8. Perhaps Dr. Lithown and I are not so far apart if we could agree to an analogous *mixture* of first and second-order *critically* based pursuits as the role of philosophy.

BARRY HALLEN  
*University of Ife*  
*Nigeria*  
*West Africa*

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## Sentences

### Suffering in Zen Buddhism

IRMGARD SCHLOEGL

*Suffering is a basic factor of life: from birth to death it is our faithful companion. How to face it, alleviate it, bear it, and make conducive use of it, is the concern of all developed religions.*

\* \* \* \* \*

*In Buddhism, suffering is seen as twofold: Disease of body, illness, frailty, pain, ending in the death of the organism.*

*Disease of mind, unease, unrest, "parting from what is loved, having what one dislikes"; the agony of split loyalty, the fear of death and of "losing control".*

*The physical component is the sphere of the physician: it is, however, known that the sufferer's attitude to his illness or pain is an important factor, contributing to or hindering cure; it is, perhaps, even the cause itself of some ailments. Thus a mental factor is inherent even in physical suffering.*

*The mental component, today mainly in the hands of psychologists, is properly the sphere of religion, in the sense in which religion is "the cure of souls". In that, too, the sufferer's attitude is of importance for the process of becoming whole.*

\* \* \* \* \*

*Buddhism is a religion. As such, it accepts the fact of suffering. It is, however, not overly concerned with the ever-changing symptoms, but rather with the eradication of the root-cause of*

---

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*suffering. The Buddha said "Suffering I teach, and the way out of suffering".*

\* \* \* \* \*

*We must look at the Buddha's life to understand his Way rightly. He faced the basic problems when he encountered them, and steadfastly held to them in an unprecedented attempt to gain insight into them. When that insight finally came, he knew he had worn out the cause of suffering itself. What is entailed in coming by such insight is the stripping off of all accretions, of status, name and birth, to utter inner nakedness.*

\* \* \* \* \*

*The Buddha's foremost concern was with the Three Fires, the emotional energy that flares up as long as there is a sense of I. "Your house is on fire, it burns with the fires of desire, anger and delusion; there is no dwelling in such a place".*

*The fires do not burn in the mind, but in the heart; the passions are popularly conceived as "red", the colour of blood. The heart is either helplessly overcome and suffers the primitive surges and eruptions of energy inherent in the passions, or, by suffering their onslaught without giving way to them, it is made strong enough, human enough, to contain the tension, and can act as a hermetic vessel in which transformation takes place. In this transformation not I, but the energy itself, is transformed, which is the religious experience per se, and in it I, as I know myself, have also died.*

\* \* \* \* \*

*From his own experience, the Buddha taught the Middle Way between over-zealous I—effort and indulgent inertia. Perhaps the profoundest connotation of this Way is to walk right into and through the middle of the sea of suffering, until it is traversed and there is the emergence out of it on the "other shore". We tread it, if we face, as courageously as he did, our problems, inadequacies, sufferings, if we accept them, do not refuse or evade them, but willingly suffer them through and out. The Buddha found the Way out of suffering by suffering out suffering itself, and could*

*say that he had found nothing new, only “rediscovered an ancient path leading to an ancient city”, the way of the heart, leading to the heart, the human heart, our own. Thus Buddhism sees suffering as central in the dilemma, and deals with the cause itself rather than the symptoms.*

\* \* \* \* \*

*This cause is I, our self-conscious, overweening sense of I which is not real but an illusion given substance by the Fires. In that light, the basic teaching of No-I (Anatta), makes sense. Every artist knows that self-consciousness equals embarrassment and inhibits good performance, knows that only if he succeeds in merging and “becoming one” with his performance will it be as good as his skill allows, and sometimes even exceed it. Hence this obtruding, self-conscious, self-oriented I is the spanner in the works. Whenever this I contacts what does not suit me, I feel threatened, and am invaded by an uprush of wild emotional energy—and so suffer one way or another. Naturally this I, tiny, separate from all that is other than I, is permanently insecure, feels itself threatened by all that is “other”, and its other name is fear. Along the fissures which this fear cracks open, the primal fires erupt like a volcano.*

*In a way, I know this too, and so am equally afraid of what threatens me from without (other than I), and of what threatens from within (the Fires, loss of control). I and the Fires are directly related.*

*Out of this dilemma the Buddha points the way. There is an end to suffering, though that end is totally other than what I can imagine. Actually it is the end of I as I know myself; and since I have an inkling of this, too, I am afraid of it.*

\* \* \* \* \*

*The Buddha’s Way is also the way of the Zen school. Its founder Bodhidharma is said to have stated: “All know the way; very few actually walk it”. Master Rinzai said of this way a thousand years ago that the ordinary person does not naturally take to it. Naturally not, for though it truly leads to the end of suffering, it eradicates*

*the cause—and since I myself am that cause, I would rather not undertake it but prefer to look round for an alternative—and so continue to suffer.*

*This has been the attitude of mankind since our beginning. Out of himself, man cannot bestir himself to walk this way. He needs the “Fall” into suffering—this is the positive side of suffering; and he needs a guide who inspires him, who gives him heart, the energy or strength by virtue of which he can keep on this way. Above all he needs “right seeing” so that he does not blindly imitate but follows rightly, facing his own problems and suffering as the Buddha did his, and thus found the Way out.*

## The Oxherd pictures

*(explained by Irmgard Schloegl)*

*In Zen Buddhism, this way out of suffering is usefully illustrated by the analogy of Herding the Bull. This Heart-Bull is wild and fierce; he is difficult to find, difficult to accept; hence the hard labour looking for him everywhere, in despair, failing to recognize him again and again because he is so other than expected. And when finally found and accepted, this Bull is difficult to hold, and to gentle. Thus grappling with it, the herdsman I and the Bull at last become familiar with one another and are both changed in the process.*

*The Bull, though in the beginning wild and primitive and fierce, is in need of gentling, of humanization. Though frightening in his blind strength and wilfulness, he is not an enemy but a friend; when transformed, he is what we are after. But the work on his humanization entails much suffering, and great effort is necessary. The effort has to be of the right kind—not brutish, domineering and new repression. In this process, bearing with each other, both Bull and I become gentle. And since the Bull in this analogy stands for the energy inherent in the emotions, this energy, humanized, is wiser than man; it is also older and stronger—which is the compulsion that we rightly feel in the emotions.*

*In the beginning of the process of taming, I would like to overcome and ride the Bull—but he carries the man, for not I but the gentled Bull knows the way home. Truly, man needs the Bull; refusing him and the hard labour of taming and gentling bars me from home.*

*Arrived home, the Bull vanishes, and there is only Man, no I. This Man no longer suffers from I and the Fires, from the self-induced afflictions of selfish anguish and bitterness. But he is subject to the sufferings that are our common human lot; he is nowise beyond those but bears them now in patience and gentleness, can bear them thus because he is aware of the light.*

*The spiritual man begins from here, for the last and basic human problem is not yet seen into and he has only arrived at but not yet traversed the portal of death. Death awaits us all, and to I it heralds the end. Apart from physical death there is what Zen Master Hakiun calls the Great Death which I must die to win through to the other side of No-I, the death in and to Life. To this I have not and cannot have access, and can only accept that this points to a mystery which cannot be understood rationally. The last three states of the Bull-Herding analogy are concerned with this mystery.*

*In our culture, reverently, this is illustrated as the Passion of Christ and the Crucifixion. It is the cross willingly accepted, hung onto by his own acceptance, fully open to the pain, the shame, the sop, and the lance. Death-I gone, vanished, died. The descent into the netherworld “into the origin, back to the source” where a re-structuring in depth takes place, which is hinted at by the analogy of the ocean and the waves, where the individual wave becomes aware that, whether up or down, it is nothing but ocean. What has been seen from the side of I as fear, that panic fear of the totally other in all its awe and numinosity, is experienced from the “other side” No-I, as the full warmth of life, the Love inherent in the human heart, and is the heart’s fulfilment. It is the Love that moves mountains, that needs no objects but shines as the sun shines, for shining is its nature and all things get quickened by it.*

*And so the last stage, “coming back to the market with bliss-bestowing hands”, is a re-linking in Love and Understanding to our*



The Search for the Bull



Finding the Traces



Finding the Bull



Catching the Bull



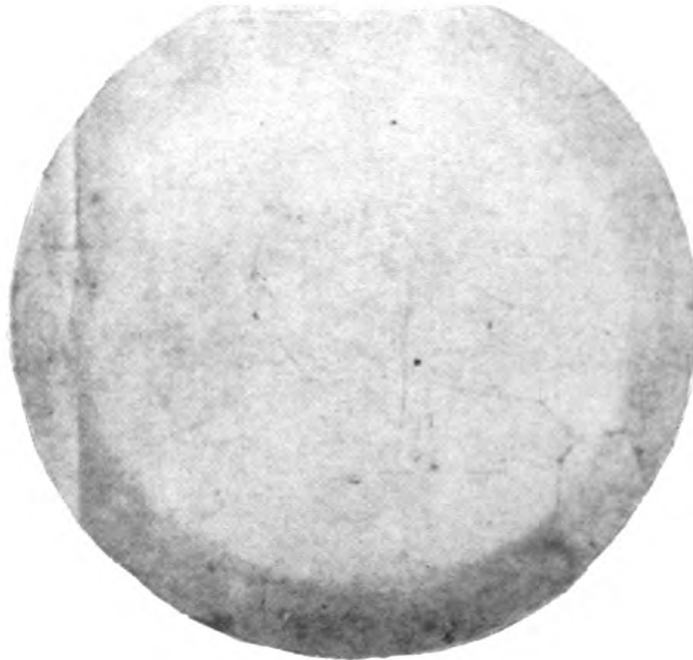
Taming the Bull



Returning Home on the Back of the Bull



**Bull Vanished—Man Remains**



**Both Bull and Man gone**





**Returning to the Source and Origin**



**Entering the Market with Bliss-Bestowing Hands.**

*human conditions and its suffering. Nowise being beyond it but helping to point the Way that leads through suffering to the end of suffering, into the light and the warmth always experienced as grace. It is coupled with true humility and the true joy of seeing the wholeness inherent in the ephemeral; with pity for and love of the ephemeral, and reverence for the mystery and miracle that surround us. With that is found the true vocation; that is, active participation in pointing out this way, in the Buddhist formulation "for the peace of all beings".*

(The pictures are kept at the Zen Buddhist Monastery in Kyoto, Japan. Ed.)



## Notes on contributors

R. B. BRAITHWAITE was Knightbridge Professor of Moral Philosophy at Cambridge. Author of *Scientific Explanation* (1953) and *An Empiricist's View of the Nature of Religious Belief* (1955).

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**KELVIN SPENCER**, after an engineering pupilage, served as a Royal Engineer in the First World War, then took an engineering degree, and was in a large research station for a dozen years. As Chief Scientist at the Ministry of Power in the 1950's he took part in briefing ministers on the pro's and con's of starting the first nuclear power programme ("Magnox"). He was then in favour of it, but now hopes that nuclear power in the U.K. will be phased out.

**ROWAN WILLIAMS** read Theology in Cambridge and researched in Oxford on twentieth-century Russian Orthodox thought. He now teaches at Westcott House, Cambridge.

---

The cover design: two possible sources of energy. The renewable sources of wind and water set against nuclear power.

The cover graphs: two predictions of energy production needed by opposite strategies for the next fifty years. The upper graph shows high growth under the conventional strategies of continual expansion. The lower graph shows the possibility of tailing off our expansion during the 80s, and reducing to below the present level before the year 2000, with continued reduction following. This would be feasible through more effective and conservative energy use, and would fit in well with the development of the renewable energy sources.

The ascending units, 2 to 6, on the graphs are in thousands of millions of megawatt hours.

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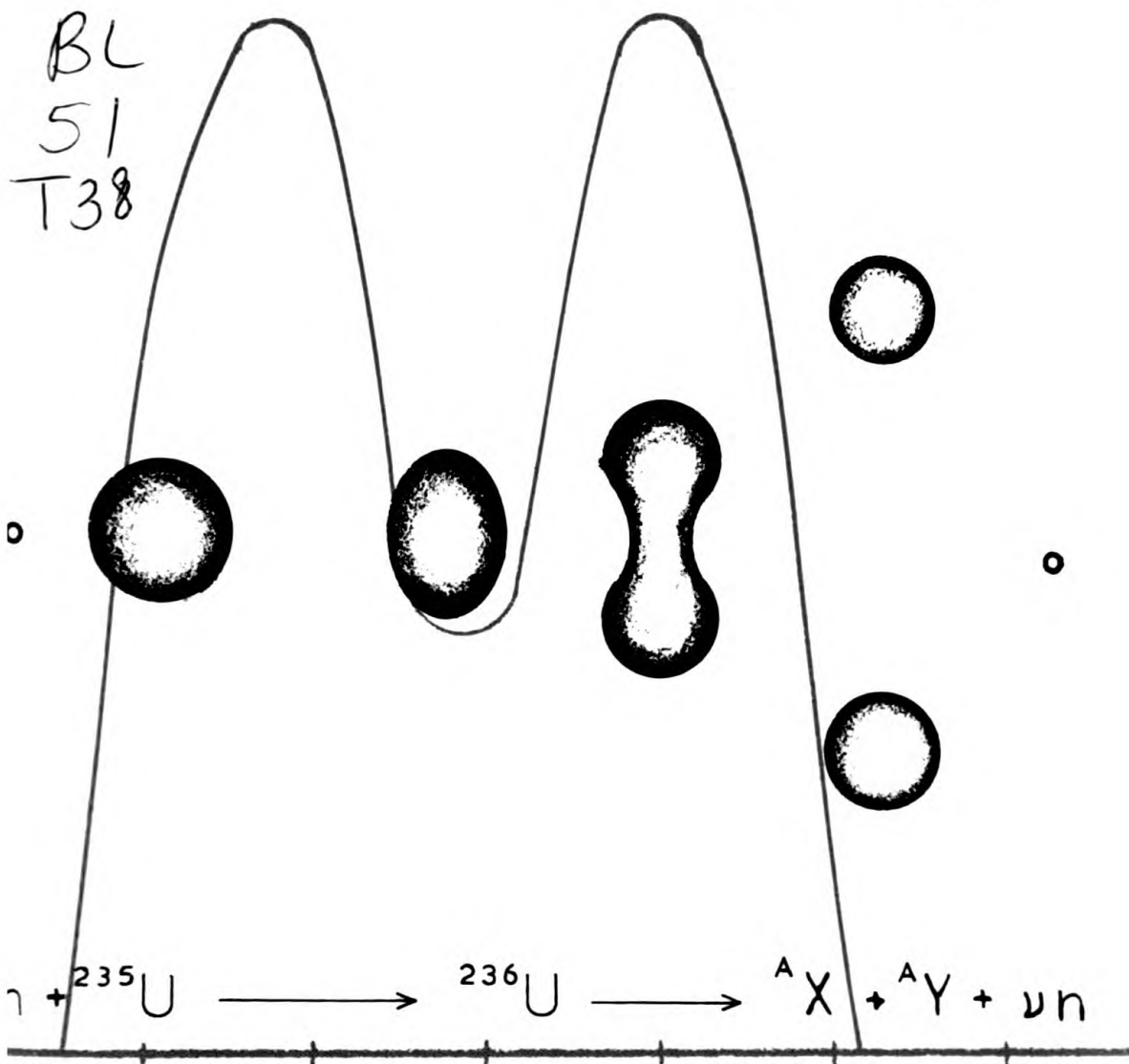
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## Editorial

### *A Guide for the Perplexed*

Ernst Schumacher, with whom there was discussion in *Theoria to Theory* IX i, died suddenly on September 4th. In place of an editorial, there follows a review article on his posthumous book, *A Guide for the Perplexed* (Jonathan Cape).

*A Guide for the Perplexed* starts splendidly:

On a visit to Leningrad some years ago I consulted a map to find out where I was, but I could not make it out. I could see several enormous churches, yet there was no trace of them on my map. When finally an interpreter came to help me, he said: "We don't show churches on our maps." Contradicting him, I pointed to one that was very clearly marked. "This is a museum," he said, "not what we call a 'living church'. It is only the 'living churches' we don't show."

It then occurred to me that this was not the first time I had been given a map that failed to show many of the things I could see right in front of my eyes. All through school and university I had been given maps of life and knowledge on which there was hardly a trace of many of the things that I most cared about and that seemed to me to be of the greatest possible importance for the conduct of my life. I remembered that for many years my perplexity was complete; and no interpreter came along to help me. It remained complete until I ceased to suspect the sanity of my perceptions and began, instead, to suspect the soundness of the maps.

The maps I was given advised me that virtually all my ancestors, until a quite recent generation, had been rather pathetic illusionists who conducted their lives on the basis of irrational beliefs and absurd superstitions. Even illustrious scientists like Johann Kepler or Isaac Newton apparently had spent most of their time and energy on nonsensical studies of non-existing things. Throughout history, enormous amounts of hard-earned wealth were squandered to the honour and glory of imaginary deities—not only by my European forebears, but by all peoples, in all parts of the world, at all times. Everywhere thousands of seemingly healthy men and women subjected themselves to utterly meaningless restrictions, like voluntary fasting; tormented themselves by celibacy; wasted their time on pilgrimages, fantastic rituals, repetitive prayers, and so forth; turning their backs on reality—and some actually still do it even

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1978, Vol. 11, pp. 231–235

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in this enlightened age!—all for nothing, all out of ignorance and stupidity; none of it to be taken seriously today, except of course as museum pieces. . . .

The maps of *real* knowledge, designed for *real* life, did not show anything except things that allegedly could be *proved* to exist. The first principle of the philosophical map-makers seemed to be “If in doubt, leave it out”, or put it into a museum. It occurred to me, however, that the question of what constitutes proof was a very subtle and difficult one. Would it not be wiser to turn the principle into its opposite and say “If in doubt, show it *prominently*”? After all, matters that are beyond doubt are, in a sense, dead; they do not constitute a challenge to the living. . . .

The philosophical maps with which I was supplied at school and university did not merely fail to show “living churches”, like the map of Leningrad to which I have referred; they also failed to show large “unorthodox” sections of both theory and practice in medicine, agriculture, psychology and the social and political sciences, not to mention art and so-called occult or paranormal phenomena, the mere mention of which was considered to be a sign of mental deficiency. In particular, all the most prominent doctrines shown on the “map” accepted the possibility of art only as self-expression or escape from reality. Even in nature there was nothing artistic except by chance; that is to say, even the most beautiful appearances could be fully accounted for—so we were told—by their utility for reproduction, affecting natural selection. In fact, apart from “museums”, the entire map from right to left and from top to bottom was drawn in utilitarian colours: hardly anything was shown as existing unless it could be interpreted as profitable for man’s comfort or useful in the universal battle for survival.

Now a map is a representation of something mapped—in its most usual sense, a territory. It shows features by means of stylized conventions—contour lines, dots for places, wavy lines for rivers, different colours for different geological strata. It cannot show everything in detail, or it would be like the map in Lewis Carroll’s *Sylvie and Bruno*, as large as the country, and then we could not use it to find our way about the country. A map is not an *explanation*; it does not tell us why the features of the landscape are what they are, but it shows how they are laid out in relation to each other. (This may of course sometimes suggest explanations, e.g. that a town is placed at the mouth of a river because of access to the sea and the hinterland, but such explanation is not the primary purpose of the map.) Also a map is not an *exploration*. Explorers going into a new territory do not have maps; they have to find their way by compass and dead reckoning, and by climbing to places where they can get

an open view. Maps are made when people have already surveyed the territory; and other people can then use them.

This is relevant to Schumacher's "philosophical map". He is not an explorer, penetrating new territory. His map tells us how the territory has been seen and represented (his method of presentation, to drop the analogy, is assertion and not argument). Nevertheless, as we have said, though a map is not an explanation, it may be an aid to explanation, and though it is not exploration, to see how one feature is situated in relation to another may help exploration at the boundaries.

But Schumacher's particular map does not help us to explore; it is in effect a truncated version of the old map called "the Great Chain of Being" (a description he approvingly takes over). This map showed a hierarchy of "Levels of Being" which depended for its plausibility on a geocentric view, where the earth contained material substances, plants, animals and men. The chain was completed by Hell below and heavenly hierarchies, which included the stars above with God at the summit. The "Chain of Being" demanded that there be a form of being for every link from inanimate matter up to God, and also that each form should be a discontinuous link.

Schumacher only dwells on the four levels he sees as proper to our world: matter, plant life, animal consciousness and human self-consciousness. He does not suggest a Hell below, but he is open to the possibility of "Higher Levels" beyond our physical universe, and he certainly believes in God at the summit. The four levels within the world are distinguished by the commonsense classification of the game of "Any Questions?"—animal, vegetable, mineral, plus human on top. This is indeed a useful classification for practical purposes, but when it comes to using it for a "philosophical map" it is too simple. Matter is described in a way in which the prototype is a stone (he constantly speaks of "mineral matter"). It is said to be indefinitely divisible without losing its "Gestalt". Can this possibly apply to a view of the physical universe as comprised of dynamic fields of energy, of fundamental particles with quantum jumps? And though there are indeed differences between plants, animals and man, there may also be continuities not ade-



quately shown by saying that each higher level also contains the factors present in the lower ones—according to his formula (p. 27):

“man” can be written  $m + x + y + z$   
 “Animal” can be written  $m + x + y$   
 “Plant” can be written  $m + x$   
 “Mineral” can be written  $m$ ,

where  $m$  stands for matter,  $x$  for life,  $y$  for the kind of consciousness presumed in animals, and  $z$  for self-consciousness.

Certainly there are differences; but it may be that when we know more about some forms of physiological development we can also learn more about some forms of consciousness, not in the reductionist way which Schumacher rightly repudiates, but as being within a single process of development, in which a conscious state can control a physiological one as well as vice versa.

Indeed Schumacher’s map is rather like one of the old pictorial maps, where mountains were shown as little blue peaks with white on top, and forests as clusters of little trees. We might call these “ordinary language” maps, and they are extremely attractive. Modern ordinance survey maps use much more abstract types of representation, but they enable us to read far more of what we can expect to find in the territory—contour lines, for instance, tell you what the other side of the mountain will be like in some respects, and not only what the front looks like as depicted in the picture of the little peak. In other words, a “philosophical map” will need to be drawn in subtler ways, and it may also tell us more.

Nevertheless, a map is drawn after, and as a result of, exploration. We need philosophical maps, but at present, especially in the territories of man’s psychophysiological nature, about which so little is known, we first need explorers. Exploring is a serious activity which demands powers of observation, as well as courage and endurance. When Schumacher turns to describing ways of developing certain kinds of conscious awareness, particularly those needed for self-knowledge, he has some very good things to say which could well bear on the capacities which will be needed by explorers. He is particularly good on the need, and on some of the means, of coming to self-knowledge, and on how this can also be a way of getting

closer to understanding the inner world of other people, which is invisible to us in any direct sense. This gives his views a moral dimension which is lacking in accounts of enlargement of consciousness in, for instance, T.M.

So this is a courageous book, and if it invites people to be explorers rather than stick to his particular map, Schumacher would probably not have demurred. For the book ends with a distinction between “convergent” and “divergent” problems. A convergent problem is one which can be specified and given a technical solution (he instances the invention of the bicycle, and we might indeed instance some of his own “alternative technology” in tools and mini-tractors). Divergent problems are those which arise in living situations, especially in moral situations, where we seem faced with a choice between alternatives both of which are unsatisfactory (he instances the dilemmas of permissiveness and authority in education). The solution is not found by going for one at the expense of the other. People of another philosophical persuasion might say divergent problems were “dialectical”. Instead of “either-or”, one must look for a new position in which the opposition can be surmounted. Perhaps wisely, Schumacher does not speak of dialectical higher syntheses; he is more down to earth, and also prepared to be more visionary in seeing what it may cost to find a new approach, though in this book he invites us to find one rather than give it to us himself. The explorer must climb to where he can get a new view of the terrain, take his bearings, and plunge forward.



## Discussion

### Proposal for a new college

PETER ABBS, GRAHAM CAREY, ROY NIBLETT,  
MARY GLOVER, with Questioner

(This discussion formed part of the first of a series of seminars being held by the *Theoria to Theory* group and sponsored by a grant from the Hankey Foundation. Peter Abbs and Graham Carey have recently published a book, *Proposal for a New College* (Heinemann Educational Books). They describe the aim of the College as, “to integrate, for our own time and in the most demanding manner, the experiences of living and learning, of community and culture; a college which through its methods and habits may help to quietly usher in that post-industrial society on which the continuation of life must now depend; a college which nowhere exists, and which, in the encompassing wilderness of our educational institutions, calls out to be created.”)

*Roy Niblett.* I want to ask Peter if he will introduce some of the questions raised in his and Graham’s book. I expect he will want to raise some questions of theory and some of practice.

*Peter Abbs.* Let me quickly indicate the argument as presented in the book. As you ask about the philosophical aspect, I would also like to speak briefly of the notion of man as being primarily a symbol-maker, for this is one of the central concepts holding the book together.

The first section of *Proposal for a New College* is, we hope, a pretty devastating attack on contemporary education. We feel it has become highly utilitarian and extremely fragmented. I will give one or two examples of fragmentation from Sussex University

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where I work, and where it seems to me there is a terrible gap between what you might call *thought* and *labour*. When I am sitting in my room in the evening the “proletariat” come in with dusters and clean it. Old men clean the floors while young students talk about Marxism and socialism. These are simple examples of the rift between “study” and “work” which we draw attention to in the book. One of the unities we ought to work towards is that of hand and mind. So, the book begins with a critique of colleges and schools—we find them very drab in their concept of learning, and extremely fragmented, which results in people not feeling responsible for *all* aspects of their lives. After the critique we look at what we think has been a major shift of emphasis from about the time of the Renaissance—the emerging of the idea that *what is external is real*. So a notion of reality emerged which could only include the “objective”. Science was elevated, and everything subjective, within the person, became doubtful, shadowy, uncertain. This concept of pure objectivity has, of course, caused immense damage, as we are now beginning to realize. Then we look back at our great forerunners: at the monastery, incarnating a single totality of knowledge, labour and relationships; then briefly we look at Ruskin College, the Bauhaus, and Black Mountain College which ran for twenty-three years in America. We argue that we can learn from these rather diverse institutions because they were all trying to develop a concept of wholeness of life in which labour was seen as an essential element.

Having described our predecessors, the book moves to the idea of education as an aesthetic activity. I am not sure if “aesthetic” is the right word, as inside it we want to include moral values and the word is often used to suggest that beauty is an end in itself without reference to human meanings and moral evaluations. By “aesthetic” education we mean a whole education. We also use the word to indicate that life itself should be seen in much the same way as the artist views the material out of which he makes something. The task is to create that form of life which seems most appropriate. Finally we look at the concept of man as symbol-maker, and, at the end, we make practical proposals for the new college, showing how the tasks would be shared and a common life developed.

Now for the notion of man as symbol-maker. I will quote a short extract from the book.

Through the creation of the symbol man was able to reel the outside world into his mind. Through the symbolic process man developed the *power to internalise outside objects and to give them further meanings*. Thus, the enormous variety of things in the outside world came to form essential furniture in the house of consciousness. Because man had fashioned images and sounds for the things he had seen, touched, sensed, felt, he could continue to *reflect upon them* and to *possess them* when they were no longer there. He could recall to consciousness what would otherwise have been irretrievably lost. Furthermore the various internalised objects could relate to one another. Relationships between things could be forged. It is pertinent to note that the word "symbol" derives from the Greek word "*sumballein*" meaning *to throw together*, to join the diverse objects into an imaginative synthesis. The primitives' love of riddles testifies to this delight in the uniquely human capacity to perceive a similarity between objects dispersed in time and context. Poetic language is essentially *metaphoric language*, and metaphoric language throws together and fuses many unexpected relationships between dissimilar objects. It was this energy naturally expressing itself through vivid metaphor which Wordsworth saw as the most obvious gift of the real poet, perceiving "affinities in objects where no brotherhood exists to passive minds." It is the power that Picasso affirmed when he inverted a bicycle saddle and left it standing as a bull's head. It is not an important work of art so much as a pictorial maxim celebrating man's genius for recognising and creating analogies, puns, that talent for double vision which divides the human from the animal world.

The second facet of cultural experience which we want to emphasise here concerns a comparable process of transformation but moving in the converse direction, namely *from within outwards*. Through the symbolic process man was able to express—and not only express but give shape to and recognise—the invisible swarm of emotions, images, instincts, apprehensions, which buzzed through the dazed hive of his mind. Through the extraordinary phenomena of speech condensing both meaning and feeling a torrent of unconscious forces could be transformed into quiet pools of reflection in which man could discern his face. Shelley in his *Defence of Poetry* put the matter most succinctly: "Neither the eye nor the mind can see itself unless reflected upon that which it resembles."

The symbolic process has, it would seem, two aspects—to internalize objects "out there" and give them human meanings, and the ability to externalize what is within. It is this remarkable symbolic process which has taken man out of the ecological realm, and given him a spiritual dimension. The notion of man as a naked ape is thus quite inappropriate, as is the notion of man as a complex machine.

*R.N.* I suggest in the first part of our discussion we take up some of the more philosophical points and later on some of the practical.

I would like to ask a question. Will the students likely to be attracted to a college such as you have in mind be those who have felt in their own lives something of the separation and disunity you spoke of as one of the troubles of our age? The University of Sussex itself started off not so long ago as a protest against utilitarianism and fragmentation in education. It sought to get some of the answers through creating schools of study. It refused to have departments or heads of departments because it thought this might lead to a less meaningful institution. It thought students coming to Sussex would be affected by the new intellectual atmosphere of the place. You are suggesting that by 1977 this may no longer be the case. Is this because students were selected by wrong criteria, or members of staff were too much affected by the spirit of the age—including, maybe ambition for further posts they were unlikely to get unless they fitted in with the more conventional viewpoint? Or was it that the students should have been a good deal older? If they had been recruited when they were more mature they might have been more receptive to the kind of thing you had in mind and which, to a limited extent, Sussex had in mind fifteen to twenty years ago.

*P.A.* I think first of all it is important that Sussex, even in its pioneering days, was not trying to do what we are proposing. The founders of Sussex accepted the idea of a university as a place for the pursuit of knowledge and understanding *divorced from labour*. There was, for example, no notion of students communally preparing their own meals and looking after the gardens. There was always a hidden proletariat beneath the academic life and supporting it. Nevertheless there were some important new ideas in Sussex, but it never saw *all* the tasks of life as the proper material for educational activity and transformation. It was not seeking community or wholeness of being. And Sussex, like most other universities, has now become too large and therefore both bureaucratic and highly fragmented though, of course, some excellent work is done there.

*Q.* You were at Keele (now the University of N. Staffordshire), Mary Glover, where there was also an idea of giving students a broader experience of education. What about that?

*M.G.* At Keele the broadness of experience we offered to students was basically through the Foundation Year where it was thought

a good idea if everyone knew a little about a lot of things, and each of fifteen professors gave a course on his own subject, not, for instance, talking about what the laws of physics are, but about the kind of way the physicist works, and so on with other subjects. I don't think we aspired to "wholeness" which seems to be a fantastic unreality, but to a wider experience of knowledge and life. The honours degree consisted of two main subjects and three subsidiaries, and these were to be an arts one, a science one, and a social science one. We found this was too much of a burden. People fell by the wayside, having constantly to be offering themselves for examination in subjects they had hardly heard of before. So we reduced them to two. My impression was that the Foundation Year didn't work as its originator, Lindsay, expected. He couldn't imagine anyone not wishing to know about astronomy or psychology, or the Middle Ages, or whatever, and he was asking these students to sustain arduous information about things they didn't care to know about. Human nature quailed at the great assortment of different kinds of knowledge. It is now more possible to some extent to choose two subsidiary subjects which will support your main subject. But they were allowed and indeed encouraged to choose subjects that had nothing to do with each other. This might turn out well or not. I remember one young man who took as his subjects Geology and Latin and I said, "These don't seem to have much to do with each other," and he said, "Oh, but they do. I am now doing a research subject that uses them both, the study of Roman milestones. As a geologist I can tell where the stone has come from, and as a Latinist I can read the inscriptions". But I didn't think their mutual relevance was very real.

*Q.* One more point about Keele. Though they didn't talk about "Wholeness", they started in huts so you could go and look in at your professor's window. There was no hierarchy. Then when they got more money, and many more staff and what have you, something which had not been talked about vanished.

*R.N.* Two things about Keele. From the very start it was believed students should be in residential communities, whereas Sussex at the start was content to have them in boarding houses in Brighton. Also, though it is true Keele expanded, it did not expand anything



like as fast as other universities. Even now it is much smaller than Sussex as a deliberate policy.

*M.G.* We went into residence and began life very much sooner than it seemed probable that we would be able to because we were living in what had been a military base with strings of little huts. This meant that students found themselves with five or six other people, and they always wanted a cup of tea at 9 o'clock and met informally to make it. So they had the experience of talking and making friends with people not reading their subject. We were ashamed of living in huts and we went on to build some enormous and very dreadful residences, and the student groupings were scattered. Then we realized what was being lost, and built residences divided by staircases where there were places where people made tea, so that it would become natural for them to meet and talk with the same people. Our all living in huts together in the early years had a great deal to do with the very good relations between staff and students.

*P.A.* I think the points about residence and scale are very important. Nearly all our universities and indeed secondary schools have become much too large for any sense of community. Individuals do not feel responsible for the institution of which they are members. So we say that we don't want to have more than 200 in our new college, and it will be residential not only for students but also for nearly all the faculty.

*Q.* In any institution organized as Abbs and Carey want to organize it, especially one run by a plebiscite, after about three weeks the wives will be doing all the work. It is a piece of sentimentality to say that you must never pay anyone to clean anything however much you respect them, and it gets replaced by a piece of cruelty by which the wives do the work and get overstrained. This causes the breakup of community after community. Stopping this kind of thing happening is a major enterprise.

*P.A.* We draw a lot of attention to the importance of weekly meetings where problems such as you are mentioning might emerge and be seen as raw material for discussion.

*Q.* You will want, as they have at the Quaker community at Pendle Hill, a strong leader who clobbers the men who dominate

the weekly meeting and finds out where the real trouble is. You cannot do it by plebiscite. That is a cruel form of government.

*P.A.* We don't use the word "plebiscite". We talked about the open and continuous discussion of problems as a crucial part of the educational process.

*Q.* You can educate people in the process of political democracy like this with up to about eight people, and less well with up to about fifteen, but by the time there are thirty people it will be dominated by strong characters unless you have something to counteract this.

*P.A.* We are saying that open discussion of conflicts should be part of the educational process, and that people tend to suppress conflict rather than use it.

*Q.* To justify that part of your book you should first have lived in a monastery, and then in a place totally open in theory like a kibbutz, and then probably in another group of ten or twelve persons. There is no substitute for discovering what goes wrong.

*P.A.* I take the point. This is something one could only come to terms with as it emerged in living in such a college.

*M.G.* Discussion always favours the people who are good at discussion. The people who are having a hard time in any institution are very often not good at finding the words to express what they feel.

*Q.* In the Epiphany Philosophers group which started this journal, at the times in the year when we live together we have what we call a "Chapter of Faults". When it goes well it becomes merely funny. When it goes badly it can become tense, but this can be resolved because each strong character has a chance of coming to see where what he has done has annoyed other people. It is not about deep personal things: it can be about trifles, and it is not a question of right or wrong but of seeing that you have annoyed people. It may have been by talking in a way that hurt them in a discussion, or by skiving the washing up, or indeed making something like washing up an excuse for not having written that paper. It breaks down barriers because each person himself has a chance to say what he thinks he has done, instead of being cursed by other people, or things being said behind his back.

*R.N.* May I link this with the question of selection of students for the college? Will you, for instance, want to test people's practical abilities as well as intellectual promise, as there may well be some people who would really like to spend time on practical tasks, far more than some others who were more intellectual. The practically minded people might feel that the management by the intellectuals was below standard.

*P.A.* One of the courses that would be available would be an integrated course, drawing together domestic science, ecology and the daily running of the farm. So those who wanted to come to the college because they were concerned with organic farming methods and the production of good food would choose that sort of course. But there would remain other tasks like looking after the library, working at harvest time, gardening, cooking, where I think students and faculty could, in the first place, be asked to sign up according to their preferences. The common chores like cleaning the place would have to be shared by all.

*Q.* You can't run a farm like that. It wouldn't pay. And you wouldn't get enough people wanting to do the cooking; also you are underestimating the chores. And in farming, what about milking the poor old cows? How do you combine being able to count on someone milking them at five o'clock in the morning with the kind of freedom of choice you want?

*P.A.* The farm would have to be run almost as a separate but integrated unit and there would be a farmer in residence.

*Graham Carey.* There is a major misconception in many people who read this book, thinking it is a completely free and easy college. It would have to have a very disciplined approach to work.

*R.N.* What is the source of this discipline? What replaces the theology of the monastery, or the leader? The only thing I see that is supposed to fulfil this function in your college is the symbol-making activity.

*G.C.* I don't see that in itself as a binding idea.

*Q.* Then if there isn't a religious base, what will form the motives for the discipline?

*G.C.* The college might start spontaneously and in a very small way and begin to get off the ground. That is one way. The other,

which I favour is to have regular preparatory meetings of a working group over a period of a year or two. The question of work and dedication to tasks you may not want to do is faced in the commitment to the academic work. We don't advocate much in the way of interdisciplinary studies, or a futuristic education. We are happy with many of the disciplines that exist at the moment. For instance, I want to see a vigorous school of dancing; also language, literature, sociology, taught as themselves expressing a binding principle. Also there is a strong binding principle in *the sheer necessity* of the domestic work. If you do not make the bread or carry the water you simply cannot eat or drink!

*R.N.* The question of the binding principle or coherent philosophy behind the institution is a very far-reaching one. Of course one's philosophy can be entirely or almost entirely unconscious. But if it is, I would have thought that it needs bringing up into consciousness, or there will be disagreements that could have been resolved if the underlying purposes had been better defined, So I regard this as more important than perhaps others do.

We should also get further down to practicalities, in which I should include on what criteria are the students to be selected; is it to be entirely self-selection? How would they be financed to come to a college they may passionately wish to come to, but have no money to help them to do it. And what qualifications will they emerge with? So I should like to ask Peter and Graham or both to say anything more they would like to about this question of binding principle, if they can bring the philosophy a bit more up into consciousness, so that it can act as unifying agent.

*G.C.* People will do work if they find there is a good reason for doing it. The book itself forms the germ of a binding principle. It takes ideas from a number of places, and we make no apology for going back to a number of traditions.

If you are a good dancer, this provides a reason for your existence. You can come to terms with yourself through your dancing, so the kinds of things you are doing provide the core of the discipline. The self-managing side of the college is essential. You can't exist for long without bread to eat and clean water to drink. Tolstoy spoke of "bread labour", and this is a binding thing because life

depends on it. The cultural side of the college is academic work, not narrowly conceived, and seen in aesthetic terms.

*Q.* Peter said earlier that you use the term “aesthetic” to cover not “aestheticism” but also morals. Does it stand for an attitude to life that could be your binding thing?

*P.A.* The college is not founded on a single fixed principle but is attempting to fulfil a need created by the conditions which surround us. We live in an age in which, for most people, there can be few easy certainties. We live in a time of terrifying ethical, psychological, and spiritual confusion, and I can't see this ending quickly. I think we are in a time of spiritual disintegration. We are aware of so many alternatives in philosophy and ethics and of so many cultural forms that we are faced with a whole range of possibilities for living. This is both exciting and frightening. It is exciting because it opens up, expands our concept of Being-in-the-world but it is also frightening because one feels one is going to lose one's centre of gravity. One dominant response has been the technical response whereby people believe in the technical process, the perfecting of the Machine; again and again things are beautifully produced, but to no purpose. Television and photography reach an acme of technical perfection yet the purpose to which they are put is often quite banal. I regard technicism as a perversion that is coming to an end. Some of you may say the binding principle should be Christianity. I myself think we can learn from Christianity but we must admit it has become extremely difficult for people to be Christian in any traditional sense.

These are the peculiar conditions of philosophical uncertainty creating a need that must be satisfied and is not met by the prevailing utilitarianism of our society. Where technology is now emphasized, we should emphasize culture, where consumption is now emphasized, we should emphasize conservation. If we just carry on with this vast Faustian technological experiment the earth itself will become uninhabitable; it is this knowledge and all that it entails, which will bring into existence a richer concept of education, a concept of education which we believe a number of small experimental colleges should now be exploring, building paths towards a future we can all possess.

# A cognitive view of Biological Process

BRIAN GOODWIN

## INTRODUCTION

My intention in this essay is to describe the emergence of a new view of biological pattern formation which links this area of study very much more closely to human pattern-forming activities than has been the case in the past. During most of this century, biologists have tended to make the assumption that, somehow or other, detailed studies in genetics, biochemistry, and biophysics would eventually provide explanations of the processes which generate limbs in insects, feathers on birds, spiral patterns in the arrangement of leaves on plants, and spots on ladybirds' backs. This expresses a reductionist belief which is now floundering badly and is being replaced by a view of biological process which seeks to understand pattern formation in terms of rules or laws operating at levels above the molecular and the genetic (in the sense of products of the primary genetic material, DNA). Furthermore, these rules are biological, not physical, although they in no sense violate the laws of physics and chemistry. It is here that this new approach to morphogenesis differs quite sharply from the view of the most outstanding student of biological form in this century, D'Arcy Wentworth Thompson. His study, *On Growth and Form*, published in 1917, sets forth the thesis that form can only be understood through mathematics, and that the forces which operate in the genesis of biological structure are essentially physical. That mathematics and form or order belong together few would dispute, but D'Arcy Thompson's view tends to eliminate the biological as a distinct and autonomous realm of nature, i.e., his reduction of biological

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structure to the operation of mathematical and physical laws fails to recognize the biological origins of the constraints which generate this structure. It is biological process which “discovers” rules, expressible in mathematical form, these rules giving rise to order and pattern. This process is both orderly and creative. Furthermore, I will argue that it may also be seen to be cognitive. Thus biological pattern formation assumes characteristics which link it closely with the processes which generate pattern and order in human society. However, this similarity is not an identity: I do not wish to imply any reduction of the social order to biological order, which would simply commit again the reductionist fallacy at another level. The creativity of Nature is not the same as the creativity of Mind. But I will argue that they are much more akin than current thinking allows.

#### THE FAILURE OF THE REDUCTIONIST VIEW OF PATTERN FORMATION

One of the most distinctive characteristics of biological process is its capacity to generate a great diversity of structures, forms, and patterns. The evolutionary process generates species of distinct morphology and behaviour, the developmental process generates individuals of characteristic form from eggs or buds, the process of living manifests itself in behaviour patterns such as hunting, feeding, talking, building, etc., typical of the individual and its species. In recent decades, the dramatic success of such subjects as genetics, molecular biology, and neurophysiology in analysing biological activities in terms of units such as genes, molecules, and neurons encouraged the view that a satisfactory understanding of biological pattern formation would arise from the detailed study of the properties and behaviour of these units, order and complexity arising from their interaction. However, this analytical programme of reduction and resynthesis works satisfactorily only when there is an extremely simple and direct relationship between the units of a system and its higher-level behaviour, as in a gas where the momentum or the kinetic energy of the molecules can be averaged to determine the pressure or the temperature of the gas. Of course there must always be *some* relationship between the properties of the units

which are construed to exist within a complex system and the behaviour of the system itself. The problem is that if the units themselves are complex, in the sense that macromolecules or neurons are complex, then there are very many different ways in which higher-order behaviour can arise. The reductionist programme is then faced with the virtually impossible task of exploring all the possible interaction patterns available and selecting those which conform to observed higher-order behaviour. Given that one never has complete knowledge of the properties of the units, so that the relevant behaviour may well be missing from the computation to begin with, it is clear that this is not a very reliable strategy to pursue in the study of biological pattern formation at the macroscopic level, that of the species, the individual, and its behaviour.

An alternative approach, which has always been an important strategy in science, is to observe the behaviour of the system of interest, to record its regularities, and then to see if it is possible to devise simple formal rules which act as axioms from which the behaviour of the system may be deduced. These formal rules then represent the constraints within the system which underly its orderly behaviour. It may happen that they can never be reduced to certain categories of behaviour of simpler units, as the inverse square rule or law of gravitational attraction could never be reduced to the mechanical properties of matter, much to the discomfiture of seventeenth-century mechanical philosophers. However, scientists rapidly accommodate themselves to such eventualities, and quite soon even go so far as to believe that a phenomenon such as gravitational attraction is in some sense explained by the law, whereas it is only described. What is explained by the use of the rule is, for example, planetary motion. Newtonian mechanics is a generative theory in the sense that it allows one to generate patterns (trajectories which are conic sections, e.g. ellipses, parabolae, or hyperbolae) by means of formal operations constrained by rules (the calculus, with the inverse square law of attraction), and these patterns fit the observed behaviour of the planets. This is not a reductionist theory, since the phenomena can be explained in terms of units and rules which correspond to the level of the observables themselves. Reductionism entered science largely with the adoption of the atomic hypothesis in the seventeenth century. It is an



extremely useful hypothesis for the explanation of certain microscopic phenomena in physics, chemistry, and biology; but not, I submit, for the understanding of biological pattern formation.

### COGNITIVE BIOLOGY

In facing the problem of pattern and order in biological process, I believe that biologists will be induced to adopt a very different view of organisms and their evolution from the reductionist and materialist one which has prevailed throughout this century. This will bring biology much closer to the ideas expressed by Whitehead in his philosophy of organism, and the idealist approach to the understanding of form which originated in the West with Pythagoras. Developmental biologists are now beginning to describe the appearance of characteristic structures such as limbs, and eyes in terms of systems obeying formal rules whose molecular interpretation is left undescribed and is irrelevant for the explanation of the phenomena of interest (French, Bryant, and Bryant, 1976; MacDonald, 1977). These rules are not in the category of natural law, as the physicist tends to regard the law of gravitational attraction. They are rules which have been arrived at by the evolutionary process as a solution to the problem of reliably and repeatedly generating particular types of form. And they are of course inherited, passed on from generation to generation.

What sort of system is this which employs rules to generate useful structures and behaviour patterns, and which can transmit the rules to its progeny? I have argued that such rules constitute knowledge, and that a system which uses knowledge is a cognitive system (Goodwin, 1976a, 1977). This comes from an extension of an argument presented by Chomsky (1972) in a linguistic context. In his analysis of linguistic competence, Chomsky presents evidence for an instinctive, unlearned capacity for generating correct sentence structure or syntax, a capacity which emerges in the course of the human developmental process. The rules or constraints which constitute linguistic competence define the processes which generate the correct surface structure of sentences from their deep structure,

such as structure-dependent operations in sentence transformation. Possession of these rules, i.e. possession of the structural (anatomical) and functional (physiological) constraints which are the embodiments of the rules, is equivalent to having the knowledge required for speaking correct sentences. This knowledge is not learned, but is innate, inherited as part of the human genotype. Chomsky's (1972) contention is that "knowledge of language results from the interplay of initially given structures of mind, maturational processes, and interaction with the environment". Innate structures are thus seen to constitute elements of knowledge. I have simply used this proposition in a more extended form to suggest that the basic attribute of living organisms is their possession of knowledge about aspects of the world, knowledge which renders them competent to survive and reproduce in the environment to which they are adapted or which they know.

I have defined knowledge as a useful description of some aspect of the world, giving the possessor the competence to behave in a manner which contributes to its survival and reproduction (Goodwin, 1976a). The fact that we are dealing with descriptions means that there are codes or sets of codes which relate it to that which is described. The unravelling of such codes, which is the equivalent of learning to read an unknown language, together with the solution of the problem how the knowledge is transmitted reliably from generation to generation, has been a major preoccupation of contemporary biology. Coded knowledge is located largely in the DNA, which acts as a primary memory store for the organism, this knowledge being in the form of hypotheses which need to be translated into active form for testing. However, there is a great deal of "tacit" knowledge in other structures. The elucidation of the translation and assembly process from the coded linear sequences in the DNA to active three-dimensional proteins which function as tests of genetic hypotheses by revealing their meaning, constitutes one of the triumphs of twentieth-century biology.

I used the term "meaning" above in relation to the translation and testing of genetic hypotheses, and it needs some clarification in this context. In coded form as it occurs in the DNA, the information for a particular protein such as the enzyme  $\beta$ -galactosidase

(required for the catabolism of the nutrient lactose in micro-organisms) or a crystallin (a protein which forms the transparent lens of the eye) cannot be tested because it exerts no action upon the organism or its environment. Before it can be tested, the information in the DNA must be translated into a form in which it exerts a particular type of force and acts within a particular context. Thus the  $\beta$ -galactosidase converts lactose into glucose and galactose when it operates within the context of the bacterial cell (which defines particular conditions of pH, osmotic concentration, substrate level, etc.); while a crystallin transmits light rays in a particular way within the context of the eye. These activities may be said to constitute tests of meaning of the coded hypotheses in the hereditary material, involving the interpretation of the information. This interpretation takes place within a particular context, which in part determines the pattern of forces which operate during the testing operation. We then arrive at a distinction between information and knowledge. The technical definition of information involves only selection (e.g., specifying one out of a set of possibilities), but says nothing about meaning, which I take always to involve activity in real space-time. Thus knowledge differs from information in that it not only involves selection of alternative possibilities, but also includes instruction for action which, operating in a particular context, conveys meaning.

### GENERATIVE PROCESSES

In the rather detailed discussion given above, it is clear that every aspect of the behaviour of what I have called a cognitive system is compatible with physical and chemical laws. However, such a system transcends the rules of physics and chemistry in that, besides obeying these, its behaviour is constrained by other rules which are the embodiment of particular types of knowledge of which it makes use. This allows such systems to operate in domains which, while available to systems obeying the laws of physics and chemistry, are relatively improbable; i.e. cognitive systems can stabilize behaviour in physically and chemically improbable states by means of particular rules of action which they have embodied in parts of their

own structure, such as catalysis of chemical reactions by enzymes so that relatively high rates of metabolic transformation can occur at low temperatures. By thus regulating their own activities through the imposition upon themselves of specific rules or constraints, biological systems have managed to discover and exploit an immense range of behavioural and morphological patterns. To give an architectural example, although rectangular stones occur in nature they are very rare; and structures in which they are piled on top of one another are much rarer still. However, the art of the stone-mason and the builder consists in following some very simple rules about shaping stone and assembling it, and these rules then permit the construction of an immense variety of highly improbable structures, from Stonehenge to Chartres Cathedral.

The essence of order and pattern is adherence to laws or rules; and the characteristic of cognitive systems is that they operate in terms of rules which stabilize useful temporal and spatial patterns. The process whereby such rules and the variety of their applications is discovered is described as creative in a human context, and I would suggest that the evolutionary process shares this property. We do not yet know how to describe this creative potential of evolution, which generates organisms of greater and greater complexity constrained by the necessity that this be relevant, meaningful in its context; i.e., that it be biologically successful. (But see Saunders and Ho [1976] for a very thoughtful and interesting paper on this subject.) Such generative processes appear to have the property of proceeding from symmetry to asymmetry, which involves an increase in complexity; but then a new symmetry is generated which resolves the complexity into higher-order simplicity without, however, losing the lower-level complexity. Thus in the evolution of the human hand, the development of the opposable thumb involved the breaking of a structural and dynamic symmetry in the organization and behaviour of primate digits. The grasping action of the primate hand wherein all the digits act in unison, so well adapted to swinging in trees and grasping certain types of object, is transformed into a much more complex structure with great independence of action of the thumb. However, the human uses a series of coordinating activities for the hand which involve higher-order symmetries such as the coming

together of the first finger and the thumb in the typical action of picking up a small object, or the opposed wrapping of thumb and fingers around a stick. These symmetries have a bilateral element rather than the simpler unilateral action of the primate, giving a unity of movement and action to the more complex structure.

Alternatively, asymmetry can arise as a functional adaptation within a system with higher-order symmetry as in the breaking of symmetry of the aortic arches in the evolution of the circulatory system in vertebrates, which retain a bilaterally symmetric overall body plan. Thus the hierarchical organization of biological systems, both structural and functional, allows for the appearance of asymmetry at one level and symmetry at another. However, the general tendency is for symmetry to evolve into asymmetry, as in the phenomenon of cerebral dominance and handedness in human beings, which breaks the bilateral body symmetry of the vertebrate line; and then for a higher-level symmetry to appear. In relation to human evolution, the higher-level symmetry which transcends the asymmetry of cerebral dominance is not yet evident. It is, however, clear that the biosphere needs a more balanced dominant being than the one currently with us, and we may look forward hopefully to its emergence.

It is of some interest to pursue this line of thinking in a little more detail, and to see if there is an analytical foundation for the ideas presented above, since in certain respects they appear to be at variance with some basic generalizations about "natural" process as described by physics and chemistry. What I am suggesting is that there is a natural tendency for systems to break their symmetries and become asymmetric, thus becoming more complex. On the other hand, physics says that, for a system with given constraints, there is a natural tendency for asymmetry to disappear and for entropy (disorder) to increase. Thus, if a thermally isolated gas or liquid starts with a temperature gradient, then the natural tendency is for this to disappear and for the initial heterogeneity of state (asymmetry) to decay into homogeneity (symmetry), with a uniform temperature throughout the system. This is a fundamental property of thermodynamically isolated systems, and is expressed in the second law of thermodynamics. However, observe that the

statement of the law depends upon the assumption of fixed constraints: entropy increases to the maximum subject to given constraints, in a thermodynamically closed system. If we are concerned with systems whose constraints can change, then the law no longer applies, and this is the situation for developing or evolving organisms. The problem then is to formulate a "law" which describes the general tendency for complexity to increase in systems which can undergo this more general change, and which suggests why such a process is "natural". By "natural" one usually means that increased complexity is, on the whole, more stable than decreased complexity. One way of looking at this problem is in terms of structural stability, a concept used to describe the properties of dynamical systems whose parameters ("constraints") are subject to change. In this context, it is the case that asymmetry is more stable than symmetry; i.e., systems with symmetry transform into asymmetric systems under a perturbation (variation) of parameters. Particular examples are the transformations of periodic systems undergoing simple harmonic motion, such as an ideal pendulum, into either a damped oscillation (a real pendulum with friction which eventually comes to rest) or into a limit cycle (a child on a swing); the emergence of spiral motion in water running down a plug-hole, from an initially symmetric flow; or the appearance of coherent light emission from a laser when the external "pump" exceeds a particular energy level. All these asymmetries arise spontaneously in systems which are displaced from thermodynamic equilibrium and are subject to parametric perturbations. Thus the transition from symmetry to asymmetry, i.e., the breaking of symmetry, is a natural process in systems whose constraints are subject to change, and this provides a description of the general tendency of such systems to increase this complexity (asymmetry is more complex than symmetry; it requires more terms to describe it). However, this is a long way from giving us a theory of the evolution of living systems. These are not simply complex; they show ordered complexity, or organization. The way one represents this central property of organisms is crucial to any attempt at a formal analysis of generative processes, ones which operate on the basis of knowledge or useful descriptions, seen as ordering or organizing constraints. I do

not wish to pursue these technical problems here, but rather to take up the more general discussion of the implications of such a view regarding the creativity of the biological process.

### **BIOLOGICAL PROCESS AS CREATIVE BECOMING**

To obtain some initial focus on the concept of creativity, let us start with Descartes' description of speech and language as creative expression. There are two essential ideas here: relevant novelty, and constraint. A competent language user can generate an unlimited variety of sentences, each of which is relevant or appropriate to some situation; but there are severe constraints on the structure or form of each sentence, imposed by the demands of communication: the hearer must be able to recover the meaning of the sentence. These constraints or rules, which determine syntax and grammar, constitute part of the knowledge required for linguistic competence as described by Chomsky (1968) and discussed above. It is this view of knowledge, extended to the basic organization of living systems, which provides the basis for the cognitive biology which I have described in previous sections. Thus wherever one finds the appearance of relevant novelty within a system subject to constraints which are expressions of knowledge, as defined previously (i.e., useful descriptions of aspects of the world), one has creative expression. One example of this in a biological context is the behaviour of developing organisms, which I have described previously (Goodwin 1976a, b). Embryos may encounter during their development particular circumstances which require what is called regulative response if the final result is to be a normal adult. For example, loss of tissue from a part of the embryo can only be compensated for if the behaviour of neighbouring cells or tissue can be altered in such a way as to compensate for the loss. There is an unlimited variety of different contingencies which may be encountered, so that there is an unlimited number of appropriate responses which the embryo must be capable of making. Different types of embryo differ in their capacities to respond in this way. The analogue of the communication requirement which imposes constraints on sentence structures is the survival and reproduction

requirement in the adult organism, which imposes the constraints on the developmental process embodied as rules which generate a “successful” organism. Thus we have creative behaviour in the developmental process which is analogous to that in linguistic communication.

However, there is a more general type of creativity, and that is the discovery of rules which generate a new and successful organism: i.e. the evolutionary process producing a new species. This is the behaviour described above in terms of the transformation of symmetry to asymmetry by parametric perturbation, subject to the constraint of survival or relevance which tends to require the emergence of a higher-order symmetry. Expressed less technically, this is the process of generating new organisms as a creative response to new opportunities which emerge from the on-going nexus of organic evolution. In order to make a full transition to the description of biology as a creative process, one needs a philosophy which takes the essence of being to be creative becoming, and which is free of the positivistic and dualistic elements which permeate contemporary science. There can be no atoms of substance or meaning in a creative process where every element of structure and function is sensitive to its context, a property I have argued is characteristic of biological systems (Goodwin, 1976a, b); and a cognitive biology which assumes that organisms have real knowledge of the world requires that the “subject” possessing this knowledge and the “object” whose properties the knowledge expresses be essentially similar in nature, not distinct. A philosophy which satisfies these requirements is that of A. N. Whitehead. What I shall do finally in this essay is to explore what I regard as some of the implications of an organic philosophy of Whitehead’s type, particularly those relating to his manner of resolving the body–mind or substance–quality dualism which is a prominent feature of contemporary scientific thought, and is a severe hindrance to the development of an adequate theory of organism.

### COGNITION AND CREATIVE PROCESS

My own definition of knowledge as a useful description of an aspect of the world has itself dualistic overtones, since it can be taken to mean



that the description need not reproduce the essence of that described, but only represent it in some formal sense. My meaning is that knowledge is manifest when there is a re-enactment of the process which is described, as the biological clock re-enacts the cyclic process of the night-day-night transition. The evolutionary history of the organism, which includes the experience of these day-night cycles, is embodied in the organism's activity. Therefore its knowledge is in its process; it is not something static, set aside from this process. Thus instead of a description of the organism's world emerging from the organism as subject, which is the Cartesian or the Kantian way of looking at knowledge, we have the organism emerging from the world as an organized, coherent whole in which knowledge is a constituent of activity: a constraining, ordering constituent, as described above. As Whitehead (1929) has put it: "Descartes in his philosophy conceives the thinker as creating the occasional thought. The philosophy of organism inverts the order, and conceives the thought as a constituent operation in the creation of the occasional thinker . . . . In this inversion we have the final contrast between a philosophy of substance and a philosophy of organism." The creative process thus realizes itself through the organized activities of living beings. For Whitehead this description applies not only to organisms, but to Nature in general, thus avoiding a physical-biological dualism. But, we then find ourselves in the position of asking what is the nature of these living beings if they are other than biological organisms; i.e., how are we to recognize other "actual entities" apart from ourselves and other organisms? We are faced with some kind of distinction between the organic and the inorganic, between animate and inanimate. Whitehead regards this distinction as fictitious, arising from an abstraction. He also appears to deny that there is any significant distinction between organic order and mind. This denial results in the important assertion of continuity, of a basic unity in the world; but it fails to recognize different levels of creative organization, and to distinguish between them. I have suggested a distinction between biological and physical process in terms of the concept of a cognitive system (Goodwin, 1976a); but a distinction between organisms and minds requires a theory of symbolic and moral processes which characterizes human intelligence and contrasts it sharply

with the constrained knowledge which operates in organisms. Symbolic thought has degrees of freedom not available to processes which employ fixed relationships of interpretation and meaning between structures and their descriptions (reproductions or re-enactments). A brilliant beginning for such a theory of symbolism is provided by D. Sperber (1975).

However, despite the necessity for clear distinctions between levels of organizational complexity in nature, I believe that a major consequence of Whitehead's philosophy of organism is the resolution of the Cartesian duality in his vision of the world as creative process. The fundamental category of being is activity, creative activity. In relation to organismic process, knowledge is an essential ordering ingredient. Man as an actual entity interacts with every other actual entity, i.e. the rest of the universe, and this is how the world can be known, why it is intelligible. Knowledge cannot be obtained without this union, and the way of science is the way of experience. Knowledge comes through the resolution of complication into greater and greater simplicity, and the art of resolution is the art of life. A cognitive biology seeks to bring this vision into clearer perspective. The way is made infinitely easier by the extraordinarily penetrating insights of Whitehead.

#### References

- Chomsky, N. (1968). *Language and Mind* (Harcourt, Brace & World).
- Chomsky, N. (1972). *Problems of Knowledge and Freedom* (Fontana).
- French, V., Bryant, P. J., and Bryant, S. V. (1976). "Pattern regulation in epimorphic fields", *Science* 193, 969.
- Goodwin, B. C. (1976a). *Analytical Physiology of Cells and Developing Organisms* (Academic Press).
- Goodwin, B. C. (1976b). "On some relationships between embryogenesis and cognition", *Theoria to Theory* 10, 33.
- Goodwin, B. C. (1977). "Cognitive Biology", in *International Workshop on the Cognitive Viewpoint* (eds. M. de Mey, R. Pinxten, M. Poriau, and F. Vandamme), p. 396.
- MacDonald, N. (1977) "A polar co-ordinate system for positional information in the vertebrate neural retina". *J. Theor. Biol.* 69, 153.
- Saunders, P. T., and Ho, M. W. (1977). "On the increase in complexity in evolution", *J. Theoret. Biol.* 63, 375.
- Sperber, D. (1975). *Rethinking Symbolism* (Cambridge University Press).
- Whitehead, A. N. (1929). *Process and Reality* (Cambridge University Press), p. 210.



## Birth of a language\*

RUDOLF BENESH

[EDITORIAL COMMENT. *One of the great, perennial desires of human beings is to design a usable language. One of the great, perennial mysteries is that they can never do so.*

*Thus Bishop Wilkins, in the early days of the Royal Society, designed his Character Universalis, "An Essay towards a Real Character and a Philosophical Language", 1668; but it was still-born: nobody ever used it. In our day, the modern counterparts of Bishop Wilkins try to design interlinguas—that is: universal languages which will enable people who speak only differing languages to communicate with one another. These fail also: not in the sense that they cannot be constructed, for they have been constructed: but in the sense that they do not "take on"; Esperanto, Lincos, Latine sine flexione and the rest all exist: but only those with a special interest in such things study them while in practical life what we get is not any progress towards a universal language, but in each large-scale region of the world the establishment of a lingua franca. Thus over large areas of the world more and more people are currently learning English, in other areas Spanish.*

*Why is this? What is it which prevents us from devising universal systems of communication? When we look into the matter we find that in the field of the very abstract, we indeed have one such universal system, namely mathematics: and in the field of the very limited and concrete we have another, namely the system of international road-signs. But we have nothing in between: and we don't even know why.*

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*The paper which follows attempts to explore this basic question. It is a seminal paper: it is an exceedingly difficult paper to understand, and the author of it, Rudi Benesh, who meant to expand it into a book, was not able to do so before his death. But it is a paper written with authority, because the author of it has succeeded in doing, over the field of dance, that very thing which we all of us thought to be impossible: namely, to develop a "Language" or method of recording any kind of dance which people can really use and do use: which has "caught on".*

*One or two of Benesh's terms become easier if they are explained. By "axiom" for instance, he means "principle", for his first "axiom" is that dance, since it is an art which must be appreciated by the eyes, not by the ears, must have a visual notation to record it. And so he starts with three visual signs to record it: an upright dash, a horizontal dash, and a dot; and placing these in various positions on a musical staff, works out the cases of what can be signified, in dance terms, by their combination.*

*So far, so good; this is what anybody devising a notation would do. But then what?*

*In this paper Benesh struggles to explain what next happens: and to describe the two great "barriers" which anyone trying to turn a notation into a language which people will actually use must somehow break through.*

*An account of the Benesh notation and its use is given in Reading Dance: The Birth of Choreology, by Rudolf and Joan Benesh: Souvenir Press, 1977. See also Kathleen Russell's note about the cover design of Theoria to Theory XI i-ii. The bottom staff in that cover design shows a piece of the notation.*

It is now possible to look back over a period of more than twenty years of development in the field of movement notation and languages. This enables one to theorize and see in perspective how languages, at least how movement languages and notation, have

come about and assess the reasons for success, and to speculate as to the possibility of formulating any general linguistic rules.

There are two distinct stages in these developments:

Stage I is the notation evolving stage, the end product being an alphabet.

Stage II is the practical application of notation and the evolving of languages. In fact, "Choreology" in the present case.

Teaching could be considered a third stage but is not concerned with the development of a language.

Stage I is by nature mathematical and has been likened to Euclid. It commences with Axioms and Premises which are manipulated according to certain concepts. The means is the strict application of logic, consistency and ergonomics. The result is a basic alphabet.

Stage II. Choreology is the evolving of languages out of the basic alphabet. These are, for example, Ballet, Modern Dance, Jazz, Indian Dance or applications to medical, scientific or industrial use. The principles in each case are roughly similar. First comes the spelling of words—postures, positions. Then compound words—steps. Next syntax, the order in which the signs of the alphabet or words must be used. Then there is the grammar which covers the principles of redundancy, conditioning and a scale of values. Grammar analysis could later be carried out into the classification of steps, similar to the classification of words into nouns, verbs, etc. Finally, and very important, comes the technique of composition.

The above outline of Stages I and II will be later explained in some detail but first there is an all important factor to be considered. Between Stage I and Stage II there is a barrier. This barrier is a formidable one and unless a notation is capable of breaking through it, Stage II will never come into existence. Designing a practical notation is perhaps like designing a piece of equipment that will do the work of a steam hammer but must pass through a key-hole.

The key to the break-through is simplicity. That is to say, the arriving at simplicity through complication. This is the pre-requisite to all creative thinking and applies equally to all works of art. On analysis a work of art is found to be extremely complex, yet to be successful it must appear simple.



The essential need for simplicity cannot be over emphasized. Simplicity does not necessarily mean omitting and reducing the value of things, it means the embracing of everything necessary into a simple unified theory or concept.

It should be written up in large letters in every academy and college that complicated thinking is easy and leads to muddled thinking, whereas to think simply is creative but very difficult. Unfortunately there are too many who think the first impressive and the second suspect. "Too simple to be true" should be replaced by "Too complicated to work". The following extracts from a delightful article entitled "Obscurantism" by Dr. Alexander Kohn from the *New Scientist* of January 29th, 1970, well illustrates what should be avoided.

"Development of Educational Theory Derived from Three Educational Theory Models" and submitted to the US Office of Education:

"Disconnectionness is not either complete connectionness or strongness or unilateralness or weakness and some components are not connected with respect to affect relations"; "In other words, feedinness is the shared information between toputness and inputness, where the toputness is at a time just prior to the inputness"; "toputness is system environmentness"; and "Storeputness is a system with inputness that is not fromputness".

The writer of this extract has thought fit to "improve" the language and has thereby effectively reduced its communicative value to nil.

Now human movement is extremely complicated. When the limbs, the trunk, head, wrists and fingers, features of the face are all involved—as they may well be in dance—the volume of information is vast. This is complicated by the fact that we are moving in three dimensions of space. For example, wrist rotation affected by arm passing from one plane to another. Time also adds a fourth dimension with its own complications.

The processes at work in Stage I are very different from those in Stage II. Since Stage I must follow strict laws of logic and consistency, its growth is inevitable, depending only upon the correct selection and interpretation of the premises and concepts. This stage can therefore be done at a desk, in a backroom, or even an

ivory tower. On the other hand, Stage II is essentially practical application and can only be done in the field by skilled choreologists working under professional conditions in companies or wherever the particular "language" of dance, or whatever it be, is being used. These languages must also be allowed to grow naturally, but, as in Stage I, be carefully nurtured with understanding and experience. The linguistic laws governing this stage are not fully understood. They are certainly not logical in the ordinary sense. With experience one develops an intuition for what is right and what is wrong, but cannot always say why. It takes several years of working in the particular dance style before its language is fully understood in terms of notation.

Once again the criteria is simplicity. Through its enormous complexity Stage II must also pass through its barrier by means of simplicity before it can be accepted as a living and creative language. Ballet was the first application to reach this stage and it is a compliment to its successful simplicity that at the beginning even those learning it thought that the notation was designed for ballet alone, and could not be applied to any other style of dance, let alone any other kind of movement. This is quite natural, we could be excused for wrongly thinking that our alphabet was designed for writing English.

Flexibility is another important factor throughout. The end product of Stage I, the notation, must clearly be flexible in the extreme. So also must be the end product of Stage II if the language is to be alive and continue to grow. Hence the danger of rules. And here lies a problem. A language depends for its universal comprehension upon the consistent use of rules. I am for ever being asked to make a ruling, to decree whether this way is the right one or the wrong one. I am for ever hedging. Teachers have my sympathy. It is a great comfort to have everything "correctly" pigeon-holed, the right and the wrong way to do everything. And the temptation to succumb is very great. Here lies the danger of the too academic mind, when a thing must be either black or white.

Now the reason for writing at such length on this subject is the endeavour to clarify the position and simplify, by putting the whole into perspective, the processes in the birth and upbringing of a movement language. The answer to a problem or the usefulness of



what one is doing will firstly depend upon where one is in the process. For example, in Stage I there must be strict logic but no rules, whereas in Stage II there may be no logic but rules. These rules are of the same order as those in art. Those rules of composition which so many teachers unfortunately say are there to be broken. They cannot wisely be broken but they are there to be got around.

I have always tended to think of Stage I as the pre-natal period and Stage II as post-natal. This analogy is a useful one. The growth in Stage I follows an inevitable course according to the built in conditions. It is self-generating and enclosed, as it were, within the egg or ivory tower. When it is ready and able to break through the barrier to Stage II and come into the world, the human new-born is equipped with the means of adapting to any environment, any ethnic group and any language. There is an interesting tie-up here with the theories of Chomsky who is apparently causing a revolution in verbal linguistics. According to his theories a child is born already equipped with a basic knowledge of language enabling it to learn any particular language or languages.

Stage I was earlier described as a process developing logically from certain axioms and premises by means of certain concepts. An axiom is the undeniable truth or fact upon which a theory stands or falls. Had the axioms assumed here been false then the notation would never have worked efficiently.

The first axiom is difficult to explain. Different forms of communication or language are perceived through one or other of our senses. The appropriate notation must consequently be geared to the working of that particular sense organ and have a logical structure derived from the particular medium. For example, speech is perceived through the ear and the logical structure is phonetic, consequently the only efficient speech notation must be basically phonetic. Music is also perceived through the ears and is an aural art and its logical structure is based on pitch, interval and duration. Movement, on the other hand, is perceived through the eyes, and dance must accordingly be one of the visual arts. Appeal to the "audience" can only be through their eyes. Therefore a movement notation must be visual and based on the logical structure of visual perception.

The second axiom arises from the first. It is the principle of linear perspective and utilizes the manner by which the eye perceives three-dimensional objects on its two-dimensional retina. This has long since been reduced to mathematics and the notation simplifies this rather complex subject by the application of what is known as parallel projection onto a “picture plane” which is the stave of the notation. This subject is dealt with elsewhere, and explains the need for three basic signs.

The Premises are the basic signs—not symbols—which plot the points in three-dimensional space on the matrix or five-line stave. Those mathematically disposed will note the basic similarity or use of the Cartesian geometry with its  $x$ ,  $y$  and  $z$  co-ordinates for plotting in a similar way. Fortunately, since the limbs are of fixed length, the  $z$  co-ordinate is not required. That is to say, the distance in front or behind the body is conditioned.

Now the movement of a human body is a lot more complex than this and the signs used for plotting positions must contain a good deal more information than just the locations in space. These signs must therefore be capable of considerable manipulation according to certain concepts which will now be dealt with. But first it must be remembered that although these signs are developed so as to give a great deal more information, they must remain small enough to mark a precise point on the matrix. This explains the design of the basic signs which must be the ones from which all later signs are derived. They must therefore be as simple yet as distinctive as possible. The answer is therefore an upright and a horizontal dash and a dot.

The first concept is that a cross = a bend, and by extension of the idea, a tilt. Thus we get the signs for bent elbows and knees and also body bends.

Two further concepts arise from the simple manipulation of the basic “level” sign, namely that a sloping sign means contact and that a tilt to the left means left, and vice-versa.

By curving these sloping signs either upwards or downwards we obtain the concept of supporting and supported respectively.

These curved signs can now be attached to the basic ones or replace one of the lines in a cross sign. Doubling the sign means contact with another person.

So far, by manipulation of the basic three signs on the basis of these four concepts the resulting number of signs is close to one hundred, each one giving different information and none bigger than the sign for a bent knee or elbow. A great deal more information is then added according to where they are placed on the staff: what part of the anatomy or whereabouts in space, the staff serving as matrix for both.

So far we have dealt only with static positions and a static notation. The plotting of movement by movement lines and their development into steps, slides, jumps, etc. is another chapter of economy and simplification comparable to the one just described, and results in a true movement-notation.

The choice of the five-lines staff must also be considered. The use of a staff similar to that used in music has its obvious advantages. But the question was, could the five-lined staff, which carried all the necessary information for musical sound, similarly carry the visual information necessary for movement?

Other questions must first be answered: why has the music staff got five lines? And why does it go from left to right? Writing and reading from left to right has its obvious ergonomic advantages and this is also the generally accepted convention for the flow of time. This is of paramount importance where correlation with other notations, such as music, is required.

There is no musical reason why the staff should have five lines. Other numbers have been tried, for example the four lines of Medieval chant. A greater number would reduce the need for the awkward ledger lines, yet a greater number has never been used. Why? The answer would seem to be that five is the maximum number that the eye can read accurately with speed. In addition, five lines give the half and quarters which is also ideal for visual purposes and for representing the human figure.

This brief and far from complete outline of the workings which took place in Stage I should show how, out of the complexity of information, a simplicity was ultimately arrived at, enabling an alphabet of signs to be prepared which was able to breakthrough the barrier and commence working on the specific but very different problems of Stage II.

It goes to show how little we understand language when few, if any, could have had the foresight or understanding to realize that at the end of Stage I the completed notation, however perfect it might be, is of no use to anyone. We all imagine that given the notation, that is to say, the alphabet, that we shall with a little practice be able to read and write. Nothing is farther from the truth. We all know the alphabets of many languages we cannot read or write, in fact, with the aid of a dictionary we can have all the words as well and still be quite unable to read or write a language unknown to us. As obvious as this is in verbal languages, it is less obvious in others like mathematics and music but no less true, as a little thought will prove. Unfortunately movement and dance is no exception. In fact, we have on occasions tested the fact by giving a group of students all the signs they needed to write a certain thing down but they were not able to do so. This is just as well and may be nature's way of avoiding a tower of babel, because if everyone was able to evolve his own language from a given notation or alphabet (and the number must be infinite) what would be the point? Is this food for thought for the art teacher or critic who expects each artist to create his own language?

How then does one set about evolving a language, for example classical ballet, from a notation? The answer is by using it as a means of communication and learning by trial and error and a little intuition and experience. We started with Joan writing it, and myself, who fortunately did not know the language at all, reading what she had written. I say fortunately because if I had known the language I would not have read what she had written but what she had meant to write. As I learnt the grammar, or conventions of the language so we were able to streamline and simplify. Redundancy became a key word.

Redundancy as a principle of language formation is something one has to learn to use. It is a two-edged sword. One analyses and writes down a step in notation. On scanning this it will be found that much of the information is duplicated for various reasons. One can then eliminate some of the signs. Then perhaps by rewriting or analysing in a different way, reduce the total number of signs used. Ultimately one could arrive at the simplest in terms of the

number of signs used. Generally speaking this is the aim, as the result will be a simple and recognizable pattern. But there is a limit. A certain amount of redundancy must be included as a safeguard, especially against bad writing or errors. This is the simple reason why shorthand has not ousted longhand in general use. It is so streamline and devoid of redundancy that we would be unable to read each other's writing, even less so than at present. However, there is a certain amount of redundancy already built into the notation itself so that it is not a serious issue at this stage. There are, however, certain criteria which must be observed, for example the axioms of Stage I must not be lost sight of, but be continually applied. Because of the flexibility of the notation, there will be several ways of writing a certain posture, position or step. The best choice will be by application of the basic axiom or concept built into the notation. For example, Axiom number one; the visual aspect must take precedence, unless of course there is an overriding dictate by the language being used as, for example, an anatomical one in the case of physiotherapy.

This brings us to the dictates of a particular language. What is it that makes one style of dance or kind of movement different from another from a linguistic point of view? The difference is in the scale of values which differ in each case and the conventions or rules which arise from these. In other words, what is important in one case will not be in another, and vice-versa. I have often said that notation presupposes a convention, meaning that notation cannot be used abstractly but only as applied to a particular movement language. If a notator was to record objectively a dance the style of which was foreign to him, he would find himself attempting to write down a vast amount of detail much of which he would find changed every time that part of the dance came round again. Not only could he analyze it down to such a wealth of detail as to render it very heavy reading, but important detail would be lost in the welter of unimportant and variable information. Contrary to what many think, interpretation would be impossible, since it is the variable detail which gives scope to artistic interpretation, while the important detail must not be lost. A scale of values or conventions must be worked out and understood before an intelligent approach can be

made. The dancer learns these as he learns other languages, from practice and often almost sub-consciously. It is therefore essential for all concerned to know the language or particular dance style, that is to say the notator, the dancer and the audience, otherwise the eye would not know what to look for and what to discard out of the enormous visual information. It therefore follows that the notation not only presupposes the art convention but must also disregard certain details. This can be easily illustrated by imagining a pianist who is a perfect sight reader but who had never heard any Spanish music (or any other particular style for that matter). As we can well imagine, his reading of Spanish music would not be recognizable as Spanish. The same would apply to a dancer or singer, perhaps more so as their body and mouth respectively would have been moulded to the dictates of the style.

The answer lies in the correct analysis and knowing what to leave out, and the result must arrive again at a simplicity after having gone through so much complexity. Again it may be a compliment to its simplicity that some, who have not studied the notation of course, say it is a shorthand. This demonstrates a complete lack of understanding of what a shorthand is.

In the same way as the notation or alphabet had to reach sufficient simplicity to break through the barrier to Stage II so, at the end of Stage II, the resulting language must similarly break through the barrier by means of a like simplicity, before it can be of universal and everyday use.

It is only here at what might be called Stage III that teaching can be done and teaching material prepared. That is to say through a language, e.g. classical ballet, with which the student is either familiar or is studying alongside with the notation, as does a music student. The teaching material must be in the form of reading material graduated in the same way as are reading primers in all other languages. The grammar must be taught as it arises and as a natural part of the usage of the notation.

Here in Stage III it again takes several years of trial and error before the best method and order of teaching can be laid down. And until this is done the graduated reading material cannot be prepared. In the case of classical ballet this was done in 1955 and

BIRTH OF A LANGUAGE

STAGE I

	<i>Elements</i>	<i>Means</i>	<i>Growth</i>
Axioms . . . . .	Visual	Logic	Inevitable
Premises . . . .	Basic signs	Consistency	—
Concepts . . .	matrix		
	Manipulation	Ergonomics	In backroom
	of signs		
Process:	COMPLICATION		
	SIMPLICITY & FLEXIBILITY		
Notation	(Alphabet)		
BARRIER			

STAGE II

Practical application—Choreology			
Languages, e.g. ballet			
Words . . . .	postures, positions		
Compound-			
words . . . .	steps		
Syntax . . .	order of signs “words”		
	etc.		
Grammar . .	redundancy	Non-logic	Natural
	conditioning	Linguistic	—
	scale of values	principles	In professional
	classification		use
	composition		
Process:	COMPLICATION		
	SIMPLICITY & FLEXIBILITY		
Language			
BARRIER			

STAGE III Living and creative language

Maintenance of consistency	Institute of	Controlled
	Choreology	—
Teaching methods—Teaching		In schools,
		colleges and
		education
Teaching material		

the following year or two when teaching at the Royal Ballet School, and is the method by which you have all learnt the notation.

After this comes the unavoidable but unfortunate need for a system of examinations. Again, for practical reasons, these must be concerned primarily with Stage III. Consequently they must be

of a practical nature so far as is possible. It is much easier testing theoretical knowledge than the ability to use the theory. Likewise, it is much easier to pass a theory examination than a practical one, and means much less. In fact a person could know all the theory as an expert but be quite unable to write and read as has already been explained. For the same reason computers cannot be made to translate although they may be fed with complete dictionaries and grammars. The theory must be known, but passing a theory examination alone means nothing from a practical point of view.

The inner workings of Stages I and II are like the machinery behind the keyboard. It is the domain of experts, the choreologists, and should certainly not be shown to beginners without careful explanation. It is the final simplicity of the keyboard not the inner complexity which is of value.





## Creativity, religion and science I

RONALD BROWN

Creativeness is a topic which is both ancient and modern. In very early ages creation was the prerogative of God, or the Gods. Later, during medieval times and the Renaissance, it was traditional to ascribe the birth of new ideas to divine revelation. Let me illustrate this point by means of two examples. The alchemist Basilius Valentius<sup>1</sup> in 1599 gave an account of the preparation of oil of vitriol (sulphuric acid) in the following terms. "If you get such deep graduated and well prepared Mineral, called *Vitriol* ( $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ ), then pray to God for understanding and wisdom for your intention, and after you have calcined it . . ." Galileo<sup>2</sup> in telling of work with his telescope confessed "all these facts were discovered and observed by me not many days ago with the aid of a spy glass which I devised, after first being illuminated by divine grace". This approach persisted at least into the nineteenth century, and is perhaps best demonstrated in the attitude of Coleridge, who saw his artistic efforts as a type of reflection of Divine creation. More recent concepts stress that all living organisms have their own inherent creative spark. From the early part of this century creativeness has been of growing concern to an ever-widening group of workers; it remains a subject of some topical import.

Creativity has long been regarded as something mysterious, esoteric, mystical, occult, and occurring in the deep recesses of the mind. For many years these aspects were instrumental in causing this subject to be ignored as one that was rather unsuitable, if not downright disturbing, for investigation. Thus, although modern methods of looking into originality and imagination may probably be dated from the works of Sir Thomas Galton, such as *Inquiries*

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*into Human Faculty*, published in 1883, it is only comparatively recently that there has been renewed research in this area. In spite of our present day knowledge of what might be termed the phenomenology of creativity, such factors as its attributes, methods and results, there are few accounts of either the fundamental processes involved or the workings of the creative mind.

The objective of this presentation is to examine the nature of discovery and innovation in science, from the viewpoint of developing the role of creativity in scientific and theistic endeavours.

Often those outside science suppose that its knowledge is certain, because it is based on reason and logic rather than on beliefs and faith. Science advances by slowly and meticulously adding data to the already large storehouse of facts, until sufficient is uncovered to warrant making some change in the edifice. Consequently, scientific methods are thought to be no more than the collection and filing into categories of factual information. In marked contrast, religion and the humanities deal with the much grander concept of ideas, as opposed to mere facts. The basis of all this activity is taken to be the inductive method, by which we mean reasoning from singular statements, such as the result of an experiment, to universal truths. Let us examine the discovery process in more detail, to try to learn whether the above comments are valid ones.

Although the collection of facts is an important first step, and in spite of having to spend a good deal of effort at this stage, it is not the principal way that scientific breakthroughs occur. The most important aspect comes when disjointed facts are formed into a whole, so that a new pattern emerges. Someone has said<sup>3</sup> that Professor McLuhan sees significance, where others see data. This is an important beginning in any innovation. There is now almost overwhelming evidence that the moment when a new insight comes is a time when reason and logic must be left out. In fact, too close a concern with detail or technicalities, or even too much attention to what you are doing, can be severe hindrances. Each major advance in science involves an irrational, illogical element, a suspension of reason, together with a mental leap of creative insight. This moment of creativity often comes suddenly in a flash of inspiration. Perhaps flash of fruition<sup>4</sup> might be a better term, since the thought may

have germinated in the subconscious over a long period. Frequently, it is highly imaginative, intuitive, and may be best described as a sort of inspired guesswork. Let us look at some typical examples of scientific discovery to try to obtain a better understanding of the creative process.

Sometimes discoveries come when the mind is relaxed and not consciously concerned with technical problems at all. Kekulé's contributions to chemistry are well known—his theory of atomic bonding and the ring structure of benzene. Yet these ideas came to Kekulé on two different occasions when he was half asleep. The first time he was on the upper deck of a bus late at night; the second occasion as he dozed by the fire. An even more remarkable occurrence is recorded by the pharmacologist Professor Loewi. After reading a novel Loewi fell asleep, only to awaken very suddenly in the middle of the night in order to jot down a brilliant idea that came in his sleep. On waking the next morning he had the frustrating experience of not being able to decipher his own hurried writings, however much he tried. The following night he went to sleep again, had the same dream, but this time woke to make very careful notes. On investigating the nature of this breakthrough in the laboratory, he found he had discovered that a chemical interaction occurs when nerve muscles are triggered. Subsequently, the area of chemical agents and nerve, muscular or glandular reactions formed an important field of study for many workers. Alfred Werner was asleep when he had the insight which led to the foundation of coordination chemistry. Faraday worked tirelessly to find a relationship between electricity and magnetism. Finally, he had to take a holiday. On returning to the laboratory this worker found the connection immediately, almost without effort. Marquis de Laplace, mathematician and astronomer, made the comment: "I have often observed that, by ceasing to think for some days of some very complicated question, it became quite easy to me when I came to consider it afresh." Bernard Mathias invented many superconductors, and formulated ideas about their properties, while asleep.

Normally the inspiration is both sudden and unexpected. Some time ago Platt and Baker<sup>5</sup> published the results of a survey in which

they asked chemists whether they had ever received these sudden flashes of insight, or “hunches”. Over 80% of the respondents admitted having assistance from this source. The replies were very illuminating. “The idea came with such a shock that I can remember the exact position clearly.” “When occupied in work of an entirely different type, an idea came to my mind as suddenly as a flash of lightning and it was the solution.” Poincaré tells the following anecdote. “One morning, walking on the bluff, the idea came to me, with just the same characteristics of brevity, suddenness and immediate certainty, that the arithmetic transformations of indefinite ternary quadratic forms were identical with those of non-Euclidean geometry.” Darwin spent years collecting facts which he could not correlate. The concept which led eventually to the theory of evolution came quite suddenly one day, when Darwin was away from his normal working environment. While strolling across Glasgow Green James Watt had a sudden inspiration of how to make an effective steam engine. Helmholtz, Arrhenius, Max Planck, Einstein, Sir William Rowan Hamilton, Mendeléeff, Henry Eyring, Newton, Gauss, Edison, all experienced discovery as a sudden enlightenment or revelation.

Nor would it be correct to imagine that discovery is impersonal or totally devoid of feeling. Rather it is frequently highly charged and very memorable. Among the most prevalent emotions seems to be one of joy. Faraday exhibited boyish glee at some of his work. Davy danced for joy. Harvey talked of the pleasures of discovery. Scheele delighted in discovery. Pasteur felt his joy to be one of the greatest things ever felt. Robert R. Wilson, a nuclear physicist, was pervaded by a fantastic sense of joy. Let me quote some other sources. “There are not many joys in life equal to the sudden birth of a generalisation illuminating the mind after a long period of patient research.” Or Darwin at the conception of evolution: “I can remember the very spot in the road, whilst in my carriage, when to my joy the solution occurred to me.” Kepler said of one of his astronomical finds, “The intense pleasure I have received from this discovery can never be told in words.” Professor Oppenheimer talks of discipline, dedication and devotion in science. Thomas Hobbes’ first contact with geometry around 1630 had such an impact that

from the very moment on, "This made him in love with geometry." An even more striking example is that of the biologist A. R. Wallace, who described his feelings in the following terms, "My heart began to beat violently, the blood rushed to my head, and I felt much more like fainting . . . I had a headache the rest of the day, so great was the excitement." The object of all this concern was no more than a new species of butterfly! William Herschel wrote on the use of telescopes in language that was far from uninvolved. "These instruments have played me so many tricks that I have at last found them out in many of their humours and have made them confess to me what they would have concealed if I had not with such perseverance and patience courted them. I have tortured them with powers, flattered them with attendance to find out the critical moments when they would act . . . it would be hard if they had not been kind to me at least." To take a more recent illustration, we have Michael Polanyi<sup>6</sup> saying: "But the ultimate justification of my scientific convictions lies always in myself. At some point I can only answer, 'For I believe so'." These cases are not isolated, but instead typify the creative process. Let me mention, in passing, that many new phenomena come about through accidents, near accidents, or to use a more descriptive term serendipity. Evidently, discovery is not the cold, unemotional exercise in logic that one might suppose.

Let me return to a point that was mentioned briefly above. Many people describe the sequence that leads to a new insight not in terms of discovery, but rather as though it had been revealed. Notice the accounts which follow. "Freeing my mind of all thoughts of the problem I walked briskly down the street, when suddenly at a definite spot which I could locate today—as if from the clear sky above me—an idea popped into my head as emphatically as if a voice had shouted it." "One day all of a sudden the whole became as clear and comprehensible as if it were illuminated with a flash of light" (*cf* Acts 9:3). "Then the explanation, essentially complete, sprang into my head." When Helmholtz described his work on physiological optics he said: "I often had the impression that what I was putting down was not my own work at all, but I seemed to be recording the work of another." This attitude is not restricted

to science. Sir Edward Elgar commented: "Works of art are not composed they're there waiting to be discovered."

Perhaps it is evident by now that this article has set out to show that scientific innovation takes place by a process which is not unique to science. The fundamental creative urge instrumental in scientific discovery is encountered in all imaginative endeavours of mankind. Science can be counted with religion, music, the arts, the dance as a creative activity. The driving force which motivates a scientist to create is the same as that which inspires the theologian, philosopher, musician, poet, artisan, historian, painter, sculptor or author. When a poet draws an analogy between "Keys that jingle in your pocket, Words that jangle in your head", or claims "O my Luve's like a red, red rose, That's newly sprung in June", he is using the same tools as the chemist who likened electrons going around a nucleus to planets circling the solar system. Or the man who said that colliding atoms were like careening billiard balls; or the physicist who compared sound floating through air to waves in the ocean.

Language used to describe scientific discovery applies just as well to all creative acts. Flashes of insight, sudden inspiration, mental leaps are equally at home in other fields. Some of Stravinsky's music was written in a dream; Wagner composed parts of *Die Meistersinger* and *Das Rheingold* in a dream-like state; Haydn made use of unconscious urges.<sup>7</sup> Also in this illustrious company we may include more modern compositions. One songwriter was pressed for time as the deadline for a film score drew near, but the song was not written. Then, while out in his car one day, Harold Arlen suddenly asked his wife to pull over, wrote "Somewhere Over the Rainbow", and met the deadline for the film *Wizard of Oz*. One evening a student was walking across a college campus when suddenly he had inspiration for a song. Hoagy Carmichael had to rush to find pencil and paper before the opening strains of "Stardust" disappeared from his mind. Let me quote some examples from sources about literature. Isaac Asimov was very busy working on the proofs of a biochemistry text when he received a telephone call from the editor of a science fiction magazine, who wanted a story. Asimov apologized for being absolutely unable to write at that time, put the telephone down, and started to climb upstairs

to his study and proofs. Somewhere between the bottom and top steps he had a thought, put down the galley proofs, and wrote another of his famous robotic short stories. Jean Cocteau in *The Process of Inspiration*: "One morning, after having slept poorly, I woke with a start and witnessed, as from a seat in a theatre, three acts which brought to life an epoch and characters about which I had no documentary information and which I regarded moreover as forbidding. Long after, I succeeded in writing the play." Then there is A. E. Houseman in *The Name and Nature of Poetry*. "As I went along, thinking nothing in particular, only looking at things around me and following the course of the seasons, there would flow into my mind, with sudden and unaccountable emotion, sometimes a line or two of verse, sometimes a whole stanza at once." Robert Frost was taking a stroll one winter's night when the words for the whole of "Stopping by Woods on a Snowy Evening" came into his mind with such force that it took a determined effort to end the poem. Of course, many authors have pointed out the common ground between science and the arts. Perhaps Arthur Koestler<sup>8</sup> and Bronowski<sup>9</sup> have described the similarities especially well.

A good deal has been written<sup>10</sup> on the subject of creativity. The list of contributors includes architects, chemists, educationalists, ethnologists, psychoanalysts, psychologists, and more recently theologians. When we examine accounts of religious experiences, these are often very similar to descriptions of other creative encounters. Frequently there is a sudden enlightenment; usually deep seated feelings are involved; often joy is experienced. Let me mention some typical statements about the religious life taken from recent sources in the literature. We are looking for insights, not systems; others talk of a creative synthesis, the use of imagination, or the purposely tentative character of the experience; a new creative effort is required in the field of religion; a fully theological vision of the creative process. Although there has long been a tendency to present some aspects of theism in poetic form,<sup>11</sup> this subject has been re-examined in recent works. Thus, one article<sup>12</sup> deals with the use of imagination in poetry and religion. A modern introductory textbook on theology<sup>13</sup> gives an admirable account of the



function of imagination in religion. According to Theodore Jennings<sup>13</sup> theistic beliefs are to be seen as one part of all of the human disciplines which make use of image, symbols and reflection. This appears to be in accord with the viewpoint of Margaret Masterman,<sup>14</sup> and in keeping with the position of the present author. It seems to me that revelation is a continuous process that can be encountered in all of mans' varied experiences of reality.

So far this presentation has concentrated on only one facet of discovery, namely that part of it associated with the creative phase. There is another aspect which follows subsequently and is equally important. Once the initial alogical act has taken place, once the breakthrough occurs, we must test this new insight to determine whether it can stand. Quite often it is necessary to discard immediately some of our guesses, for not all wild imaginings can withstand close examination. Each new pattern which emerges must be investigated to see how much more it can explain or predict than the old one. At one time a scientist would have talked in terms of verification of a hypothesis. At this same juncture the theologian would have discussed verification of the existence of God through teleological, ontological, cosmological, or other "proofs". Today it is more customary to try to falsify a concept. This change from verification to falsification makes quite a difference in our approach to the assessment of knowledge.<sup>15</sup> At this stage reason and logic are applied. Every aspect of the innovation is scrutinized to test its correspondence with observation and with reality. Notice that this two-pronged approach of creativity followed by testing requires widely disparate attributes. On one hand, the creative force needs an unfettered, unusual way of looking at things. In contrast, you need a coldly logical, critical, keen analytical mind to test the rightness of a concept. There is another way of viewing this two-fold influence on discovery. For both science and religion the creative act is a personal affair subject to the beliefs, prejudices and inward motivation of the discoverer. By way of contrast, testing is a group activity, subject to the standards of others.

An interesting question that arises is how are these standards of acceptance set? The way that new insights are greeted varies widely, both from one culture to another and from age to age. One feature

that remains common, whatever any other differences, is the almost universal resistance to change. Examples of prejudice and rigid thinking amongst scientists are numerous and have been documented, for example, by Kuhn.<sup>16</sup> In fact the way that Kuhn's views on the nature of scientific revolutions were received by men of science typifies their reaction to anything novel. Let me give some illustrations. Around the middle of the last century Oliver Wendell Holmes and Ignaz Semmelweis independently established that puerperal fever was carried from person-to-person. Both men were criticized for suggesting that people in medicine could actually harm, rather than heal, their patients. For Semmelweis the attacks proved so virulent that he died tragically in a mental home, a broken man. Harvey was ridiculed for his views on the circulation of blood. Dixon, an early researcher in the area of chemical interactions and nerve impulses, published his work in an obscure journal, because he feared censure. Newland's suggestion that elements in the periodic table be arranged in groups of eight was greeted with scorn. "Why eight; why not any number?" was asked. Jenner's first paper on vaccination against smallpox with cowpox was returned. The opinion of Wilfred Trotter<sup>17</sup> still seems apt. "The mind likes a strange idea as little as the body likes a strange protein and resists it with similar energy. It would not perhaps be too fanciful to say that a new idea is the most quickly acting antigen to science. If we watch ourselves honestly we shall often find that we have begun to argue against a new idea even before it has been completely stated." Of course, this attitude is not confined to science. Bizet died heartbroken following the reception given to *Carmen* on its first performance. Beethoven and Schoenberg both produced music that was greeted with suspicion, bewilderment and derision. When "Love is a Many Splendoured Thing" was first written no-one would sing it, even when offered payment to advertise this piece. After it was performed by the Four Aces, 258 recordings of this song were made within the first year. Subsequently, it was given an Academy Award. A listing of authors, poets, artists and musicians who died in obscurity, often tragically, yet were recognized later as men of genius would be almost endless. Nor is this an attitude of the past alone. The Xerox procedure for photocopying was available for four years before it

received commercial support. During recent months the lack of backing for inventors in the UK has been a subject of interest in both the technical and national press. In modern medicine, deeply entrenched traditionalism is slow to recognize officially acupuncture, chiropractise, homeopathy, osteopathy, or other alternative treatments.<sup>18</sup> Traditional science still considers paranormal phenomena unsuitable subjects of study for the “real” investigator.<sup>19</sup> Religions also have their share of prejudice, authoritarianism, orthodoxy, legalism, narrowness of vision. The way stretches from Old Testament prophet to Alfred Loisy and Tyrell; through Dietrich Bonhoeffer to the organizational minister. In spite of, or perhaps because of, our living in an age of rapid change, permissiveness and freedom we still regard innovation as undesirable. People whose tastes differ from the majority in dress, recreation, music or personal habits are looked upon as odd, if not frightening. Creativity can result in ridicule, opposition, condemnation, persecution, burning at the stake. It may also lead to crucifixion.<sup>20</sup>

Although we can neither ignore nor dispense with the views of Descartes, Locke, Mill, Peirce or Keynes, we can see them in perspective. Facts, evidence of the senses, reason, logic, analysis can no longer be seen as supreme, if indeed they ever were, nor even as objective, but rather as one method of approaching an understanding of the realities of existence. Equally important aspects of this understanding are imagination, insight, intuition, inspiration. We might include also reflection, contemplation, and a sense of mystery. Religion and science are both grounded in experience, coloured by preconceptions, and supported by presuppositions. In both science and religion, vision always precedes formulation. Both subjects are now more open-ended, more sensitive to other influences. There is a growing awareness of the need for the convergence or re-unification of all disciplines of the mind. Of course, there has been already a move towards a confluence of various types of experience.<sup>21</sup> Maslow<sup>22</sup> gives an account of the underlying unity of some widely disparate approaches to life. Thus, a woman giving birth described her feelings in much the same way as that used by others to express cosmic consciousness, or mystic awareness, or the creative process, or the Zen *satori* experience.

Innovation and methodology in both religion and science have, of course, been recurring themes since the earliest issues of *Theoria to Theory*. James Beal<sup>23</sup> saw a likeness between creativity and psychic events. Ian Ramsey<sup>24</sup> talked of moments of vision and flashes of insight as a process of disclosure, and identified revelation as the occurrence of such disclosures in a Christian context. The present article has not set out to give a totally comprehensive view of creativity and its impact on various areas of knowledge. Nor yet does it claim to provide a definitive statement on the interrelationship, or lack of such, between religion and science. In fact, some topics are no more than introduced; others merely hinted at. It is hoped that this paper might provide a starting point for some discussion, and that a further contribution will result.

#### Notes

1. Read, J. (1966). *Prelude to Chemistry: An Outline of Alchemy, its Literature, and Relationships* (MIT Press, Cambridge, Massachusetts), p. 194.
2. Drake, S. (Translator) (1957). *Discoveries and Opinions of Galileo* (Doubleday, Garden City, N.Y.), p. 28.
3. Kostelanetz, R. (1967). "Marshall McLuhan", *Commonweal*, 420 20 January.
4. I am indebted to Dr. I. L. Finar for this term.
5. Platt, W. and Baker, R. A. (1931). "The Relationship of the scientific hunch to research," *J. Chem. Educ.* 8, 1969.
6. Polanyi, M. (1964). *Science, Faith and Society* (University of Chicago Press), p. 9.
7. These examples were provided by Professor Walker, who is Chairman of the Department of Music, McMaster University.
8. Koestler, A. (1964). *The Act of Creation* (Hutchinsons, London).
9. Bronowski, J. (1961). *Science and Human Values* (Hutchinsons, London).
10. Because sources in the literature that deal with "creativity" are widely scattered and diverse, it is not possible to include each reference. Readers who would like a general bibliography on this subject are invited to contact the author.
11. Readers of this journal will not find such a thought novel. To cite just one example, see F. Happold (1967). "Mystical experience and mystical verse", *Theoria to Theory* 1, Third Quarter, 269.
12. Williams, R. (1977). "Poetic and religious imagination", *Theology* 80, No. 675, 178.
13. Jennings, T. (1977). *Introduction to Theology* (SPCK, London).
14. Masterman, M. (1967). "Theism as a scientific hypothesis. III", *Theoria to Theory* 1, Third Quarter, 232.

15. Discovery followed by falsification is, of course, the hallmark of the hypothetico-deductive system, which is due to K. Popper, and is presented in *The Logic of Scientific Discovery* (Hutchinsons, London), 1972. Revised, sixth impression. An alternative approach to knowledge is held by F. Feyerabend (1975), *Against Method* (NLB, London).
16. Kuhn, T. (1970). *The Structure of Scientific Revolutions* (University of Chicago Press), 2nd ed.
17. Trotter, W. R. (editor) (1941). *Collected Papers of Wilfred Trotter* (Oxford University Press, London), p. 186.
18. Alternative medicine has been dealt with in previous issues. See, for example, the discussion on acupuncture in *Theoria to Theory* 7, First Quarter, 9, 1973.
19. Paranormal phenomena have been covered in many issues of this journal, especially by Ted Bastin.
20. Fabun, D. (editor) (1968). "You and creativity" *Kaiser Aluminum News* 25, (3).
21. Masterman, M. "Integrity in the religious quest", papers for presentation at the Modern Churchman's Conference, July 1976, Part I has been published in *The Modern Churchman*, Vol. 20, (4), pp. 132-50. I am indebted to Margaret for providing copies of these articles prior to their publication.
22. Maslow, A. (1959). "Creativity in self-actualizing people", in *Creativity and its Cultivation*, H. Anderson, editor (Harper and Row, N.Y.), p. 89.
23. Beal, J. (1973). *Theoria to Theory* 7, Fourth Quarter, 49.
24. Ramsey, I. (1973). *Theoria to Theory* 7, First Quarter, 34.

## **Review discussion**

### *The Tao of Physics*

By Fritjof Capra (Wildwood House, 1975, and Fontana/Collins 1976)

#### I

The bold claim of Dr. Capra's book, *The Tao of Physics*, is not just that religion and science are vaguely the same sort of thing if you are sufficiently tolerant, but that some basic aspects of physics "force us to see the world very much in the way a Hindu, Buddhist or Taoist sees it" (p. 17).

How far does he make his case; firstly, for a religious connection, and, secondly, for a specifically Eastern connection? And what is the significance for science and philosophy?

His argument in this book rests on one particular approach to one special branch of physics: the *S*-matrix theory of hadrons (heavier particles that interact via the "strong" or "nuclear" force as well as via the electromagnetic and gravitational forces familiar in everyday life). He would, however, claim that the same argument could be carried out in many other fields.

Instead of starting from a postulated detailed mechanism by which particles interact, *S*-matrix theory starts from the other end, the observable end, by examining the total connection between the particles that go into an interaction and the particles that come out. The *S*-matrix is a kind of mathematical "black box" that specifies what comes out in terms of what goes in. One aim of the theory is to show that the form of the *S*-matrix is determined entirely by a few simple ground-rules and the requirement of self-consistency—a very powerful requirement, because it turns out that the way in

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which any pair of particles interacts is determined by the properties of all the other particles that could in principle take part in the reaction. Each part of the theory determines all the other parts, so that in principle the theory could “pull itself up by its own bootstraps”. This “bootstrap programme” is described in the book with admirable lucidity.

The approach is the opposite of that of the atomists of the seventeenth and eighteenth centuries on whose legacy most of physics is living. Their ultimate constituents of the universe were separate atoms interacting only through collisions which in no way affected the intrinsic internal nature of each atom. The bootstrap idea, by contrast, sees the nature of every particle as continually determined by all other possible particles (whether or not those particles happen to be manifesting themselves at the time). It is this mutual interdependence that Dr. Capra compares with Eastern religious views: no part can be understood in isolation from the whole; the apparent separateness of the parts is an illusion. Moreover, this interdependence is actually a dynamic affair—the dance of Siva, continually creating and destroying the world.

Let us grant that *S*-matrix theory is the best approach to hadron physics (which only time will judge). The idea of all the entities being interconnected certainly reminds one of Eastern philosophy, which in turn cannot be divorced from Eastern religion. But we must, with Capra, go beyond this to examine the detailed links. He argues (Chapters 2, 3) that the Eastern sage and the particle physicist both undergo a highly technical training to enable them to have experiences beyond the scope of ordinary life, or to see ordinary life in a new light; and that both achieve enlightenment by being forced to abandon the usage of concepts normal in ordinary language. This similarity of the discovery processes in mysticism and physics gives a basis, Capra argues, for comparing their conclusions.

Many aspects of the comparison, however, go against Capra’s thesis. In most mysticism the primary experience is of unity (of the self with all things, of the self with God, etc.). One gets the impression that subsequent intellectualization can only water down this primary unity. But in particle physics the primary experience is of

multiplicity—evermore different sorts of particles with more and more new and unexpected properties. Only the minority of physicists that follows the *S*-matrix approach tries to build an intellectual construction to reveal a unity within the multiplicity.

Could it not be that these physicists are motivated to this by a prior inner conviction of unity, rather than being led to unity by physics? In other words, physics has not independently and surprisingly produced a parallel to mysticism; rather, ideas that are of the same stuff as mystical experience have influenced the course of physics, to the latter's benefit.

Now, whatever may be the nature of the link with mystical experience, it would seem to be equally strong whether we look at its Western or Eastern forms, since both stress unity—although in the West it tends to be expressed as a unity of creatures *in God* rather than an intrinsic unity. On passing from experience to philosophy Capra turns East, on the grounds that “mystical schools have always played a marginal role in the West” (p. 18). But the idea of unity is by no means an exclusively Eastern possession. In Western philosophy it is represented, for instance, by the idea of the World-soul, which was taken for granted by the pre-Socratics (though hardly distinguished from the world-body), was expounded by Plato and developed and repeatedly revived by neo-Platonists. (Only with Newton does all trace of the idea vanish: for him the parts of the world are so separated and independent that the order of, say, the Solar system must be maintained by the repeated intervention of God.) Physics manifests both multiplicity and unity, and the balance is probably closer to the West than the East.

Take, for instance, the concept of the vacuum. In modern physics it is not just an empty gap but a dynamic potentiality that can generate all matter; in a way, a kind of primary substance. Capra likens it both to the Hindu *Sunyata* and the neo-Confucian *Ch'i*, but he is unconvincing. The physical vacuum implies a very precise and complex spatial structure, which makes it very different from *Sunyata* (which in another context Capra says is equivalent to “tathata; or ‘suchness’”—a far cry from the physical vacuum). And it parallels *Ch'i* only in so far as they are both in a sense non-dualistic “primary substances”; so that one could obtain just as good a



parallel with, say, the *apeiron* of Anaximander. Indeed, a closer analogy than any Eastern one, capturing the distinction between the vacuum state and the fields acting on it, is the “womb of becoming” in Plato’s *Timaeus*, as it was developed by later Platonists.

Western parallels such as these are all too often missed or distorted by Capra. His account of Anaximander’s views is unrecognizable in its selectivity; Plato as a philosopher is completely ignored, and with him the whole Platonic–Christian tradition where most of the Western parallels lie. Likewise, we hear nothing of the great intellectual struggle, won by Aquinas, to introduce Aristotelian ideas into the Church—which in Capra’s account simply “supported Aristotle’s doctrines throughout the middle ages”.

In drawing only from Eastern philosophy Capra has overstated his case. But, since hitherto physics has, with few exceptions, been coupled exclusively with Western philosophy, some overstatement is defensible to redress the balance. When we look for positive contributions from the East to set the balance right we find many suggestive leads in this book; but we find little help towards solving the long-standing problems encountered in following them up. Our world is not simple: it may be a unity, but it also has multiplicity; and, while it may be a profitable ascetic exercise to regard multiplicity as unreal and pursue the unity, it is no sort of explanation.

The problem of “unity-in-multiplicity” haunts physics as much as philosophy. Capra’s claim that all the multiplicity of particle physics could come from a few simple *S*-matrix rules and consistency-requirements is misleading, in that one can write down infinitely many consistent *S*-matrices which obey the rules but which are totally uninteresting because they do not correspond to our world (e.g. the zero operator, corresponding to a universe in which no particles ever interact). The trouble is that not all the rules are explicitly stated, and somewhere in them has to be the information that we are not dealing with a universe consisting only of the vacuum, or of particles without interaction. In other words, the occurrence of multiplicity is being fed in somewhere, and the universe of *S*-matrix theory arises not from simple unity, but from the interplay of unity and multiplicity.

This brings us to the point I found most interesting: the role of

the “observer”. For quantum theory must be interpreted, and this brings in its own aspects of multiplicity. The interpretation is involved in selecting the “right” *S*-matrix to correspond to our universe, not an empty one. But interpretational aspects enter quantum theory more explicitly than they do classical physics. In the interpretation due to Stapp which Capra cites, for instance, quantum theory is a theory of observations, meaningless outside the laboratory context. (Unlike the case with Newton’s atoms which can be imagined as forming a world with nothing like laboratories in it.) Whatever interpretation one uses, the observer is directly implicated.

Capra juxtaposes this with the Hindu concept of *maya*, the idea that no reality is to be attached to the particular form and structures in which the universe appears to us from our particular viewpoints. Some of Capra’s quotations on this describe little more than the distinction between the internal and external world that has been a commonplace of Western philosophy since Kant. But beyond this there is a vision of a unity-in-multiplicity that is essentially dynamic, but which when frozen into static concepts becomes a mere multiplicity. Capra’s compendium of Eastern sources presents this vision evocatively, but somewhat inscrutably. Is there a chance that in understanding the relationship between the “observer” and the “observed” in the formulae of quantum theory, and the role this plays in generating multiplicity, we may obtain a language that does more justice to this vision? A real advance might be possible here. But we must approach the problems critically, refusing to use “multiplicity is *maya*” as a slogan for blocking our minds to the difficulties.

CHRISTOPHER CLARKE

## II

Many will enjoy this book for its simple descriptions of what modern physics and Eastern mystics are all about, descriptions which experts on both sides may too facilely dismiss as biased and superficial. For the author is making a highly original point, which I have found fascinating, though ultimately unconvincing. One’s initial reaction

is that there is surely something odd about comparing two pictures of the world, of which one is based on private experiences, recorded by certain sages for the encouragement and training of their disciples, but still admittedly ineffable in content, while the other is based on what can be shared by all intelligent investigators. If both schools succeed in their quests for complementary abstractions from reality, we must expect any agreement in their findings to reflect basic tendencies of the human mind, or perhaps similarities in metaphor, rather than any deeper identity of subject matter. If this is not so (for such reasoning is far from conclusive) very detailed evidence will be needed to prove it.

Of the many parallels which Capra presents in Part II, none really satisfy this criterion. That the “Unity of All Things” appears in both systems is true; but it is so self-evident a proposition to serious metaphysical thinkers that it carries no weight. That both systems end by transcending all their pairs of opposites would be interesting if true: but the instances in physics cited by Capra are really only cases where a wider and more sophisticated taxonomy of concepts provides single terms for what had earlier been seen as two opposites, whereas the Eastern mystical traditions come to see their “opposites” as essentially indistinguishable.

In the well-known Taoist classic, the *Tao-te-Ching*, attributed to Lao-Tsu (4th century B.C.) are phrases like “nothing is high if nothing is low”, etc., though true in a literal sense, have also a metaphorical interpretation which Capra misses. The “Space-time” chapter shows up the matter sharply: first, the space-time of relativity theory is not an *isotropic* four-space, in that a distinction is made between time-like and space-like intervals; second, the ultimate reality of Eastern thought involves not only the negation of time, but of *all* particular existents which, for us, inhabit space-time.

In his chapter on the “Dynamic Universe”, Capra points out the extent to which modern physics deals with processes rather than with objects, a tendency which he also finds among the mystics, where the apparitions of *maya* are represented as for ever in process of becoming and passing away, and everything is in flux. This is so, certainly, but is a view of experience which they are aiming to

transcend, whereas our dynamic universe is seen as a more accurate description of the things we are *finally* concerned with. There could hardly be a sharper expression of the divergence between the planes under study in the two systems. In his next chapter, "Form and Emptiness", he compares the identification of these two in, especially, Buddhist thought, with the current theories which assume that "empty" space is in reality filled everywhere with "virtual particles". This is indeed a good parallel, but the hypothesis about virtual particles (in the form he cites) is incapable of being falsified and can be entertained seriously only in an instrumentalist sense; if more strongly asserted, it becomes untrue to the spirit of scientific enquiry. What is actually observed is only the interactions of particles, which in the next chapter, the "Cosmic Dance", is compared with the Hindu myth of Shiva's creative dancing which both destroys and creates the world; but the physicists' "dance" is neither creative nor destructive of objects of ordinary perception, let alone things on any truly cosmic scale. This is a similarity between descriptions, unrelated to any likeness in the things being described. The same can be said of Capra's attempt to find a meaningful correspondence between the extensive use made in both systems of ideas of symmetry and symmetry-groups.

To seek a parallel between the mathematical treatment of "change" in *S*-matrix theory, elegantly general though it is, and the underlying principles of the I-Ching is surely preposterous. In the chapter "Interpenetration" Capra seems to be pointing to the apriorist character of "bootstrap" theories based on *S*-matrix theory, to which he finds a parallel in Taoist metaphysics. Both eschew the attempt to infer things from any basic law, and instead look to self-consistency as a criterion for existence. This is better; but bootstrap theories, if they turn out to be successful, open up the question of what it is that self-consistency is being expected of, any answer to which is likely to invoke entities of a more fundamental character than the current subatomic particles. That would indeed move physics into a field which might well prove to be that with which mysticism is concerned; but it is also taking a big step into a still speculative future.

For when all is said and done, Western physicists and Eastern

mystics are *not* looking at the same things—at least, not yet. One may reasonably speculate that the root cause of the current unease in basic physical theory is that many problems have solutions only at a deeper level than that directly accessible to physical experimentation. It may well be that such a level is what much Oriental philosophy is pointing to. If so, the parallels which Capra is seeking may before long come to be realized. But it confuses the issue to claim to have found them where they are not to be found; moreover, it may discredit in advance the very adventure of the mind which modern physics most requires.

FREDERICK PARKER-RHODES

### III

I opened Fritjof Capra's *The Tao of Physics* with some hope that he would say something interesting about the foundations of modern physical knowledge. I was not disappointed. The book is very exciting, and Capra is clearly in earnest. I do not know of a better general introduction to the major concepts of modern physics. But nowhere in the book is there any detailed or conclusive discussion of the important assumptions which Capra makes, in particular that modern physics and Eastern mysticism just are *true*. Capra does not inquire *in what sense* they may be true. He assumes (and this assumption is peculiar to neither the Tao nor physics) that the world is not at all as it appears, and that behind the world of ordinary experience there is another dynamic world (the world of the Tao and of physics) which is really real, or at least more real than the ordinary world.

Capra does not attempt to interpret the (spatial) “behind” metaphor which goes with this picture, which seems to me to require a (mechanistic) causal theory of perception. His method is for the most part simply to show how modern physics and ancient mysticism look alike. He seems to assume that if they say the same thing, then this thing is true. Now they do say the same thing, for example,

about a principle called the Unity of All Things, which appears, however, to do no more than affirm the familiar idealist proposition that all events are connected in a systematic web of mutual interactions. Capra does not acknowledge the real difficulties of this sort of view, and he gives almost no attention to the philosophers who have tackled them. No doubt everything is connected with everything. But it still has to be explained how some things appear to be connected to each other more closely than they do to other things. Perhaps space and time are transcended in reality. But it still has to be explained how we come to have a real experience of space, and how this is connected up to the space-time of physics. Capra says (p. 86) that “In modern physics, the universe is *experienced* as a dynamic, inseparable whole which always includes *the observer* in an essential way” (emphasis added). Does the modern physicist really experience the whole universe? Isn’t it rather that he thinks certain thoughts about the universe as a whole? Does he *experience* his inclusion in the universe? Isn’t it rather that in developing his theories, he finds that among his terms there must be one referring to himself? Does the physicist *feel* less separated from the universe when he performs an experiment in relativity theory? Or does he feel much the same as when he performs an experiment in classical physics? As long ago as 1925 Russell had pointed out that the “observer” of relativity theory might well be a camera or some other recording instrument. The observer does not have to be a human being. This raises the key problem of the relationship between the world of physics and the ordinary world in which human beings usually operate. The attempt to relate high-energy physics to the mystical life would be more convincing if it could be shown why the “participator” which is to replace the “observer” (pp. 145–146) has to be a *human* participator. At the very end of the book Capra quotes Chew and Wigner to the effect that complete understanding of the physical world *might* even require understanding macroscopic space, time and human consciousness. This is presented as a striking and even daring hypothesis. “. . . we would be obliged to confront the elusive concept of observation and, possibly, even that of consciousness” (Capra quoting Chew, p. 319). Is it too blunt to ask Capra what he thinks philosophers have been trying to do for

the last two-and-a-half thousand years, often in a full knowledge of Eastern ideas?

*The Tao of Physics* is expository and educational. It is, as I have said, a superb introduction to modern physics. It is also in some ways a very personal book (p. 320). Perhaps this is no accident. For Capra sets out to show both science and mysticism not as mechanisms which produce true propositions (laws), but as conscious *ways* of human development. He is happy if he can show that they do the same things to the people who practise them. An equally good case could probably be made at this point for the similarity between the Eastern sage and the formal logician, who also “has to undergo many years of training”. What Capra needs to show the unity of Tao and physics (which ought to follow from the Unity of All Things) is a way of getting them to *strike* us the same way. He has to show that they look the same, that they exhibit the same pattern. This is all he needs to do, and all he does, because he thinks that the world is in any case none other than a criss-cross of interweaving patterns. The human being is almost wholly absent from Capra’s picture. Like the Buddhists, though, his doctrine seems to be “not one of metaphysics, but one of psychotherapy” (p. 99). This also means that, like the Zen Masters, Capra “likes to give out facts as facts without much comment” (p. 125).

We may agree that the Eastern sage and the modern physicist say the same thing. But unless we can answer the historical, philosophical and scientific question (which can be answered by neither Tao nor physics) *why* they do so, and what it *means* that they do, the similarity will not detain us long. Capra tries to answer this question in his Epilogue. He says that both mystics and physicists use a method which is “thoroughly empirical. Physicists derive their knowledge from experiments; mystics from meditative insights. Both are observations, and in both these fields are acknowledged as the only source of knowledge” (p. 322). If both these methods are empirical, the natural question to ask is, what is *not* empirical? If insight is empirical, why don’t the products of *all* insights show the similarity to Eastern mysticism? In addition, it seems to me

just to be flatly untrue that experiment is “acknowledged as the only source of knowledge” in physics. † Philosophers have been very concerned to point out that an experiment can only signify something in the context of some theory or understanding. In other words, another source of knowledge is the intelligence which produces theories. Capra ought to distinguish a *source* of knowledge from a *test* of knowledge.

He is not well equipped to answer the question he puts in the Epilogue partly, I think, because the concept of truth with which he operates involves just such a subjectivist confusion. Do A and B agree in what they say? If they do, then what they say is true. (But the agreement of two falsehoods does not convert them into truths.) It may be that the subjectivist concept of truth which Capra uses derives less from philosophical reflection than from the more or less accidental influence of mathematics on the concepts of physics. When they meet reality, theoretical physicists unconsciously retain the habits of the coherence test of truth which is adequate for mathematics. But for reality beyond ideas coherence is not enough.

It may be (I only suggest a possibility) that the Tao is intended not as a philosophy, but as a helpful or therapeutic way of life. It may also be that physics is confused in its foundations, and perhaps sometimes confuses its own provisional propositions with reality. (And concludes that reality is provisional.) Such a crisis in physics could also be a more or less conscious crisis in the lives of physicists. We have here the beginnings of a theory which might explain why physics and the Tao attract one another. But this sort of theory explains the similarity between the two in terms other than their self-evident truth.

There are, no doubt, many possible explanations for the unity of

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† Popper, for example, certainly does not acknowledge it. “I should like to emphasize that what really matters in science is theory, which we arrive at by thought, and by understanding the problems we have to solve. We aim, in science, to discover the truth about something that interests us, to discover true explanatory theories. Contrary to what is often supposed, we do not arrive at explanatory theories by making experiments.” Karl Popper (1974). In *Reflexive Water*, editor Fons Elders (London: Souvenir Press), p. 85.



Tao and physics other than their monopoly on truth. Capra does not discuss these possibilities. Indeed, *The Tao of Physics*, while it contains a great deal of interesting information, is uncritical at the crucial points. The method Capra uses is correspondingly simple. He quotes physicists and sages extensively. Sometimes I was reminded of the sort of discussion which goes, “X say that . . . .” “Oh yes, that’s right. Y points out that . . . .” “Yes, after all, Z has said . . .” All the agreement never yields the answer to the question, “How is it in fact?” For the most part, Capra’s technique rests on the personal attraction of the Eastern sages and the institutional authority of the Western science from which he quotes.

An assumption which Capra shares with the materialists is that there is one basic science (physics) which is by itself sufficient to give a total picture of the real world. Capra thinks that physics can yield a world conception. He believes that physics by itself has a complete and privileged access to ultimate reality. (Perhaps only all the sciences together have this access.) He might have tried to explain why the activities of the particle/events of physics should be equated with the ultimate reality, as they must if they are to constitute Shiva’s dance, “the basis of all existence and natural phenomena” (p. 259) apart from the fact that they dance.

It is striking that Capra’s whole thesis rests on this sort of “fundamentalist” (or “mechanistic”—both Capra’s words) idea, against which he conducts a vigorous battle, especially in the penultimate chapter. For example: “The organic view, therefore, seems to be *more fundamental* than the mechanistic” (p. 321, emphasis added). The physicist inquires into “the *essential* (basic? fundamental?) nature of things.” He penetrates “ever *deeper* realms of matter” (p. 312, emphasis added). Yet Capra professes a philosophy in which “the universe is an interconnected whole in which no part is any more fundamental than the other . . .” (p. 309). This is the heart of the so-called bootstrap philosophy.

What *The Tao of Physics* needs is less undigested Tao and physics, and more theory of knowledge.

JONATHAN WESTPHAL

## IV

## POSTSCRIPT

Capra's ideas, and the reviews above, provoked a lively debate among the editorial group, the main points of which we recount here.

The obvious question for further examination was, in what sense is physics "like" Taoism (or "Easternism", since Capra is concerned as much, or more, with Hinduism and Zen Buddhism)? Capra's psychological starting point was a revelation: a time when, sitting on the beach one late summer afternoon he "'saw' the atoms of the elements and those of (his) body participating in this cosmic dance of energy," and "*knew* that this was the dance of Shiva . . .". One is tempted to paraphrase this conviction of his as "physics and Easternism are the same thing". But this would be a misleading expression: "thing" carries with it a mass of presupposed ideas that land one squarely in the types of philosophy that Capra is striving to reject. It would be better to say that, when one penetrates deeply into either Eastern mysticism or *S*-matrix theory, one finds the same basic structures cropping up.

This led to a consideration of "structure". It was objected that in physics "structure" does not just mean "patterns", but particular mathematical schemes (which could even be expressed as a series of axioms). One element in the structure of *S*-matrix theory is the idea of a complex analytic function;<sup>†</sup> but where are the analytic functions in the Tao? Are we really dealing with structural similarity, or with poetic analogy?

If we dig more deeply, the analytic property of the functions in

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<sup>†</sup> This concerns *complex numbers*, which are just the points of the plane equipped with a rule for "adding" or "multiplying" two points to produce a third. A *complex function* is a rule that associates to each complex number (i.e. point) another complex number called the *value* of the function at that point. A *complex analytic function* is one where the value at a point changes smoothly as one changes the point. Such a function has the property that its values at all points are completely determined once one knows its values in any finite region, however small. This is ultimately responsible for the linking together of different reactions into a unified whole that Capra finds so like the stress on unity in Taoism.

S-matrix theory can be traced back to the assumption of causality (in a rather technical sense) together with weaker mathematical assumptions. But now there is even less correspondence with Taoism: it was precisely the lack of a full conception of causality that, according to Needham, was a vital factor in the failure of ancient China to move from a sophisticated technology to a theory-based exact science.

Another theme concerned the content of mystical experience. Capra's vision stressed the totally dynamic dance of Siva whose play is the world of sense; this dynamic flux is itself the one basic principle. But often mystical vision shows an eternal calm at the centre. And the world of sense in Hinduism, as Capra indeed stresses in places, is "Maya", appearance: behind it is an unseen primary unity. At this level mysticism leads one right away from the diversity that is needed to talk about structure. Physics perhaps does tie in with the dynamic unity-in-flux of the dance of Siva; but does it have this eternal being behind it?

On the other hand, of course, there are types of mysticism (expressed in the experiences of the psychics and some anthroposophical literature) that are filled with a wealth of detail with little explicit unity. All gradations between dynamic process and eternal unity are possible.

While many expressed qualifications of or disagreement with Capra's ideas, there was general accord on the excellence of his presentation of the significance of parts of modern physics. The ideas he has made so accessible will, we hope, inspire a wider development of the debate started here.

## Sentences

### On enlargement through education

*He that knows the secrets of Nature with Albertus Magnus or the Motion of the Heavens with Galileo, or the Cosmography of the Moon with Hevelius, or the Body of Man with Galen, or the Nature of Diseases with Hippocrates, or the Harmonies in Melody with Orpheus, or of Poesis with Homer, or of Grammar with Lilly or of whatever else with the greatest Artist: He is nothing, if he knows them merely for Talk or idle Speculation or transeunt and External Use. But he that knows them for Value, and knows them his own: should profit infinitely.*

Thomas Traherne, *Centuries of Meditation* III 41

*. . . the first time the mind comes across the arguments and speculations of unbelievers, and feels what a novel light they cast upon what he has hitherto accounted sacred; and still more, if it gives in to them and embraces them, and throws off as so much prejudice what it has hitherto held, and, as if waking from a dream, begins to realise to its imagination that there is now no such thing as law and the transgression of law, that sin is a phantom, and punishment a bug-bear, that it is free to sin, free to enjoy the world and the flesh; and still further, when it does enjoy them, and reflects that it may think and hold just what it will, that "the world is all before it where to choose," and what system to build up as its own private persuasion; when this torrent of bad thoughts rushes over and inundates it, who will deny that the fruit of the tree of knowledge, or what the mind takes for knowledge, has made it one of the gods, with a sense of expansion and elevation—an intoxication in reality, still, so far as the sub-*

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*jective state of the mind goes, an illumination? Hence the fanaticism of individuals or nations, who suddenly cast off their Maker. Their eyes are opened, and, like the judgement-stricken king in the Tragedy, they see two suns, and a magic universe, out of which they look back upon their former state of faith and innocence with a sort of contempt and indignation, as if they were then but fools, and the dupes of imposture.*

*On the other hand, Religion has its own enlargement, and an enlargement, not of tumult, but of peace. It is often remarked of uneducated persons, who have hitherto thought little of the unseen world, that, on their turning to God, looking into themselves, regarding their hearts, reforming their conduct, and meditating on death and judgement, heaven and hell, they seem to become, in point of intellect, different beings from what they were. Before, they took things as they came, and thought no more of one thing than another. But now every event has a meaning; they have their own estimate of whatever happens to them; they are mindful of times and seasons, and compare the present with the past; and the world, no longer a monotonous, unprofitable, and hopeless, is a various and complicated drama, with parts and an object, and an awful moral.*

*Now from these instances, to which many more might be added, it is plain, first, that the communication of knowledge certainly is either a condition or the means of that sense of enlargement or enlightenment, of which at this day we hear so much in certain quarters: this cannot be denied; but next, it is equally plain, that such communication is not the whole of the process. The enlargement consists, not merely in the passive reception into the mind of a number of ideas hitherto unknown to it, but in the mind's energetic and simultaneous action upon and towards and among those new ideas, which are rushing in upon it. It is the action of a formative power, reducing to order and meaning the matter of our acquisitions; it is a making the objects of our knowledge subjectively our own, or, to use a familiar word, it is a digestion of what we receive into the substance of our previous state of thought; and without this no enlargement is said to follow.*

H. Newman, *Liberal Knowledge viewed in Relation to Learning*

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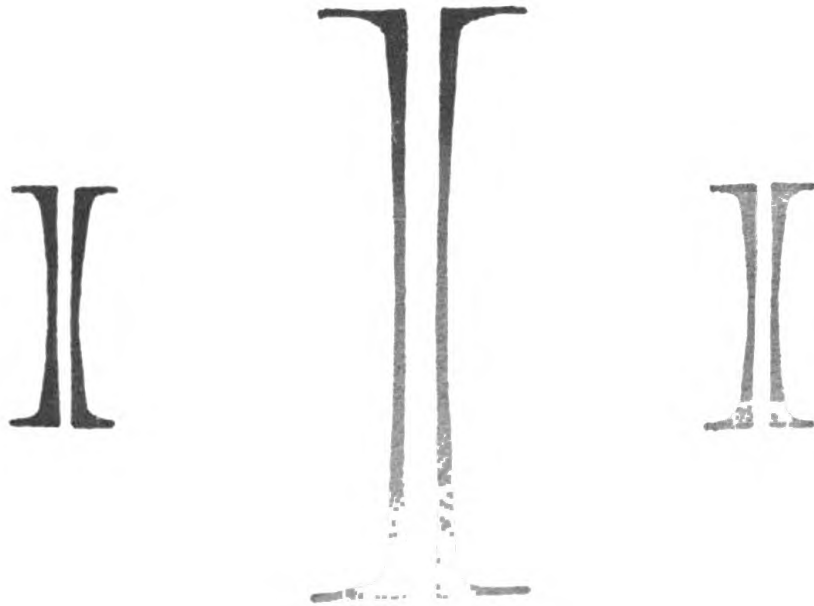
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## Editorial

In our first editorial in *T. to T.* (I, i) we said to the philosophers: "Stop limiting philosophy and defining it in such a way as to exclude a large number of important enquiries. Be curious! Everything else would follow if you would only have curiosity." We were tilting then at those philosophers who were narrowing philosophy to discussions of currently fashionable uses of language, and not looking at the substantive questions of what the language was supposed to be about. Facts, if specialized and non-obvious, were said to be a matter for the appropriate scientists, and philosophers should not talk like amateur psychologists or physicists. There were, of course, the obvious facts of common sense, and philosophers could and did talk endlessly about these. But the trouble about depending only on established experts and common sense is that no space is left for the emergence of new facts, which may upset the establishment but nevertheless be there. What the progress of science in the end depends on is not the continual reworking of the facts of common sense, but of the facts of uncommon sense. Common sense is not a constant nor sacrosanct; it is only a familiar way of thinking about familiar things, plus bits of already established or already out of date science.

It has been said that philosophy becomes frivolous when it is not reaching out beyond itself. Now, as opposed to ten years ago, this is becoming increasingly appreciated even in the centre of the academic world, and a number of philosophers are being prepared to widen their interests. For instance *Philosophy* (the journal of the Royal Institute of Philosophy) has been showing this broadening of interests during the last four years under the editorship of Renford Bambrough. It has had articles on such subjects as "The Concept of Beastliness" (myths about the nature of beasts that get invoked in

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talking about human conduct); “Freud and Pseudo-Science”; “Milgram’s Shocking Experiments” (where subjects in a lab. went on administering what they believed to be increasingly tormenting electric shocks to other subjects in obedience to instructions from a chief experimenter); and an article “Against Equality” followed by a reply and counter-reply. This widening has been largely over topics with an ethical aspect. There are two reasons for this; one is that this is certainly the kind of question where the intelligent non-professional would like to know what philosophers might have to say. The other is that it is easier to bring moral issues into philosophy than new cognitive ones (we are discussing the vivisection issue in this number).

Any science and religion journal, however, such as this one, which hopes to encourage and promote curiosity, has got to deal with cognitive issues. Our more particular concern has always been and still is the science and religion issue in all its aspects, where new thinking and discovery on the frontiers of these may affect or alter our views of the world, so that all those really interested in science and religion have got to take note of them.

Indeed, scientists themselves are becoming more open to there being no fixed “scientific world view”, since work on the frontiers of the sciences is leading to results which make some of their basic assumptions radically problematic. One way of bringing this out and showing it to the intelligent reading public is that adopted in the *Encyclopaedia of Ignorance* (just published by the Pergamon Press), where a number of scientists, among them Ted Bastin and Christopher Clarke who have contributed to and helped build up this journal, have written short articles showing how radical problems come up in their own fields, and where new ways of thinking are being called for. In the space provided this is necessarily a method of calling attention to problems rather than a milieu in which it is possible to press forward with them. While we fully welcome this opening out, our own special concern is to see how to introduce new topics, or to try out revisionary ways of thinking about established philosophical topics, in the hope that some general idea which can be of *philosophical* interest may emerge. Such exploration is needed in the philosophy of religion even more

cardinally than it is in science. And again, some theologians are (at last) beginning to see this. In an article “Correcting Theological Analogies” in this number, for instance, James Heenan ends by saying that “the theologian must either rest content with the limitations of religious language being irreducible, or unearth more effective techniques for its betterment”, and he is surely asking for such exploration.

So we are now planning to experiment with an alternative method of introducing either new topics or revisions of current ways of thinking by running quite long philosophical serials in which people who are developing or suggesting a new view can put it forward in stages, along with devices for testing it. Readers of the journal are not only invited to try these for themselves, but also to write to us about their results, positive or negative, so that they become on some issue our collaborators. We offer them a subscription to the journal at a reduced rate.

One of the complications about innovation is that a great deal of it comes from industrial technology. For instance, Margaret Masterman’s articles on the “Re-iterative Semantic Analysis of a Simile”, which were started to produce an example for a multi-disciplinary seminar, are now being serialized to explain a new technique which can be used in industry and which, according to some of those who practise it, is yielding a new view of language.

Following the articles by Kathleen Russell and Rudi Benesh in the last two numbers there will be serials on the “language” of dance and a new theme which we shall introduce in the next number; and, especially if philosophically curious readers will cooperate, we hope to stir up the seminar world by running other such serials.





## Discussion

### Schizophrenia and mysticism

SALOME PELLY, MARY CARR,† KATHARINE  
TREVELYAN, T. R. (Dick) MILFORD, BOB SMITH, with  
members of the Editorial Group (Q)

*Q.* It is sometimes said that mysticism is a form of schizophrenia, and sometimes the opposite is said. You are a doctor, Sal; what is your view of schizophrenia?

*S.P.* Well, it usually starts in intelligent young adults, say of 19–20. One view is that it can be induced by their feeling that they are scapegoats in their families. They can't cope with their world and they withdraw from it. Or it may be due to a change in the chemistry of the blood.

*K.T.* When a young person comes to stay who turns out to be schizophrenic, he often says that he discovered early that he was unique, but family and friends didn't recognize this. I tell him he *is* indeed unique and should step out with what he truly is—allowing others to be what they are. How difficult it is for schizophrenics to recognize that others really exist!

*Q.* But everyone is unique in some way. Schizophrenics may have psychic powers which they can't manage, and their families and schools don't understand this. If they are literally sensitives as well as sensitive, and if society round them isn't going to change, what should they do? Is there any way of making them able to be more flexible and society better able to understand them? What happens, Katharine, when people come to you?

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† Mary Carr is the pseudonym of someone who is professionally concerned with mental illness and therefore wishes to remain anonymous.

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*K.T.* I have turned my life into great practicality, because when I was baptized at the age of 28, I saw that the Church had all the words, but colour and texture were needed, not more words. So in the place where I live in the New Forest in a wooden hut, I have six places where others can live. I was sent a young man a few days ago, totally schizophrenic and unable to face anyone at all, and we have had a tremendous three days. I said “Smell this shampoo” (his hair was all over the place, unwashed). He rose for the lovely smelling stuff. I said “Tomorrow pour this over your head; get all the past out of it—let it pour away with the water.” He was delighted, and went away to do it. But he said “Why should the outer matter?” He was sitting at a lovely oak polished table, and I said “Have you seen the texture of this table?” He looked for the first time at the texture of the table and said “Yes, I see.” I said “This table has been with me for 65 years and is part of my roots. If you can alter the outer, you alter the inner. If you dare to make your hair clean and look at yourself in the glass, your outer will make your inner more harmonious.” And then I said “Look at your very nice jersey. It is frayed, and that is rude to the jersey. You must learn to thread a needle and mend it.” He has done nothing with his hands, and society and Karma have allowed him to do and be nothing. I feel all these things that get people into their hands bring them back to their roots—good roots—and it is this rooting that I am interested to bring to people, if you like through a sense of mysticism. I say to them “It was said ‘Raise the stone and thou shalt find me; cleave the wood and I am there’”. I am asking you to do an hour’s work every day, really taking a pick axe and clearing the brambles. It is all rather new to them. I see it like that because I see the passionate caring of God that we should be really well and that this new age we are coming into should be rooted on good loving simplicity, and I am just at the point of feeling the more we talk about God and religion, the more He weeps, and the more we shut out mouths and unite in whatever way we can with those who are in their own agony, the more there is hope for the future. So I don’t believe in words, but do believe in darning needles and bits of wool. Now I would like to shut my mouth for a bit.

*T.R.M.* You are saying the schizophrenic in one way or another has lost touch with the real world and you introduce him to reality through the physical doing of things?

*K.T.* All the time saying “Isn’t it fun? To put the wool through the needle is a joyful thing.”

*T.R.M.* Then is mysticism seeing the spiritual in the physical, or is it something quite apart?

*K.T.* To me, this would be getting to words.

*B.S.* It seems to me that schizophrenia is a failure of structure. We are highly structured, and crack up under too much pressure, whereas in the mystic, the structure also changes, but not by breaking. We don’t know what these structures are.

*K.T.* Say more about structures.

*B.S.* I was thinking of a person as a structure. When I feel healthy and there is a loud noise it doesn’t make me jump. I think my early warning system in another part of myself makes me ready for it. When I am feeling depressed, there is a noise which is suddenly *here*, and all of me jumps, not just my hearing, and I feel shaken. Another experience is that when I am feeling very weak and am required to make a decision—tea or coffee?—it has “got in from behind me” suddenly, and “tea or coffee” is oscillating inside me. I feel like breaking down, but not like escaping. I can’t escape, nor can I receive reality.

*S.P.* May I ask, are you a mystic, or trying to be one?

*B.S.* I am sometimes but I am coming towards Katharine’s idea of texture and tangibility, weaving and woodwork. “Trying to be a mystic” may be dangerous. When I spoke of an early warning system, I meant I am sure I have a field of energy around me which, when I am working properly, will alert and trigger me to what is impending. But it bothers me that with 100 micrograms of some chemical you can apparently have schizophrenia or mystical experiences. These may be due to biochemistry or to emotional and social pressures.

*K.T.* People talk about a breakdown, but not a breakthrough. What may be happening is that you are at a stage where the structure has to break, like the chick coming out of the egg.

*Q.* The cure you are recommending, Katharine, is one of extreme aristocracy. As soon as a person isn't protected any more, not in any sense in retreat, he is in a world of hurry, hurry. What is to happen then? Schizophrenics are the aristocrats of mental illness; they get themselves waited on hand and foot. They are attuned to a different kind of life from the one around us.

You spoke of their learning to do things with their hands. They should be taught to carry out some skill really well. Take Blake. Certainly he was a visionary and a poet, and he was also a very hard worker with his hands. His engravings were sometimes made directly onto the copper. The certainty that directed his hand and eye was marvellous.

*S.P.* Blake had visionary experiences, but also the real ability to engrave, and it is that kind of skill that it seems to me schizophrenics lack. They write eternally on scraps of paper, but they haven't the training and ability to externalize their experiences. How can they be helped to use what they are going through to produce what may be of immense value?

*Q.* Sal is saying that what has gone wrong in our culture over schizophrenia is that we aren't producing the right training. People water it down into saying "Teach them pottery, or something." But it isn't a matter of just pottery or chopping wood. That is the first stage towards doing something perfectly that can integrate one. The huge question is what further trainings there should be. I suspect they need the very highest trainings, and that is why they are aristocrats.

*T.R.M.* I think we are working towards saying that the schizophrenic is someone who has got detached from the world in which he lives with things and other people. The mystic may have the same vision, but it is part of a whole and more integrated view of the physical world and other people, while the illuminated spot which the schizophrenic sees so clearly is a highly illuminated reality at one point only. Your micrograms may come in here, as apparently a drug can illuminate one point, but upset a whole lot more. Is Katharine's approach to him one of helping him to find that he is part of a coherent life?

*Q.* Yes, but given that we may be saying that only top mystics can train schizophrenics, and given that it is said that one in twenty people are becoming schizophrenic, what can be done to fight intelligently for them against society? Katharine knows what it costs to do the kind of thing that she is doing.

*S.P.* I want to tell a story about a small miracle that has happened in the last weeks, that shows the treatment in our national health hospitals isn't quite hopeless; A young woman I know graduated from Newnham and went straight off to a community in West Africa which was very Pentecostal and very fundamentalist, and she and an old missionary of 75 were the only English people there. She broke down with what she thought was tropical fever and came back to England to get better, but the hospital of the tropical school would have none of her. Finally she went to a doctor in London, who put her in a hospital, and she found it was a mental hospital. She always wrote in a teeny weeny hand. Last week I got a letter from her on a huge sheet of paper, saying "I am sending you this to show you I can't draw." It was the most beautiful picture of a giraffe, a vast picture. Suddenly from being a little girl we all loved she had grown into an enormous person. The other side of the picture looked like her in a tomb. It was a loaf of bread waiting to rise, and she had written "This is me in my hospital bed. I am going to rise up and get out of this." The enormous sheet of paper also had big writing telling me about other people in the ward. Now she is ready to go on to her next place. That was a National Health hospital, the cure a mixture of T.L.C. (tender loving care) and drugs.

(Mary Carr joined the discussion.)

*M.C.* I have a school of 40 children age 5 to 12. We don't like to classify illnesses at that age. When we have what we call autism, shown in lack of communication, it looks as if it is linked with adult schizophrenia. When they do tests with small babies for autism, they seem to reinforce the idea that the chemistry isn't working properly. Autistic children are immensely skilful with some object—they don't relate to people, only objects. They seem to be absorbed in systems obsessively. We get results but we don't know why. We try everything—dancing, painting, Steiner education, but not in the

form of relationship with one person—they are encouraged to relate with all of us. You can trace ekolalia, pre-speech patterns, before they break through into speech. Steiner postulates that proper movement is a prelude to speech. If they sit, they rock. It has been found there is a brain fluid called serotonin and when that is inhibited you get no relations outward in the personality. That occurs in autistic children.

*S.P.* Did you find it had any connection with affection from the parents?

*M.C.* Cool emotions, perhaps. I watched all the mothers. They usually had fine skins, lustrous hair, lovely eyes but rather close together, and were very nervy and precise and immaculately clean. That chemistry seems to have gone one stage further with the autistic child—the obsessive pattern has taken over. The mothers seemed to be brittle. I'm inclined to think it is a chemical imbalance that increases in each generation.

*Q.* Of all the children you had, these were the ones you would talk about in a discussion of schizophrenia?

*M.C.* The state seems different but they are curiously like adult schizophrenics.

*Q.* The accepted view is that children who are schizophrenic later aren't necessarily autistic.

*M.C.* Absolutely. They aren't supposed to be linked but they are alike.

*S.P.* You wouldn't be able to get your parents to tell if they had rejected the idea of being pregnant?

*M.C.* I would say that sort of brittle, fastidious women might well react *first* against sex altogether and then to what she might see as the grotesqueness of pregnancy. There may also be an increase in autism that reflects the conditions of our time, even the chemical ones. Autistic children may be the recipients of a line of over-concentration of certain chemicals that can come in our food or water—that occurs to me, although of course I can't be sure at all. The other side is the caricature of technology. These hapless children seem like advance information of what is coming to us, a robot-like perfection of specialization.

*Q.* What about mongols?

*M.C.* They are the polar opposite of the autistic; warm and affectionate, not good at technical things. The Steiner idea is to put them together. Then there is this cold, absorbed creature with its windmill, propeller or whatever, and the folded-up child wrapping itself physically and mentally round this inaccessible one, and they work it out together, supplementing each other. When you can get the autistics relating at all to other people and smiling, this is a partial breakthrough—we don't look for a total breakthrough.

My feeling about schizophrenia is that it is an unprepared jump across into the spiritual world, when they get these immense physical impressions they can't handle. Steiner says if you get a totally pure cosmic idea it blows up the physical organism. So the body, including the spinal column, filters down the cosmic idea, and you get as much as you can stand, if you are normal. But if you are in the condition in which we are now, or you go too fast, you get socked by it, and it is very painful indeed.

*Q.* It is said that schizophrenics have alternative perceptual systems and switch from one to the other.

*M.C.* Yes, they are seeing an incredible world, though still recognizably *our* world, and what they see relates to that rather than normal perceptions—they see *things* as *extraordinary*.

*Q.* But I think many people enter that world, and the good religions aim at helping them so that they don't hurt themselves. That's a reason for the physical asceticism of people like the Carmelites. They shock us now, but they could master schizophrenia. What are we going to do instead?

*M.C.* I think a more balanced way could be taken. You want a combination of clear, scientific consciousness and these other spiritual dimensions. If you can work gently but firmly with control and in a scientific way, trying to find the relationship between body, soul *and* spirit, you will keep your feet. But the possibility of chemical causes is something we have to take very seriously in practice. What do you think, Sal?

*S.P.* Well, I do know that drugs can have a spectacular effect in some kinds of mental illness. Also they can obviously produce mental disturbances.

*Q.* Aren't we getting from the two practitioners that both are



insisting on chemical abnormality either as the basis of the illness or as a concomitant? I would have thought Mary would say, yes, there is a biochemical concomitant, but don't tell me it is just a biochemical illness, and Sal would say the same.

*M.C.* I'm not sure what schizophrenia is, but it seems to be that the human being can't find its identity in the world as seen by "normal" people, so that there must be something that can act as a vehicle for strengthening the identity, and that is, I think, what certain chemicals help to do. Schizophrenics have a predisposition to lack these chemicals. I would like to say here that my view is that what organizes and orders our life, the true ego, which usually enters at about twenty-one, sometimes cannot take hold of a body with which it doesn't harmonize properly—as someone put it, the body feels like an ill-fitting jacket.

Then a battle occurs; what we call schizophrenia is the expression of the two warring elements. This can of course take many forms, and it is significant that for diagnosis the concept of schizophrenia is ill-defined. It can cover just about any severe mental upset. But the ego can be assisted by various therapies, or, as is more usual, the body can be stunned and made to stop protesting against the intentions of the entering ego. The elements in the body which battle the ego are often the hereditary forces which have lost their flexibility, which aren't functioning properly. The patient can feel this obscurely, and naturally quite often he resents the most obvious symbol of his heredity—his parents.

Let's return to the chemical aspect. Ervin and Palmour in America have isolated a peptide, which belongs to a family of newly discovered opiate-like brain hormones called endorphins. Their research leads them to think that the molecule they have called leu-endorphin might have some pretty strong connection with schizophrenia, as cause or condition. If they're right, getting rid of this substance offers possible treatment for the illness. Ervin and Palmour isolated the peptide from material filtered from the blood of schizophrenics who had undergone hemodialysis or blood purification by kidney machine. Seven out of ten such patients apparently showed such improvement that they were able to leave hospital for the first time in years.

This brings us back to what we discussed earlier. Autism, which can be detected as early as birth by routine urine tests, may be similar to schizophrenia. Blood tests taken at the same time might reveal interesting things about schizophrenia.

So we have a pretty strong case for the physical imperfection. Now the role of *the ego*—that's much harder to understand and follow. But however hard it is to pin down—and wouldn't we expect it to be?—finding out how it affects the physical side and what its laws are is vital, at least therapeutically, for the complete picture. The ego, which I have described as entering the body at about twenty-one, also functions at certain nodes of human development in quite definite cycles. So it would be interesting to see statistically at which ages the worst attacks come. Say about 20–22, 28–30, 37–38, 42–43, 50–51, 58–59, 64–65.

One might be able to prepare for these attacks, especially the better known ones, such as the one which happens, especially to men, in the early forties.

Complicated? Oh yes, but near the heart of the problem, and rather beautiful.

*Q.* I wonder whether it is that some schizophrenics have abnormally vivid sense perceptions of some things which give them bizarre ideas. The perceptions are too strong and the person too weak, and the effect of such combinations of drugs as kemedrin and stelazine is to damp these down, and allow normal ideas to get through. The patient is given the time and strength to re-order his or her perceptions.

*M.C.* Yes, one of the basic educational techniques for dealing with people out of touch is simply to point out firmly and kindly what normal reality looks like. I think what you might describe as reality getting this strange glow and getting so much more portentous and extraordinarily gripping is just the effect of the other dimension infusing itself where it rightly belongs in everything else, but we don't always see it because we are insulated. What you are maintaining is that your insulation has worn thin so that everything jumps out at you.

*Q.* When you are nearly dying this can happen to you. When one of our group, Margaret Masterman, was supposed to be dying

of hepatitis in the Norwich hospital she thought the noise of the vacuum cleaner was hammers and they were hitting her. She was convinced she saw them, felt them and she drew a picture of them. When she ceased to be dying she realized it was the vacuum cleaner. Are you really saying this process of turning things which are impressions inside you into percepts is a superior way of perceiving? She herself was enormously relieved to stop dying and stop perceiving these hammers. What good were they?

*M.C.* It wasn't good for her, but it was reality realized.

*Q.* But in fact it was the vacuum cleaner.

*M.C.* It was hammering against the nervous system, and we are normally insulated from this in our culture, but if you exposed someone from deepest Africa to a vacuum cleaner, he would have a tremendous reaction. As you go on, you see it as it really is. Anger and various emotions are seen and felt in the spiritual dimension as thunderstorms and arrows and so on.

*Q.* The point is that you interpret them. I don't see what good these alternative perceptions do for you.

*M.C.* To go back to the vacuum cleaner. If perceiving it as hammers led you to a physiological hypothesis about the nervous system, then it wouldn't be interesting to harp on its "really" being a vacuum cleaner.

*Q.* I'm sorry but it *was* a vacuum cleaner. This is known as the Reality Principle. Margaret was getting better; she wasn't going to a realm where she might have died. Of course if you say after death there are no vacuum cleaners, I agree.

*S.P.* Surely people have all through the ages clothed these objects which they thought they saw coming to them in their own terms—witches on broomsticks, chariots. That's what we do now when we call them UFOs.

*T.R.M.* It's possible that the sense data of today may be the mythology of tomorrow.

*Q.* I do see that, but how are you going to use this suggestion? One practical benefit might be therapeutic. In the past people have rather treated those who said they saw unusual things as if they were lying or making it up. To treat them properly you have to take it as

real perceptions to them and honestly discuss it with them in this way.

*S.P.* In India no one attempts to treat them, because they are something very special, undergoing something very real the rest of us can't understand, and they must be left in that state until the gods give them back their normal ways of thought.

*Q.* In books on mysticism special experiences are described as coming as visions or auditions, and the training consists in not being upset by them, especially in distinguishing veridical from unveridical ones. Why they were prized, and why schizophrenics were so prized in India, as Sal says, was that information was supposed to come through about the future, about the past, about things happening a long way off. They had to be interpreted but they were valuable to the culture, as in traditional Tibet where there is the official seer.

*T.R.M.* Isn't he the mystic, not the schizophrenic?

*Q.* It is doubtful; it depends who writes the book about him. This is the popular idea of mystical experience. But surely there is the much deeper one when the natural self has to die and suffering be gone through, and no visions are necessary. We can take a dim view of the popular view of mysticism because of this schizophrenic analogy. The analogy is with the visionary aspect of mysticism rather than with the aspect of contemplative development.

The traditions—Christian, Buddhist, Sufi—tell you that this development is something to be trained. There is more in common in this training with what might be called a deep kind of University than we like to face. A friend whose opinion we very much value has said that a test of a contemplative community is that it can cure, or help cure, schizophrenics.



## **Reiterative semantic analysis of a simile: Part II**

The second instalment of a philosophic serial

MARGARET MASTERMAN

It has been pointed out to me that I should have said earlier that my object, in writing a whole serial about this simile, is not a professional one, but a spiritual one. It is to enable philosophic contemplatives to learn to use a machine as a “conceptual telescope”, so as to gain a deeper understanding of language.

To do this, of course, I have got to explain both what my “conceptual telescope” is, and also how to work it. The rhythm-based and reiteration-based conception of language which I contend that it reveals, owes a great deal more to the poets (Coleridge, Barfield, Empson) than it does to the philosopher mathematicians (Russell, Carnap, Davidson, Searle, Bennett). But the challenge that this new conception of language offers to mathematicizing system-makers is not due to the fact that, for the poets, as for the users of *mantras*, it is not all that new; but to the fact that (as I contend) it is the conception of natural language which hard-headed information-processers are going to have to develop in order adequately to handle language by machine. [See on this, Part 1.]

Now, granted, the actual computer techniques for doing this processing are still by no means sufficiently developed to be adequate: nevertheless, they have already reached a point which should cause all philosophers worthy of the name to take notice of them. (The first successful mechanical translation system, for instance, is already actually operating for the E.E.C., in Luxem-

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bourg.) And if it be argued, by philosophic backwoodsmen, that even if there are already signs that information-processing is going, in the end, to yield a conception of language owing more to Coleridge than to Russell, they don't want to alter their lectures, so they just aren't going to believe it, my reply would be that, in the same sort of way, the seventeenth-century astronomers at Padua are said to have said to Galileo, "Even if I did look down one of your barbarous Dutch tubes and seemed to see. . ."

I want to appeal to philosophic contemplatives not to behave like this; especially if they are not only just natural contemplatives, but also spiritually trained ones. For (as I think is becoming clearer decade by decade) the object of any full or adequate spiritual training is not only, over the short run, to send the pupil away into an *ashram* or hermitage in order that he may obtain a fuller knowledge of himself and his own nothingness, thus, for a time, causing him to turn his back on the world. It is also that, over the longer run, he may come right back into the world, having first, by dissolving his own stiffness and pride, recovered as an adult the full inexhaustible creative capacity and capacity for learning of the child. And, in this century, this is going to mean both restoring its old creativeness to philosophy ("How charming is Divine Philosophy") and also ceasing to be afraid of machines. Because, to start with, and without bringing to bear any further consideration, if you are going to train people spiritually by causing them (among other things) to use liturgical language, you have got first to teach them a proper philosophy of language to justify making a liturgical use of it; and it is moreover required of such a philosophy of language that it should be true. . . .

#### The object of writing a whole philosophical serial

It might still be asked, though, "Why, on this, write a whole philosophic *serial*?" "Why go on and on developing the reiterative analysis of a single verse of a hymn which contains a simile?"

The answer to this lies in the inscrutable and unintelligible nature of reproduced diagrams. In Part I of this essay I produced four such

diagrams, fondly believing that all I had to do to make all clear was to explain the detail of them, by breaking them down into stages and adding explanatory tables and flowcharts and schemata: in fact, by producing yet more diagrams. All useless: for the first four diagrams, when reproduced and reduced, could hardly be read: so clearly also all my ancillary tables, flowcharts and further diagrams, when subjected to the same process, would become similarly illegible. So, after much agony and after taking much advice (for I am serious about this enterprise) I have decided to space out what I have to say, so as to put any contemplative philosopher who can solve cross-word puzzles in a position actually to participate in the activity I propose, by unfolding the process of analysis one stage at a time; and that means, by writing a philosophic serial.

In the nineteenth century, the characteristic literary art form, practised by nearly all the great novelists, was that of the serialized narrative story. Might it not be that the characteristic philosophic form of this century will turn out to be not the narrative serial but the philosophic serial (see, for instance, John Wisdom's *Other Minds*)?

#### The nature of the conceptual telescope: the reactive text-editor

Imagine yourself sitting in a chair with, in front of you, a new kind of typewriter. This typewriter, which is set on a stand and is also what is called in the jargon a front-end-heavy online computer terminal, has more keys on it than the ordinary typewriter, and, as well as producing typewritten script, on paper, will also generate paper tape when required. And behind the typewriter stands up a display panel, looking like a small television screen, on which the output (the result) of doing any operation on the text-editor displays itself for inspection in eery green flickering letters, before the machine actually types it out on the paper.

So, at the very beginning, you, sitting there at the console, have a choice. Do you like what is appearing on the display panel? If so, you press a button, which we will imagine has the word TYPEOUT-NOW written on it, and the machine, without further effort on your



part, will type out what is being displayed on the screen on to the paper. But if you do not like what is being displayed to you on the display panel, you press another button, which we will imagine has the word ERASEANDTOTALLYREPLACEBY written on it (probably followed by a button ERASUREBOUNDARYDEFINER, with the help of which you can specify just which part of the displayed text you want to erase and replace). You then type out yourself the correct output which should replace the error which has appeared on the screen (marking it with an asterisk to show that it has been put in by hand); in short, you use the text-editor, correctively, as an ordinary typewriter. You thus prevent the machine, at each stage of any sequence of operations, from first starting to go wrong, and then continuing to go more and more wrong from that point on.

It becomes evident from this that the text-editor has not only a typewriter keyboard, a paper-generating mechanism and a display panel; it also has a very large number of buttons attached. A few of these are real; most are imaginary. That is to say, instead of pressing an actual button, in order to start off a text-editing operation (in the jargon, to call a function) you type on the typewriter a single continuous string of upper case letters called a function name. In the present state of the art (reactive text-editor construction still being in its infancy) the computer to which the text-editor is attached will probably only look at the first four letters of any function name. It will not be able, therefore, to distinguish between two function names which begin with the same four letters; e.g. CUTINHALF and CUTINQUARTERS. One of these, therefore, will have to have its wording transposed: e.g. CUTINHALF and QUARTERCUT. (In the future we will have text-editors which will read the whole of function names, however long; but once you have realized the amount of programming it takes to make a computer read even the first four letters, you will consent to transpose your wording and cease to grumble.) There is, of course, a school of thought which never uses full language to construct function names, but only acronyms: e.g. CTHF, and QTRC. This, however, is a short-term policy, which fails to pay for itself in the longer run; not only because it overtaxes the user's memory remembering all the acronyms, but also because it makes it difficult for one user to

replace another, since tastes in acronyms notoriously differ. Whereas the use of full language, for function naming a text-editor which is to explore real language, has a kind of poetic splendour about it; for these are operative words, dynamic words, words of power, like the words of the God of Genesis at the primeval creation: they are not just inert words, they do things. (They must never have a space within them, by the way, so the creation of them creates, each time, a new word in English.)

There is one thing, however, to which aspiring function-namers of imaginary text-editors must remain sensitive at all costs. This is that an operation which seems to you, a spiritual human being, to be merely trivial (such as the operation `SORTBYSTRESSCORES`), owing to the passive and soulless nature of machines, may take a programmer, starting from scratch, up to a year to program. (This is why I am characterizing my whole reactive text-editor, in this serial, as imaginary.) This fact, together with the further fact that, at the beginning anyway, the use of a reactive typewriter seems to throw away one of the computer's few real quasi-miraculous properties, namely its fantastic speed, causes many programmers to feel contemptuous towards the whole activity of constructing text-editors. "What, all that programming," they say, "and the only effect of it is to slow down the machine to the pace at which a human being, peering into a display panel, can operate. Would it not be much better to combine any desired sequence of text-editing operations into one single program and then run it fast?"

They forget that the purpose of the reactive text-editor is to serve as a conceptual telescope: not to provide the fastest possible way of performing any already predefined sequence of analytic operations on a stretch of natural language. If you know that you can separate the stages of the sequence of operations which you wish to perform on your stretch of language into separate operations of text-editing; and if you know also that, by using at need the basic operation `ERASEANDTOTALLYREPLACEBY`, you can correct by hand the output of any one stage of a whole sequence of operations which may have gone wrong—then you will dare to try out on your stretch of language all sorts of imaginative changes which normally you would never have the nerve to suggest—in order to see to what

extent the actual stuff of language responds to being stretched and pulled about in such a way. Moreover, it is only at the beginning that the use of machine time and space represented by the operation of reactive text-editing is uneconomic. Human laziness being what it is, there is a strong inducement on the part of the user to construct and call longer and longer operations with one function name—with the result that the operations called by the text-editor come increasingly, in the end, to correspond each to a considerable length of fast-running computer program.

Of course, the ideal thing would be for the text-editor user himself to gain the skill to program the text-editing operations which, for any investigation, he requires. And, in the future, this may indeed become possible; since a lot of the skill will, by that time, consist in combining together text-editing operations which already exist, to adapt them to some particular purpose. (In other words, unlike the programmer mentioned earlier the text-editor user, in learning to program, will not have to start from scratch.) This essay, however, is not about constructing text-editors, but about analysing language; and therefore, in what follows, I am going merely to name imaginary text-editing operations, and then describe them, on the assumption that, if they can be described, they can be programmed.

#### First stage: the rhetorical punctuation of the text

In the four diagrams analysing the simile, given in Part I, the first thing which the text-editor was made to do to the simile was to cut it into quarters. It failed to do this right because, being a prose-analysing text-editor, it failed to take into account the inequalities produced by the metre of the verse. Nevertheless, guiding itself by the punctuation, it did succeed in making credible cuts, because it was analysing a text which was plentifully punctuated. (And that this was so was no accident; for the simile was chosen to make rhythmic and reiterative analytic operations simple, and subject-predicate detection difficult.) Nevertheless, everybody who actually tried out the procedure instantly asked, “What if the punctuation marks had not been there to guide the cutting?” And of course, the answer is,

“In nearly all cases, before you cut it into quarters, the text must be rhetorically punctuated first.”

Nevertheless, to show what I mean by “making a text-editor do something”, I give the descriptions of CUTINHALF and QUARTERCUT below:

### CUTINHALF

a) i) Number the words of a sentence to form a *word-count* counting the punctuation marks as extra words.

ii) If the word-count produces an uneven number, add 1 to it.

iii) Divide the resulting word-count number by 2, and make a provisional cut after the halfway point. (That is to say, if the word-count number is, say, 30, you provisionally cut after the 15th word.)

iv) Observe whether, by moving the provisional cut up to 3 places forward or back, you could make the cut come after a punctuation mark.

[b) Any other criteria for cutting, if such be discovered.]

c) If there is still a choice of equidistant possible adjustments, or if there is no way of testing or adjusting the provisional cut, in spite of the fact that the cut is clearly in the wrong place, operate the ERASEANDTOTALLYREPLACEBY function, and retype the sentence with the cut in the right place, marking the cut with an asterisk to show that the operation CUTINHALF has failed.

### QUARTERCUT

a) Take a sentence which has already successfully been cut in half, and form a word-count, as above, for the words in the first half.

b) Proceed as in CUTINHALF.

c) Repeat the whole operation for the second half of the sentence.

Before giving examples to show how language responds to being treated (or maltreated) thus, there are two things to observe about these two operations, since they will also apply to all the text-editing operations used in this serial. The first is that, until “[b) Any other criteria for cutting, if such be discovered]” is further filled in, the

text-editing operation is over-simple; it falls back far too soon on the corrective action of the human being. The second is that, in spite of this, and indeed, because of it, the operation still assumes that the human being, if necessary, can cut a sentence significantly into halves and then, later into quarters, whereas the whole question which is really under discussion is, "Can he?"

Thus there are two independent ways, not one, in which any text-editing operation given in this serial can succeed or fail. The operation can fail, as a text-editing operation, if, even by the end of this serial, we have discovered no effective way of filling in (b). But, even so, it can succeed as a philosophically high-lighting operation, pinpointing something about the nature of language, if the user ends up by saying, "Although I cannot further develop CUTINHALF as a text-editing operation, yet, I must say, long sentences in language (not to mention sequences of sentences forming paragraphs) have indeed a tendency to have a basic balance which causes them to fall into two approximate halves; and, moreover, the more they do this, the more we tend to feel that language is being ordinarily and properly used—though doubtless some brilliant creative writer may react against this basic balancing tendency." It is if the user ends up by saying something like this, then I want to say that the text-editor, even if it has failed as a text-editor, has succeeded in achieving its more fundamental use as a conceptual telescope: and it is because this use, of the two, is the more fundamental that I want to ask readers of this serial to try for themselves so to use it, and to write back to me c/o this magazine when they have.

Let us now try out CUTINHALF and QUARTERCUT upon some examples, to show how the text-editor operates. In what follows, definitive cuts are shown by square brackets placed back to back, and provisional cuts by two colons placed on top of one another.

First, on the simile:

CUTINHALF:

*Text word-count*

AS PANTS THE HART FOR COOLING STREAMS ,  
 1    2    3    4    5    6    7    8

WHEN HEATED IN THE CHASE , ][ SO LONGS MY  
 9 10 11 12 13 14 15 16 17  
 SOUL , O GOD , FOR THEE , AND THY  
 18 19 20 21 22 23 24 25 26 27  
 REFRESHING GRACE .  
 28 29 30

Here the provisional cut comes after word 15, "SO", but is moved back one place to come after the comma.

#### QUARTERCUT:

##### *First two quarters*

AS PANTS THE HART FOR COOLING STREAMS ; ,  
 1 2 3 4 5 6 7 8  
 ][WHEN HEATED IN THE CHASE ,  
 9 10 11 12 13 14

Here the provisional quarter-cut comes indeed after word 7, STREAMS, but before the comma, and is therefore moved on one place to prevent the second quarter of the text starting with a comma.

##### *Last two quarters*

SO LONGS MY SOUL , O GOD , ][ FOR THEE ,  
 1 2 3 4 5 6 7 8 9 10 11  
 AND THY REFRESHING GRACE .  
 12 13 14 15 16

Here the cut comes in a credible place indeed, but in the wrong one, since anyone reading the text aloud will want it to come after word 11, namely, after the comma following THEE. But there is no way to make the text-editor find the right cut, since moving the provisional cut one place immediately hits a punctuation mark: and, as well, there are no less than two other punctuation marks within three places to the right or to the left. So, throughout the four diagrams, I have left the cut where it is, rather than correct it and asterisk it, since part of the purpose of making the four diagrams was to show how the text-editor operates.

Now let us consider another favourable case, this time in prose. The following is an adapted sentence from *The Times*; and I have conflated below the results of using both CUTINHALF and QUARTERCUT:

NORWAY HAS EXPANDED ITS WAY ][ THROUGH THE  
 1 2 3 4 5 6 7  
 RECENT RECESSION , ][ TO; THE POINT WHERE ITS  
 8 9 10 11 12 13 14 15  
 PROSPERITY ][ NOW MATCHES ITS GEOGRAPHY .  
 16 17 18 19 20 21

Here, though we have to move the provisional half-cut one place back, so that it comes after the comma, the two provisional quarter-cuts, as it happens, both come in exactly the right places. However, suppose they hadn't? What could have been done? Moreover, this was the original, untampered with, sentence from *The Times*:

NORWAY HAS EXPANDED ITS WAY THROUGH THE  
 1 2 3 4 5 6 7  
 RECENT RECESSION TO THE POINT WHERE; ITS  
 8 9 10 11 12 13 14  
 PROSPERITY NOW MATCHES ITS GEOGRAPHY —  
 15 16 17 18 19 20  
 TOP OF THE WORLD .  
 21 22 23 24 25

Here—in order to make this sentence grammatically a sentence—the final phrase, “TOP OF THE WORLD”, has to be taken as being in apposition to “GEOGRAPHY”, and construed as a single noun. This means that the second half of the sentence is now a triad, consisting of three, roughly equal lengths of text, each with one heavily stressed word in it. So, if stress be shown by underlining, and the words of the final, totally stressed phrase locked together to form a single word, you get (annotating by hand):

TO THE POINT WHERE ITS PROSPERITY [|

1 2 3 4 5 6

NOW MATCHES ITS GEOGRAPHY [|

1 2 3 4

— TOP+OF+THE+WORLD .

1 2 3 4 5 6

The temptation of the perfectionist Arts man, faced with a giant complication like this right at the beginning of his analysis, is to give up and refuse to proceed further, on the ground that it is impious to try and analyse language by machine anyway. I want to ask my philosophic contemplative readers to be simple and strong enough not to do just this, but to persevere in the attempt to make the text-editor a genuine conceptual telescope, the operations of which will work sufficiently well to be ultimately worth trying out on a lot of text. For not only can a computer analyse more language, faster, than a human being ever could; but also (face it) even our attempt here to operate CUTINHALF and QUARTERCUT has turned our attention, as philosophers, to the phenomenon of the balance of prose, through the possibility which it has opened up of detecting this balance, even if only in very favourable cases, in a very simple way, by using a machine.

It is already clear, however, that CUTINHALF and QUARTERCUT need further sophisticating (they do not work, for instance, on most of the sentences of this essay). To give a first provisional idea of the next step to take in sophisticating them, I will give below an analysis of the same two sentences which we have here made the text-editor handle, as they will look when the text-editor has rhetorically punctuated them. I am assuming here, by the way, that the ancient and medieval form of punctuation has as its object making it easier for the reader to read aloud, though it would take a whole other serial to argue for this.

There is no space further to explain this new form of analysis; so (to sharpen up the contemplative reader's ingenuity) I will confine myself to giving three hints.

*Hint 1* In this new analysis, the number which is initially placed under each word and which is called its *stressvalue*, can only be one



of three allowed numbers, 2, 0, and 1. If you consider that, in the kind of text which you are analysing, the word which you are looking at will *always* be stressed, give it the stressvalue 2. If you consider that it will *never* be stressed, give it the stressvalue 0. If you consider that, even in one single stretch of text, it will sometimes be stressed and sometimes not, give it the stressvalue 1. (Note, moreover, that the final analysis as given below contains no 1s, though it does contain one 3 and round brackets.)

*Hint 2* In these two favourable cases, compute the *stresscore* of each segment, by adding up the stressvalues of the words inside the segment. In how many cases does the segment's stresscore come out at 4?

*Hint 3* Look at the sequence of stressvalues which consists of the stressvalue of the word immediately before the rhetorical segment cut, and which is called the *stopword*, followed by the stressvalue of the word immediately following the cut, and which is called the *dropword*, the idea being that the sequence stopword-dropword mimicks the drop in the voice which anyone reading aloud makes at the end of a segment cut. You will find that this sequence of the two stressvalues is invariably 2, 0.

Here are the two analyses (a segment cut is given by a slash):

AS PANTS THE HART / FOR COOLING STREAMS, /  
0 2 0 2 0 2 2

WHEN HEATED IN THE CHASE, / SO LONGS MY  
0 2 0 0 2 0 2 0

SOUL, / O GOD, / FOR THEE, / AND THY  
2 0 2 0 2 0 0

REFRESHING GRACE. //  
2 2

NORWAY () / HAS EXPANDED ITS WAY / THROUGH  
3 0 2 0 2 0

THE RECENT RECESSION, / TO THE POINT WHERE ITS  
0 2 2 0 0 2 0 0

PROSPERITY / NOW MATCHES ITS GEOGRAPHY. //  
2 0 2 0 2

You can, of course, again becoming an Artsman perfectionist, say that the final rhetorical punctuation of these two sentences is still too crude—that, in the second sentence, “THROUGH” should have been stressed.

[To be continued]

*Note on “Notes and References” within this serial*

In the first instalment of this serial (*T. to T.* XI i–ii, double number), and which was labelled “Part I”, I said that the “Notes and References” of Part I would appear at the end of the whole two part article, namely after Part II.

Part II, for the reasons given above in the text, has expanded into a philosophic serial: and I have further suggested, in the same passage, that the characteristic applied philosophic art form, in this half of this century, might well become that of the philosophic serial.

However, consideration of the proper placing of notes and references within such a serial shows that this new proposed form of “theoric to theoretic” serial is not, in fact, quite the same as that of the “pure”, sometimes quasipoetic, philosophic serial of the first half of the century, as exemplified, for instance, in John Wisdom’s “Other Minds”. For the philosophic objective of this new type of serial here is to connect a new way of looking at language which has grown out of technology, with a very old way of looking at language which has grown out of liturgy and poetry, not the reverse, and to connect both with some current thinking in philosophy.

There arises therefore a difficulty. For in such an enterprise not only will the scope of the notes and references be quite exceptionally multi-disciplinary: but also the list of them will threaten to become so long as to constitute in itself a whole (quasi-illegible) instalment of the serial in its own right: an instalment, moreover, which, because it will have to be printed too small, will be as inscrutable to the ordinary reader as, in Part I, the four diagrams were.

Clearly this difficulty, if it can be solved at all, can only be solved at the end. Suggestions from interested readers as to how to solve it are invited. (This discussion also will continue).



## **Creativity, religion and science**

### **II. Experimentation**

RONALD BROWN

There are many common misconceptions about science and its methods, particularly amongst those outside the sciences. Frequently, we regard information obtained through empirical means as certain, whereas that derived merely from ideas, concepts or feelings is considered of dubious value. Objective, meticulous, working through reason and logic, a scientist is thought to be free from the complications of emotional response or human frailty which dog those who deal in religion or aesthetics. A previous paper<sup>1</sup> considered some of the ways in which new insights are gained in science, and suggested that the basic urge which motivates a scientist to create is common to various disciplines of the mind. A discussion on the nature of scientific methodology is continued in the present article. In particular, an attempt is made to: (a) examine a few of the difficulties associated with experimental systems; (b) discuss the nature of science, together with some of the factors which shape the thinking of a scientist; (c) suggest that certain of the concepts of testing developed in science can be applied to the religious life.

It is almost axiomatic that science is founded on experiments. Attempts to state exactly what is meant by "experiment" are fraught with many difficulties. Let me recount briefly my own experience. When I first became interested in this topic several years ago I started by looking at some books on the history and philosophy of science from my own bookcase. Rather to my surprise, many of the texts on the philosophical side had very little to say on what

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constitutes experimental methods. Those with a historical perspective, together with some of the older books, seemed to do a little better. Let me mention a few, typical cases. Peter Achinstein's *Concepts of Science: A Philosophical Analysis* does not contain a single reference to "experiment" in the Index. A. R. Peacocke's *Science and the Christian Experiment*<sup>2</sup> seems to dismiss the subject of experimentalism in a rather cursory fashion. He almost assumes the term to be self-evident, and does not seem to mention any of the problems associated with it. I do not pretend that the brief descriptions given above are all embracing or comprehensive. We have ignored such questions as whether experimental psychology is the same as experimental physics; the exact relationship between experiential statements and experiments; the narrow, technical sense of this term, and its broader usage. Of course, I do not claim that there is no information available at all, or that there are no guidelines. However, I would like to make the following points:

a) A good deal less has been written on "experiments" than on many other terms which are important in science—contrast for example words such as verification/falsification, theory, model, law, hypothesis. This seems all the more noteworthy in that experimental methods are almost invariably taken as the hallmark of science.

b) A universally acceptable, unambiguous usage of terms associated with experiment is still lacking. Notice that this lack of a formal definition does not stop people from actually continuing to do experiments.

It is equally instructive to take other terms to see how these would fare under a similar treatment. "Scientific method" is especially apt for this exercise, since it seems to have almost as many definitions as there are authors who have used it. When we consider what an experiment actually is, it is not easy to give an exact description.

It might be worth while indicating the terminology to be followed during this discussion. Notice that the object here is to provide workable definitions which might aid the reader. No effort is made to produce exhaustive, precise statements. Linguistic analysis, hermeneutics, semantics and related tools are not within the range of expertise of the author! At its apparently most straightforward

level scientific methods rely on *observation*,<sup>3</sup> by which is meant studying sequences of natural events just as they occur, without intervention or impetus from the observer. Subsequently, an attempt is made to find a type of order or pattern in the observations. Astronomy, together with parts of the life and social sciences, still relies mainly on observations for its input of information. However, for many purposes it is not always convenient to use conditions and time scales imposed by nature. At times it is impossible to unravel all of Nature's complexities; or to wait several millenia to examine events connected with geomorphology; or study phenomena at the bottom of the Pacific deep; nor can we yet examine sunspots in their natural habitat. Consequently, we make use of *experiments*,<sup>4,5</sup> which involve isolating some of the factors to be studied, varying the conditions of work in a regular manner, and carrying out the whole procedure in a controlled manner, as provided for example in a laboratory. I should also like to encompass in the term "experiment" something of its original meaning, which was simply to experience. As first used by Friar Bacon in the thirteenth century, an experiment was merely a contrived experience or designed observation, set against a naturally occurring experience. The complementary functions of experiential phenomena plus carrying out a prescribed task in a given manner have been retained in the French word *expérience*. This point will be taken up again later. In keeping with the usage of Hempel<sup>6</sup> and others *experimentation* is taken to include aspects of testing, as well as the acquisition of data.

At the core of science is the experimental method, with the idea that it is possible to carry out carefully designed studies under rigidly controlled conditions, in a repeatable manner. We assume it is possible to both separate and isolate at will the various parameters which control the course of an experiment. At one time it was thought axiomatic that the observer should be divorced completely from what he examined. Once you look at this concept in detail it is quickly evident how far it is removed from actuality. By way of example, what you find in an experiment, or in life in general for that matter, is largely what you expect to find, and is conditioned to a great extent by your own background, experience and expect-

tations. In a laboratory, results are determined in large measure by previous schooling and by years of rigorous training to develop a scientific bent—which teaches us to ignore findings that do not correspond with our own preconceptions! Let me give a typical quote from a manual dealing with measurement techniques. “Accurate and reliable observation therefore requires much training and practice, and relatively few people are really good at it.” One of the reasons for the predominance of youth in scientific discoveries may be because at this stage there is less likelihood of hindrances from stereotyped views or rigid ways of seeing things. There are so many cases of missed discoveries resulting from people refusing to accept either the validity or significance of their own results.<sup>7</sup> Part of this problem comes from the fallibility of our audio-visual and motor responses. A good deal of work has been carried out recently on mechanisms of perception.<sup>8</sup> Apparently, our five senses are not as trustworthy as was once thought, for these also tend to react in a way which is consistent with previous schooling and conditioning.

To try to overcome the shortcomings of the only-too-fallible human observer there has been a movement towards more sophisticated, complex instrumentation. Yet the more complicated the instrument the further it is removed from the parameter being measured, so the more the results depend on concepts inherent in the design of the tool itself. Let me illustrate this point by means of some examples. In an immersion thermometer a connexion between coefficient of thermal expansion of mercury and temperature appears fairly straightforward. On the other hand, output from a modern automatic X-ray spectrometer requires certain understandings and assumptions concerning detection/rate meter systems; links between characteristic radiation and discrete electronic transitions in elements; computer/instrument interfaces, to mention just a few items. In high energy physics experiments and instrumentation are so complex that you almost have to decide to build in the effect you wish to perceive as part of the apparatus itself. Richard Warn<sup>9</sup> has developed this point of view with regard to the structure of biological cells, and raises the pointed question “How far can we trust the electron microscope?” As yet we have not even considered the possibility that the instrument may itself alter the

outcome of an experiment. By way of illustration, Werner Heisenberg put forward his famous uncertainty principle, which states that it is not possible to determine simultaneously and precisely both position and momentum of an electron. In order to detect an electron accurately you need a tool with high energy; some of this energy can be imparted to the electron, thus changing its momentum. If you use a device that does not have high energy it will not possess sufficient resolution to locate an electron exactly, which will lead to uncertainty about position. Another factor which must be considered is whether the observer can influence the outcome of the work he is investigating. Although we may normally think of this as a problem for the social scientist, where there is some evidence that wishing for a particular result may affect whether this result actually occurs, it is also important in the physical sciences. We shall return to this point subsequently.

Other difficulties are associated with repeatability of experiments. Often we cannot isolate completely, or in certain cases even characterize satisfactorily, all of the important variables. For a particular chemical reaction we may measure parameters such as concentration of reagents, temperature, duration of experiment, but ignore a whole host of other variables (e.g., relative humidity, variations in earth's magnetic flux, work being done on next bench which may lead to accidental contamination, changes in atmospheric pressure or composition, and so on). Sometimes what was considered insignificant can prove crucial. Let me amplify this point by giving some representative cases. For reactions carried out at high temperatures, say up to 1900°C, it is customary to use recrystallized alumina ( $\text{Al}_2\text{O}_3$ ) equipment, since this is stable and readily manufactured in a variety of shapes. Under certain conditions the alumina firing tube can become pervious to atmospheric oxygen at high temperatures. In retrospect, we can see what the mechanism for this permeability is likely to be. Oxygen is picked up on the external surface of the tube wall at so-called "active sites," then diffuses through the wall along channels, eventually ending up inside the firing chamber. When this happens the atmosphere inside the furnace becomes an oxidizing one, which means that work carried out in a neutral or reducing gas is negated. Until it was



recognized, this effect led to some very strange and inexplicable results. R. Bacon,<sup>10</sup> a research worker at ICI, reports some work carried out on the rate of polymerization of a vinyl type monomer in a stream of nitrogen, using a persulphate/bisulphite catalyst. After being left for a year the experiments were taken up by another chemist, who obtained polymerization rates that were markedly slower than those reported originally. Eventually, the first polymer chemist and the second man worked side by side, using identical reagents. Still, the rates of reaction were different. This anomaly was never explained satisfactorily. Just recently I was present at a seminar where a group of students was reporting results to their supervisor. At one point the supervisor advised one student not to pursue a line of research which had been performed previously, because it would not be possible to reproduce the experimental work. This type of remark is so common in a laboratory as to pass almost unnoticed. The only reason the incident is recorded is because the subject of repeatability was in my thoughts at the time. This might be an appropriate place to introduce the topic of field work, which consists of experiments carried out *in situ* away from a normal laboratory environment. A recent textbook on scientific methods has the following remark about such experiments: "They are much more difficult to devise and carry out strictly reliably than laboratory experiments, and are particularly liable to be worthless and misleading if they are not done properly."<sup>11</sup>

For those who have never been exposed to it before, the question of errors in experiments may prove both interesting and enlightening. The concept of experimental error seems to encompass a broad spectrum of activities, including aspects of the theory of measurement, instrumentation, statistics, methods of perception, not to mention psychology! Errors are normally classified in terms of either accountable or unaccountable categories.<sup>12</sup> The former class is concerned mainly with instrumentation and method. Unaccountable errors are largely a feature of the observer. If you have ever tried to instruct a group of students in the apparently simple task of taking a burette reading, you will understand the problems that can arise. A number of people will read the top of the liquid meniscus; some will read the bottom. Even when given the

same burette to read, a large class will produce a spread of results. You find that some misread the scale; others invert numbers, so that 25.25 cm<sup>3</sup> can become 25.52 cm<sup>3</sup>—or even 52.25. When copying figures from a table, apparently 3, 5 and 8 are especially liable to be confused. This is not the place for a detailed treatment, but let me just mention that results are frequently represented by a Gaussian function, which characterizes a *random* distribution of events. R. K. Penny,<sup>13</sup> Professor of Engineering Design and Production at the University of Liverpool, gives a revealing account of errors in experimentalism. “Every measurement involves an error. The nature of errors may vary and so may their magnitudes but total elimination of errors from experimentation and testing remains beyond human power.” Perhaps it is evident by now that the precepts of empiricism and reductionism, which are based on the idea of a neutral observer carefully recording in an unbiased fashion absolutely everything precisely as it occurs, are now regarded as oversimplified and unrepresentative.

Anyone who has worked in a laboratory will be familiar with the phenomenon of that “odd” experiment. Occasionally you obtain a single, unique result that is far better than anything that was anticipated, but you are unable to reproduce this wonderful effort! I can recall having a supervisor who was never unduly excited by any piece of work that looked too exceptional. His first comment after being presented with novel information was invariably “Go and do it again, then come back and see me.” In industrial production a similar, if somewhat more serious occurrence, is also known. Every now-and-then a process which has been running smoothly for weeks or even months will break down. This can be a costly affair if the loss of production is serious. Often, such an “epidemic” will cure itself for no apparent reason. Part of the explanation for this type of behaviour may lie in the occurrence of a whole host of chemico-physical properties that depend either on very small quantities of additives or foreign substances, or the presence of such minute factors as defect concentration or a departure from stoichiometry. Thus phosphors, semiconductors, superconductors and similar electronically active materials are very much affected by additives or impurities at the parts per million, sometimes even parts per billion

(1 part per 1000 million), level. On the other hand, nucleation/recrystallization phenomena, sintering and related solid state reactions, catalysis/surface chemistry, electrodeposition are all processes where very small differences at the outset of the reaction can lead to marked changes in the final result. Mechanical and electrical properties are controlled by minute defects, which have been investigated extensively, but are still not understood completely.

There is another aspect of reproducibility which is more concerned with the logic or philosophy of the method, rather than with its practicality. No matter how many times you carry out an experiment it does not guarantee that it will always occur in precisely the same manner. This has been called "an inductive risk." To use Bridgman's terminology, we may say it is "not safe" to assume that two procedures of measurement which have given the same results in the past will continue to do so in the future.<sup>14</sup> Nowadays we have a clearer understanding of the interrelationship between the system on which a measurement is made, the measuring instrument, the observer, and the logical constraints of experimental methods.

Evidently, science has its own basic framework which affects the judgement of those who practise it. What are some of the beliefs, principles and fundamental presuppositions that a man of science must have? What factors mould and influence scientific opinion? In what manner and to what extent are these factors important? Notice that these questions are normally the province of the philosopher of science or those who deal with metaphysics, rather than the field of interest of an ordinary working chemist. Since the present author is in the latter category, this part of the presentation will, of necessity, be somewhat limited in scope.

At the root of the scientific system is the concept of an order and pattern existing throughout the universes. The purpose of the scientist's investigations is to unravel this order so as to obtain a better understanding of the scheme of things, our place in this scheme, and in the process to learn something about ourselves. We assume this pattern is amenable to study, intelligible, and that it exists outside of our own mental constructs. Although at times this latter point is hotly contested by the philosopher, it is seldom

challenged seriously by a practising scientist. Some people have thought the idea of a reality apart from ourselves illusory. By way of example, it is claimed that the onset of relativity theory destroyed the oversimplified picture of the uniformity of events by showing an interrelationship between the space-time continuum and the manner in which it is observed. This was far from the view of Einstein himself, who held the laws of nature to be both universal, and independent of the frame of reference chosen. Einstein saw the constancy of the speed of light as an absolute fundamental fact occurring alongside other natural events, yet completely outside the constructs of a human mind. Einstein put his own viewpoint as follows: "Belief in an external world, independent of the perceiving subject, is the basis of all natural science."<sup>15</sup>

We take as axiomatic that there is a uniformity, a unity and an essential simplicity about natural events. Scientific laws are held to be equally valid throughout the cosmos. We assume that nature is not capricious; there is a regularity and interconnectedness in the natural world; other scientists share much the same experiences we do, and that there are universal truths to be discovered or uncovered. We are able to recognize the validity of such truths and to evaluate critically the worth of one hypothesis over another, in spite of the presuppositions and conventions inherent in making such judgements. Professor Coulson<sup>16</sup> seems to get very close to the core of scientific endeavour when he talks of "a common search for a common truth."

Other factors, whose influences are equally persuasive if perhaps less well documented, are instrumental in shaping the progress of scientific discovery. Among these are ideological, political, and socio-economic considerations. We are not usually slow to point to the impact of dialectical materialism in this connexion, or to cite the example of T. D. Lysenko and his shaping of hereditary theories in the U.S.S.R. Another typical case is that of Philipp Lenard, a German physicist who worked on cathode rays and luminescent materials at the turn of the century. Lenard, Professor of physics and Nobel laureate, became enamoured of National Socialism to an extent where he prefaced a textbook on physics with the remark: "In reality science, like everything else man produces, is racially

determined, determined by blood.” This man’s views, which gave him prominence in the Third Reich, led him to castigate nuclear studies and relativity as “Jewish physics,” and thus inferior. His refusal to lend credence to these areas impaired the development of nuclear weapons in Germany in the 1940s. We might argue equally well that in a capitalist society the pressure to produce profits is just as effective a moulder of scientific opinion. This approach can be beneficial in producing much effort on a scientific problem of commercial import. On the other hand, it may be deleterious when it either stifles individual responsibility and freedom, or causes products intended for consumption to be released prematurely before sufficient work has been carried out on possible health hazards. Theistic or atheistic beliefs also play a part. It is now generally accepted that the rise of modern science in the sixteenth century occurred within a framework of the Protestant Christian faith.<sup>17</sup> Many early scientists strove to learn more of the Creator by studying the created order. Lack of belief in a God may also play a part. The noted cosmologist Professor Sir Herman Bondi<sup>18</sup> seems to imply that his theory of the continuous creation of matter does not invoke the concept of a God who created the cosmos. In addition, J. Needham<sup>19</sup> has pointed to the inability of the ancient Chinese to progress beyond the technical gadgetry stage of science as a failure of theism. With the loss in early Chinese religious concepts of a personal God who was rational there came a failure to seek for the type of orderly universe that such a God would create.

At present we live in an age of telecommunication, mass media, conurbations, the global community, cartels and conglomerates. Funds are controlled mainly by large Governmental or industrial institutions. All this has had its effect. We tend to concentrate on interdisciplinary projects, group research efforts, and multinational activities such as high energy physics at CERN, space exploration through the European Space Agency, or climatic studies carried out as part of National Geophysical Year. As a result we have started to de-emphasize the contribution of the individual, to diminish personal responsibility, and to create conformity. In addition we have the unifying, if not at times stultifying, influence of other scientists. The scientific community taken as a whole sets standards

of what constitutes normative science. Although there is not space to consider this aspect in any detail, these are not local but worldwide, are important in accrediting scientific knowledge and testing beliefs, and help to shape the progress of discovery. Evidently, the factors which mould or control scientific thinking are complex and still not understood completely. By listing these attributes it is not intended to question the honesty, integrity or capability of those who are involved in science. Although some of these points are not always either borne in mind by those who practise science, or stated formally by the philosopher or metaphysician, their existence should not be discounted.

In spite of these inherent difficulties, it is possible to make use of experimental methods. Physical measurements, evidence of the senses, empirical observation and hard facts are the basic building blocks of science. Frequently, this solid world of physical reality and concrete events in space-time is set in contrast with the realm of spiritual concepts, eternity, happenings which are subjective, personal and unique to an individual through religious experience. I wonder whether this sharp demarcation is valid, meaningful, or even possible? Such a distinction owes much to our Hellenistic, or rather Platonic, inheritance with its emphasis on God as immovable, immutable and completely beyond mere physical events. In a culture where working with your hands was considered unsuitable, being relegated to slaves, menials or mercenary mechanics,<sup>20</sup> where change and motion were inferior states and thought was ultimate, this dichotomy between temporal frailty and spiritual certainty was inevitable. A more recent attempt at a similar viewpoint is found in the theology of Rudolf Bultmann.<sup>21</sup> Although the work of separating Christ and mythology is an admirable one, Bultmann removes God from the realm of nature, thus seeming to imply that our concept of Deity is unaffected by the conditions or purpose of the natural world. The whole question of myth and fact in Christianity has been discussed more fully in recent issues of *Theoria to Theory*.<sup>22</sup> By way of contrast to the Greek view, the Hebrews took an entirely different approach, one which was very firmly grounded in real life situations. The Biblical account has no proofs for the existence of God, little theologizing, and even less philosophical speculation or

metaphysics. The world of the Old Testament is an everyday ordinary one, filled with real people, real problems and actual happenings. God is portrayed as one who breathes life, moulds, creates, moves and works. His activity encompasses all human endeavours; his field is that of historical situations. This same picture occurs in the New Testament. We still tend to imagine Jesus in the romantic tradition as a tall figure in glowing white robe and flowing beard. Yet he lived on earth at a fixed time in a restricted geographical area, was very likely rather short by present-day standards, and spoke the common tongue of the day with a pronounced Nazarene dialect. He earned a living as a carpenter, toiled, hungered, thirsted, was frightened, suffered, and also had a sense of humour. We cannot sever this Judaeo-Christian God from the world of hard facts, human experience, and physical reality.

A previous paper in this series<sup>1</sup> examined the aspect of discovery that is associated with the initial, creative phase, and provided some examples of the way that new insights are gained in several different fields of endeavour. There is a further aspect of experimentation which follows subsequently to the creative act, but is equally important. Once a breakthrough occurs we must test the new insight to see whether it can stand. This is the stage when reason, logic, critical analysis are invoked. Every aspect of the discovery must be scrutinized to test its correspondence with empirical observation and with reality. Notice that at earlier stages there was no clear cut demarcation between the initial act of discovery and the testing process. This failure to distinguish these two different aspects of scientific methodology caused quite a few problems at one time. Traditionally, the question of testing was taken to be a means of verifying a hypothesis. With the development of the hypothetico-deductive system, testing became falsification of a concept.

I would suggest that there are at least two ways in which the theme of falsification can be applied to the realm of religion. There has been a growing acceptance in recent years that morals, aesthetics and religion are just as much liable to change as are any other aspects of human endeavour. In addition, and perhaps more to the point, Christianity is grounded on the life of Christ and the significance of events associated with it. There is a growing awareness that if it

should be proved that the historical facts of the life of Jesus were invalid, then this would be a case where religion, or rather a particular part of the Christian branch of it, could be falsified. The historicity of Jesus of Nazareth has been of renewed interest to theologians in recent times. However much the interpretation of actions associated with Christ varies, now as it did at the time, Christianity is based on the assertion that there were events. Falsification and its status for both religion and science have been discussed by several different authors recently.<sup>23,24</sup> It is not proposed to continue with this topic in the present article. Perhaps I ought to point out that the aspect of religion with which I am most familiar is that part encompassed by the Christian branch. Consequently, most of the examples I have chosen are based on the religious life of the Christian. This is not taken to imply any shortcomings in the vast area of all of the other varieties of religious experience, but merely a shortcoming on the part of the author and his dealings with other faiths.

Although the idea of falsification is very dear to some philosophers, the whole question of testing can be approached in a much more pragmatic manner. For the practising scientist, as for the practising Christian, the main question is always "Does it work?" Let me give some typical illustrations of what this means in different situations.

At one time I used to work in an organization that had a policy of allowing every new science graduate a free choice of his area of work. A research director made an important comment when he pointed out that people who chose a project related to something the company manufactured would be regarded favourably. On the other hand, if you decided to work in a totally unrelated field you would be allowed to do so, but must expect fewer rewards. In later years even this benign attitude changed. Everyone was instructed to work on topics of immediate interest to the company's aims! Such a pragmatic approach to testing the value of a contribution in industry is fairly widespread.

Over the last 25 years I have spent 16 years in industrial research laboratories; 3 years as a research student on an industrial bursary; the remainder of the time in academic life—quite a consider-



able effort in attending scientific meetings and visiting various organizations connected with work in chemical fields. During the whole of this period, I have never once, in technical conversations with colleagues, had a discussion that involved checking whether an idea was capable of falsification or verification. Nor yet whether a method of tackling a problem was true or false. Often, the topic might have been “Does it work?”. In what sense was this question raised? In industry, the aim might be to improve the efficiency of a product, or the effectiveness of a manufacturing process, or to reduce costs. Instead of having to prove something capable of being falsified, you would be asked for evidence that the way you wanted to tackle a problem, or achieve some goal, was likely to be effective, or if it would work. Other aims of the question might be to determine whether a new approach could explain past results or predict future effects. Thus, it is far more customary to discuss whether an idea fits in with observation and experience, rather than how well a concept may be falsified. Professor Medawar<sup>25</sup> raises a somewhat similar point in his interesting collection of essays on science. This author indicates a divergence between the type of activity that scientists actually engage in, and attempts to systematize such activities. There is an analogy here with religion. What religious people do may not necessarily correspond with our attempts to describe such experiences.<sup>26</sup>

Testing in religion may also be tackled pragmatically, by asking “Does it work?”. Let us see what this means in the context of religious practices. Another way of viewing the concept of experimentation is as a means of testing by observation and experience.<sup>27</sup> When we experiment we “establish or ascertain by trial”.<sup>28</sup> This approach has traditionally been a very important one in Christianity. From very early times the church has inclined to the view that a person’s faith affects his performance; that the effectiveness of religion can be judged by the fact that it makes people act differently; or to put this in other terms, Christianity does work. “By their fruits ye shall know them” was the byword of the early church; “*tole leget*” the watchword of the Reformation. This latter phrase highlights two important discoveries of those times, namely we can test faith by recourse to an authority other than

official policy, also that reading should result in action. Experiential theology has wider implications than merely a personal, subjective viewpoint. Kathleen Bliss<sup>29</sup> describes modern religious life as follows: "Lived experience asserts itself as reality and reorganises past experience into continuity with it." This remark could equally well apply to the scientific enterprise.

At the basis of both science and religion is the set of raw experiences of the individual. Both disciplines are firmly set in the real world of human events; both are set firmly in the actual, ordinary world of concrete happenings and human perception. In both areas the creative act is a personal affair subject to the beliefs, prejudices and inward motivation of the discoverer. By way of contrast, testing is a group activity subject to the standards of others. Of course, there are still many aspects of experimentation which have not been covered adequately in this presentation. For example, the question of what constitutes an experience remains a topic of lively debate not only in religion, but also in science. Another area which has been given scant attention here is that of empirical versus phenomenological forms of knowledge. This subject has exercised some very able minds for quite some time. In the area of religious life, Hanford<sup>30</sup> has suggested a synthesis of these two apparently mutually exclusive approaches. This seems to me to be worth some further consideration for both theistic and scientific enterprises. Aspects of what constitutes normative science and normative religion are also important areas which need further clarification in view of recent work. How religion and science change in the light of new, creative insights and fresh experiences will continue to be an area of some import. Evidently, religion and science are not the same thing, but rather two distinct modes of experiencing reality. Science asserts that there is order and pattern in the cosmos; religion that there is meaning and purpose in life. Although these two attitudes are not identical, they are neither opposed to one another, nor even very far apart. Both disciplines seem to me to be more like a commitment to a way of life, rather than an intellectual acceptance of a set of propositions. I would suggest that it is just as wrong to think that science deals solely with facts, as it is to suppose that religion never does. Both are based on evidence which comes

from the set of experiences and observations of the individual. Both are grounded in experience, coloured by preconceptions, and supported by presuppositions.

### Acknowledgment

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### Notes and references

1. Brown, R. "Creativity, religion and science I," *Theoria to Theory* XI, iv.
2. Achinstein, P. *Concepts of Science: A Philosophical Analysis* (Johns Hopkins, 1968). Peacocke, A. R. *Science and the Christian Experiment* (O.U.P. London, 1971).
3. It is interesting to compare accounts of observation and experiment given by: (a) Trotter, W. "Observation and experiment and their use in the medical sciences," *The British Medical Journal* II, 129–134 (1930). (b) Dellow, E. L. *Measuring and Testing*, pp. 18–20 (David and Charles, Newton Abbot, 1970).
4. The changing usage of "experiment" is developed by: (a) Butterfield, H. *The Origins of Modern Science* (The Free Press, New York, Revised Edition, 1965). (b) Medawar, P. B. *The Art of the Soluble*, especially pp. 134–135 (Methuen, London, 1967).
5. See also Duhem, P. *The Aim and Structure of Physical Theory*, translated by P. P. Wiener (Princeton University Press, Princeton, 1954). Hesse, M. *Science and the Human Imagination* (SCM Press, London, 1954).
6. Hempel, C. G. *Philosophy of Natural Science*, p. 21. (Prentice-Hall, Englewood Cliffs, N.J., 1966).
7. Let me cite just one case. When William Herschel first discovered the planet Uranus in March 1781, it was found to have been observed at least 20 times previously. All these workers assumed there were faults in their instruments, and that the body was a star. Apparently, another planet was not expected. Even Herschel was inclined to report it as a comet, at first.
8. Nowadays there is a very extensive literature on sense-data, mechanisms of perception, cybernetics, neural pathways in the brain, and related topics. A useful introduction to these fields can be obtained by looking through issues of *Scientific American* over the last few years. See also Mandelbaum, M. *Philosophy, Science and Sense Perception* (Johns Hopkins Press, Maryland, 1964).
9. Warn, R. "How far can we trust the electron microscope?" *Theoria to Theory* VII i (1973).

10. This incident is reported by Polanyi, M. *Science, Faith and Society*, pp. 95–96 (University of Chicago Press, 1964). Polymerization is a process in which small, discrete chemical units known as monomers (Gk one part) link together to form a giant molecule, or polymer (many parts).
11. Weatherall, M. *Scientific Method*, p. 2 (English Universities Press, London, 1964).
12. Brinkworth, B. J. *An Introduction to Experimentation* (English Universities Press, London, 1968).
13. Penny, R. K. *The Experimental Method* (Longman, London, 1974).
14. On this point see Hempel, C. G. "Operationism, observation, and theoretical terms," p. 101 in *Philosophy of Science*, edited by A. Danto and S. Morgenbesser (Meridian Books, Cleveland, 1967).
15. Einstein, A. *The World As I See It*, p. 60 (Covici, New York, 1934).
16. Coulson, C. A. *Science and Christian Belief*, p. 56 (University of Oxford Press, London, 1955).
17. (a) Dillenberger, J. *Protestant Thought and Natural Science* (Collins, London, 1961). (b) Hooykaas, R. *Religion and the Rise of Modern Science* (Scottish Academic Press, Edinburgh, 1972).
18. This incident is reported by Clark, R. E. D. *Christian Belief and Science*, p. 25 (English Universities Press, London, 1960). It may be significant that Prof. Bondi is quoted from a publication of the Rationalist Press Association. The remark made was "we have to believe in something outside science which created matter at the beginning. But if we believed in the system of continuous creation . . . then it was the laws of science which ruled supreme."
19. Needham, J. *Science and Civilisation in China. II: History of Scientific Thought*, p. 581 (Cambridge University Press, 1956).
20. See Gillies, J. in the Introduction to Aristotle's *Ethics and Politics* (London, 1797).
21. Ward, K. "Myth and fact in Christianity," *Scottish Journal of Theology*, 385 (1967).
22. See *Theoria to Theory* X ii and iv (1977).
23. Flew, A. and MacIntyre, A. (eds) *New Essays in Philosophical Theology*, Chapter VI, "Theology and falsification" (Macmillan Company, New York, 1964).
24. See also McKinnon, A. *Falsification and Belief* (Mouton, The Hague, 1970).
25. Medawar, P. B. op. cit. Note 4(b), pp. 151–155.
26. Jennings, T. W. *Introduction to Theology* p. 79 (SPCK, London, 1977).
27. It seems to me that this is not far from the viewpoint of Carnap, R. *The Logical Syntax of Language*, p. 321 (London, 1937), who saw testing and confirmation as providing evidence, but not proof, for a given generalization.
28. The OUD gives: experiment vb. 1. to experience; 2. to ascertain or establish by trial.
29. Bliss, K. *The Future of Religion*, p. 163 (Pelican Books, 1972).
30. Hanford, J. "A synoptic approach: resolving problems in empirical and phenomenological approaches to the psychology of religion," *Journal for the Scientific Study of Religion* 14 (3), 219–227 (1975).



## Correcting theological analogies

James J. Heaney

Conceptual clarification as a constructive technique for the theologian seems here to stay, due at least as much to the influence of Wittgenstein as to the Christian belief in the promise of Jesus that truth can make men free. The success of constructive attempts of this sort, however, depends on two things. One is a precise view of how unclarity produces conceptual difficulties in theology, and the other is a careful survey of the scope and possibilities of correction. In pursuit of the first I wish to suggest that one important source of theological problems is the use of analogical language by those unaware of its limitations, illustrating this with the case of one common theological analogy prey to a variety of conceptual difficulties. We must then see, in regard to the second, whether there is any way for theology to make progress by amending such analogies, or if their correction is so difficult and the results so limited as to render the attempt profitless.

### (1) What Analogies Are

The value of an analogy in religion may *prima facie* be judged by the fortunateness or unfortunateness of its effects on the faith of believers. The terms “fortunate” and “unfortunate” refer primarily to the intellectual viability of that belief as determined by common sense and the standards of the tradition within Christianity to which its adherents belong. An example of a less viable belief appears in C. S. Lewis’s *The Screwtape Letters*, wherein the believer is

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urged by his tempter to feel best when praying to a certain corner of the ceiling.<sup>1</sup> The believer's convictions about divine ubiquity and transcendence, casually interpreted by analogy with spatial ubiquity, qualify that transcendence and localize the presence of the deity in a manner characteristic of primitive superstitions. The believer has, in short, begun with the notion that God is everywhere and ended with a modest form of fetishism.

J. S. Mill described the logic of this kind of analogy in *A System of Logic*:

In this sense, when a country which has sent out colonies is termed the mother country, the expression is analogical, signifying that the colonies of a country stand in the same *relation* to her in which children stand to their parents. And if any inference be drawn from this resemblance of relations, as, for instance, that obedience or affection is due from colonies to the mother country, this is called reasoning by analogy.<sup>2</sup>

Analogies thus understood have many and useful functions. One is to serve as a rule for discourse on some subject, such that describing a country that establishes colonies as a "mother" country justifies our borrowing other parent-child relations to describe further how homelands and settlements ought to behave toward one another. The benefit of this is enlarging our grounds for discussion and, hopefully, for mutual understanding. Another useful function is as a shorthand and limiting definition of the terms of the discussion, in that "obedience," "affection," "responsibility," "freedom," and "voice" will have those meanings they ordinarily would have between parents and children. If, as Wittgenstein suggested, understanding is in some measure "knowing how to go on," analogies can be important guides for enhancing understanding. And where they serve to establish common means to that end, their diplomatic usefulness is obvious.<sup>3</sup>

Despite these advantages, however, analogies hold dangers for their unwary user. The mildest of these is aesthetic offense, occurring when an otherwise useful analogy is taken too far and its limits become painfully clear. Another is that analogies are perilously short-lived, that is, that their felicity depends at least in part upon the cultural, historical, and psychological circumstances of an audience and can be seriously affected when these circumstances

change. The most serious is that analogies can be ontologically misleading, as Richard Whately, on whom Mill's classification depends, recognized:

In this kind of argument, one error, which is very common, and which is to be sedulously avoided, is that of concluding the *things* in question to be *alike*, because they are *Analogous*; to resemble each other in themselves, because there is a resemblance in the relation they bear to certain other things; which is manifestly a groundless inference.<sup>4</sup>

Whately's caveat applies to C. S. Lewis's misdirected believer in that the latter's derivation of "God is here" or "God is there" from "God is everywhere" concludes in the unacceptable belief that God is a physical object. It applies as well when an analogy is used beyond both its aesthetic and its logical boundaries: colonies may indeed rebel petulantly against their "parent," in the manner of children, but they rarely do so by "pouting." And mother countries in their turn "govern" rather than "scold" their colonies, and by making war on them rather than by spanking them. In such cases, aesthetic offense leads quickly to ontological error. Analogies are bits of "surface grammar" with a seemingly intractable tendency to become "depth grammar."

## (2) A Theological Example

One of Christianity's most common analogies, and an enduring legacy from the Old Testament, likens God to a human taskmaster who demands personal holiness, "righteousness," of his people. While in the Christian tradition such imagery is more apt to appear in popular piety and the preaching of evangelicals than in formal and speculative thought, the latter, however, often tacitly incorporates it. John Hick, for instance, notes in regard to the notion of God implicit in Pascal's wager that

To postulate such a God is to suppose that we live in a place which some declare to be the court of an all-powerful despot. He is said to be invisible but inordinately jealous for homage, and we are advised to make a slight bow to the apparently empty throne whenever we pass it.



Hordes of similar examples, both ancient and modern, are, of course, not hard to come by.<sup>5</sup> But a harsh, jealous, and demanding deity was not a pleasant God for Christianity to inherit. To some degree the doctrine of the trinity alleviated this, dispersing as it does the functions of the God of the Old Testament to one or another of the divine persons, each of whom acquires thereby a distinguishing and permanent set of characteristics.<sup>6</sup> Yahweh seems thus to pass over into the father of Jesus Christ, the merciful redeemer, whose spirit lives on in the church. The functions, formerly conjoint, of God as creator, revealer, righteous judge, shepherd of Israel, and primary agent in history are split up and personalized in Christianity so as to keep forever before the eyes of believers that their God is *all* these things. The Christian doctrine of God provides that, formally at least, no single divine attribute or role can take precedence over the rest.

But the wisdom of this doctrine has not saved Christians from struggle with its practical consequences. Finding it contradictory to conceive as a gentle father the one who allowed the death of the redeemer and set men the difficult task of attaining salvation, they have more than occasionally tended to assign responsibility for these to a vengeful biblical deity, on whom could be blamed both the human condition and man's obligation somehow to surmount it. Further, despite the gruesome death of Jesus on the cross, the task of attaining salvation still remains to all, speaking of itself powerfully against the theological claim that Jesus could accomplish universal redemption. The most common palliative to contrary-to-fact claims about the redemptive efficacy of Jesus has been to view his death as merely exemplary of how one should die who is saved. In this way, Jesus becomes less the general agent of salvation than the path for anyone to follow who wishes to attain that holiness of life God demands. Man's continuing and unabated necessity in all ages to be freed from sin and death supports the seemingly older divine role and serves as a constant and powerful check on the doctrine of a more internally differentiated God.

While the taskmaster analogy may not of itself seem such an obvious problem, certain corollaries implied at least loosely by it and which we find in common piety and formal theology alike, are

far from fortunate. The notion of demand, for instance, as applied to personal holiness seems unavoidably to imply a threshold of moral or intellectual adequacy for salvation, a point *above, beyond, or after* which salvation may be granted. As a rule for discourse on the economy of salvation, thus, the demand analogy makes possible the introduction and constant use of primarily quantitative terms for judging whether the demand has been fulfilled. While this quantitative economy need not lead us down the path of aesthetic offense to mercantile or financial analogies, it does little to hold us back from it. Likewise, we should not overlook that “demands” is an asymmetrical relation, that is, that God may demand righteousness of man but that man may not on his part voice anything stronger than petitions to God. Jonathan Edwards’s sermon title, “Sinners in the Hands of an Angry God,” put this situation succinctly and, perhaps, classically.

The notion of quantitative demand has long been both distorting of and tempting to Christian doctrine and piety. Of its two most prominent effects, the first is moral perfectionism, a concept of personal holiness wherein total sinlessness is man’s goal on earth and the qualifying condition of his entry into heaven. On this view, God asks of us a cumulative or qualitatively measureable progress “toward” moral perfection through personal ascetical effort. Although these quantitative and qualitative notions may be consciously abjured by those who employ them, and admittedly they are rarely used to determine an exact rate of increase in perfection, it is still commonly thought in this regard that the most significant moral actions will be those that “cost the most” in effort and anxiety. The ascetical life is also sometimes construed as a Stoic and heavenly inactivity amidst the distracting and numerically many events of earthly life. Prayer likewise is sometimes a “movement toward” God and a means to keep him in touch with the “amount of” progress we have made. Finally, requesting divine aid often anticipates as response that we be given “as much” grace as we need, perhaps even that we be “filled” with it. While the quantitative terminology of moral perfectionism seems at first sight a harmless enough aberration, the Pelagian possibilities it occasions and the problems about grace, merit and indulgence it exposes Christians to

are not. The spiritual life can no more be a matter of amounts than can God be there to pray to in a corner of the ceiling.

A second quite ancient and venerable effect of this analogy is the connection Christianity has often made between increase in knowledge and increase in holiness, a perennial variety of gnosticism wherein holiness is growth in the knowledge of God. Gnostics of Christian antiquity, of course, did not always discount moral progress as an important factor in achieving salvation: asceticism readily functioned as the means whereby one purified himself sufficiently of earthly concerns for divine knowledge to be possible. But the importance of approximating faith to knowledge—the intuitive knowledge of Augustine, the negative knowledge of immediate acquaintance that is the end of the mystic’s journey for the Pseudo-Dionysius, or the faith that culminates in the beatific vision for Aquinas—has remained constant in Christianity. And because that knowledge lends itself to expression in theological propositions it also lends itself to credal orthodoxy. Yet while creeds are allegedly bodies of true propositions, hence objects of knowledge, their use is confessional rather than epistemic, in J. L. Austin’s words, “performative” rather than “constative.” Although God cannot demand more knowledge of himself than man is capable of, hence the necessity for interventionary revelation, he can indeed demand confession of faith under any but the most unusual circumstances, granted he is not too exacting about its epistemic sophistication. Far from furthering or even expressing religious knowledge, thus, creeds can become voluntarist substitutes for it. Worse still, creeds when used for confessional purposes become pledges of moral perfection, instruments of an agreement with God on the terms of salvation. Recitation of the credal “facts” can in this fashion readily fasten on explicit faith as the stuff of salvation at the expense of the very knowledge it purports to be the handmaid and expression of.

### **(3) Possibilities for Amendment**

Can theology make progress by amending problematic analogies like this? To understand fully our range of options in this regard, let

us first consider the position of the potential critic, who would have it that no such amendment is even necessary:

“This is interesting, but haven’t you really gone too far with all these derivations, implications, and distortions of a linguistic habit that is by no means universal in Christianity? Surely it is a poor selection from the history of our religion that notes particularly the beliefs of ascetics, reformers, and theologians who were obviously in a polemical, and therefore extreme, situation. Just because we think of God sometimes in terms of demand, and I am not denying we do sometimes, does not mean we are forced to your conclusions. And should we be so tempted, there exist in our traditions more than enough confessional statements, dogmatic pronouncements, and ecclesiastical regulations to deal with such perverse tendencies.

Even were it not the case that we need not go as far as you suggest we do, and even were we without the safeguards we have, this would still not be so serious as you think. Face it, these questions you raise are about *mere analogies*, not about seriously meant dogmatic statements. For the latter, where some cannot be quite literal the classical doctrine of analogy in theology provides semantics enough for our needs. And for the former, when they lead us astray we can either have our churches set limits on how far to go with them, we can substitute better ones—perhaps with more precise or philosophical terminology—or we can even turn them around altogether. Your Whately was right in warning us against ontological error, but wrong if he thought we must of necessity fall into it. Analogies are like much of religious language, particularly as followers of Wittgenstein have construed it, they are language games. They entail no ontological commitments; they are simply ‘played.’”

But, are analogies really an insignificant problem? To begin with, we would be deceived were we to judge their importance by statistical size in the tradition. What matters is not how wide a following a misleading analogy may have had at various times, but that it could have had a following at all. A consequence drawn from an analogy is still a consequence, and its validity depends not upon its circumstances but upon its relation to its premises. To claim that polemical purposes affect that validity is to beg the question as well of whether

those premises themselves are faulty. And setting limits, either by ecclesiastical decree or confessional agreement, to drawing consequences from an analogy seems as much an admission of present difficulties as it is a caveat against future ones. Can we sensibly order a believer to go no further without raising the suspicion that he is already on shaky ground?

While this settles the claim that our analysis was misdirected, it leaves untouched the critic's further claim that analogies don't matter anyway. On his view, there is a point after which an otherwise useful analogy becomes "mere," a threshold of ontological vacuousness or referential failure. These analogies, he says, can be emended to suit our purposes without concern for their referential success, and serious doctrinal statements need only the formal doctrine of analogy to protect them where reference is thin. That doctrine, however, is founded on the recognition that theological assertions in need of its help are not in fact referential, that is, they may be "merely" analogical in the same sense that misleading analogies are "mere." The doctrine of analogy purports to show how theological language can avoid being so referential as to be formally incorrect when used of God, yet sufficiently committed ontologically to be meaningful. If we take ontological commitment as the real criterion for whether an analogy is "mere" or not, analogically intended doctrinal statements seem *prima facie* in the clear. But when we inquire how strong a commitment the doctrine provides for, difficulties arise. Of the two traditional accounts of this commitment we find that the first, analogy of being, relies upon the now universally discarded notion that existence is a predicate. Of the second, analogy of attribution or proportionality, we find that one of the terms of the proportion remains steadfastly unknown to us, and, hence, that we have no guarantee how closely what we say of that unknown term, God, applies.<sup>8</sup> But while this may save the day for the claim that there is ontological commitment here, it does so at the cost of qualifying that commitment beyond the point of usefulness. And usefulness is what ontological commitment is all about. By playing the doctrine of analogy as a hole card the critic has only succeeded in parlaying ontological commitment into epistemological skepticism and in making us wonder whether his "serious" doctrinal statements are not in trouble as well.

Even should we grant the critic's "mere" analogies and accept his reliance upon the traditional doctrine of analogy, however, he harbors false hopes if he thinks the revision or correction of analogies is easy. The first way we might go about it is substitution, using as our criterion for an adequate substitute a closer resemblance to, as Heidegger put it, "the things themselves." With analogies related altogether to physical objects this might well work, but as we get further from things that are readily available it grows more difficult. As a corrective to political analogies gone astray, for instance, we might consider looking at the countries themselves, but as J. O. Urmson has noted, it is a far—and perhaps an impossible—step from the empirical citizens of a country to the logical construction that is a nation.<sup>9</sup> And God is more unavailable still. A second sort of substitution would put more philosophical language in place of problematic analogies, thus solving a species of pseudo-problem in religious language. But this may be less plausible than it seems, as C. S. Lewis observed in *Miracles*:

A girl I knew was brought up by "higher thinking" parents to regard God as a perfect "substance"; in later life she realized that this had actually led her to think of Him as something like a vast tapioca pudding. (To make matters worse, she disliked tapioca.)<sup>10</sup>

Trying to "deanalogize" religious discourse in favor of a more sober philosophical language is thus apt to incur the same misfortunes that demythologizing in biblical studies and "reductionism" in philosophical theology fell prey to, namely, we may wind up with less than or something other than we bargained for.

The last technique for correction we might consider is to perform major surgery on our analogies, even reversing them if need be. But this, and the concomitant suggestion that we simply try random substitute analogies on for size in search of a quick fix, carries us not only further into ontological uncommittedness but overtly denies logical consistency to religious discourse. And should we claim otherwise, we must admit the consequences of such substitutions and reversals. Suppose, returning to our case in point at last, that we insert a benevolent, attentive, and perhaps even somewhat apologetic deity for the implacable demander of righteousness? While the results are more cheerful, they entail far-reaching and not

altogether fortunate revisions in our theology. For one thing, we would be forced to espouse a doctrine of universal salvation. For another, moral perfection would have to be not only possible in this life but common, and, finally, fulfilling the demands made on him by believers could not but make of God a sort of cosmic errand runner or, in the telling phrase of R. W. Hepburn, "a debased celestial mechanic."<sup>11</sup> In short, when we take the critic's advice about analogies being only language games, we must either blunt their importance by isolating them completely from one another or deny point to them altogether.

Can then, the correction of analogical language in religion affect possibilities for progress in theology? Likewise, if the taskmaster analogy is as harmful as it appears, is there hope for amending it?

Of the strategies described here, the only one that *of necessity* commits us to even further difficulties is that of trying to draw lines to analogical reasoning and to enforce these via ecclesiastical regulation. While talk of analogies being "mere" is also dangerous, it must still remain the case that some analogies are wrong, although interesting, and that these we may indeed justifiably call "mere." But in doing this we can never forget for a moment the perils of this notion, either as an *ad hoc* solution to problems like moral perfectionism or as a semantics for more serious theological purposes. Again, in place of wrong analogies we can substitute hopefully better ones, but the criteria for a good fit include from the very start consistency with a vast range of other issues and analogies, and are difficult to fulfil without a potentially great degree of theological upset. To solve the problems of the taskmaster analogy, for instance, would require a reassessment of trinitarian doctrine in which the role of the Father would have to undergo considerable redefinition and the redemptive efficacy of Jesus be revised to more modest and less challengeable dimensions. Further, although not historically a new proposal, the relation between demand and threshold of satisfaction needs more correction than simple reversal can provide. While amending religious analogies for purposes of theological improvement seems, therefore, not altogether hopeless as a technique, it clearly can only be both difficult to do logically and uncertain in outcome religiously. In short, the theologian must either res-

content with the limitations of religious language being irreducible, or unearth more effective techniques for its betterment.

## Notes

1. New York: Macmillan Company, 1969, pp. 21–22.
2. London: 1930, pp. 364–365.
3. For more on the practical purposes of analogy in religion, see Peter Slater, “Parables, Analogues, and Symbols,” *Religious Studies* 4 (1965): 25–36.
4. *Elements of Rhetoric*, ed. D. Ehninger (Carbondale, Ill.: University of Illinois Press, 1963), p. 91; see also idem, *Easy Lessons on Reasoning* (Boston, 1552), p. 140.
5. *Faith and Knowledge*, 2nd ed. (Cleveland: Collins-World, 1966), p. 34. Compare this to the injunction of St. Benedict: “For we must always so serve him with the gifts which he has given us, that he may never as an angry father disinherit his children, nor yet as a dread lord be driven by our sins to cast into everlasting punishment the wicked servants who would not follow him to glory.” *The Rule of Saint Benedict*, ed. and trans. Justin McCann (Westminster, Maryland: The Newman Press, 1963), p. 7.
6. Cf. Justin Martyr’s delineation of these roles in 1 *Apology* 6: “. . . the most true God, the Father of righteousness and temperance and the other virtues, who is untouched by evil. Him, and the Son who came from him, and taught us these things, . . . and the prophetic Spirit we worship and adore. . . .” “The First Apology of Justin, the Martyr,” trans. E. R. Hardy, in *Early Christian Fathers*, ed. Cyril Richardson (Philadelphia: Westminster Press, 1953), p. 245.
7. *How to do Things with Words*, ed. J. O. Urmson (New York: Oxford University Press, 1962), pp. 3–11.
8. For the classical statement of the doctrine of analogy, see St. Thomas Aquinas, *Summa Theologiae* Ia. 13; and for a more complete contemporary account of its limitations, see Kai Nielsen, *Contemporary Critiques of Religion* (New York: Herder and Herder, 1971), p. 130; and idem, “Talk of God and the Doctrine of Analogy,” *The Thomist* 40 (1976): 32–60.
9. *Philosophical Analysis* (Oxford: Clarendon Press, 1956), pp. 148 ff.
10. New York: Macmillan, 1947, p. 75.
11. *Christianity and Paradox* (New York: Pegasus, 1966); p. 194.





## Experiments on animals†

With a review discussion of "The Plague Dogs" by Richard Adams (Allen Lane, Penguin Books, and Rex Collings, 1977)

### . CLARE CAMPBELL

have long been theoretically suspicious of scientific experiments on live animals. As a result of keeping gerbils as pets, I have now become more practically so. The subject is topical [figures just given to the House of Commons, first paper of the 1977–8 session, show a 35% increase in such experiments in Britain in fourteen years].

All right—I have a niece who is only alive because medical research has got the measure of peritonitis. If she had been born one generation sooner I suppose she would have died, and she is worth more to me than many sparrows. But I have to be honest. I would still be glad for her sake that ruptured appendix is now curable, even if it had happened to be other human beings who had died in the course of research for a cure. One is selfish about one's own people. We take it for granted that limits must be set to our acting out such preferences where the rest of humanity is concerned. Some of the same limits apply to animals, as existing legislation in fact bears witness.

How do we know animals are sentient? We don't, and it can't even be proved of other human beings. It is a well-known crux of philosophy that there is no satisfactory proof of the existence of other people. To which common sense replies, so much the worse for philosophy. If we refused ever to reason by analogy, which is

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† The two opening papers were originally produced in the house magazine of Lucy Cavendish College, and are reproduced here by permission, with a few alterations. The Addenda on "The Plague Dogs" have been specially written.

surely the most fundamental activity of thought, we would end up in prison or a madhouse. But to have to concede to others the most valuable property we have, of being first person singular, is very exacting. So we try to limit our liabilities by being parochial. The post-lady in my Suffolk village, full of interest in everyone of local stock, cannot really accept that black people are fully human. I shan't forget my parents blushing with shame when Neville Chamberlain said over the radio in 1938 that Czechoslovakia was only "a little country far away." We all tend to switch off our minds when it is hinted that there might be life of equal complexity to our own in other galaxies. We like to feel at the centre of things in terms of value even if not topographically. Formerly this human self-valuation was believed to be objective—God was a man, and so the whole universe really did prefer us. Most even of orthodox Christians have now shed that naive perspective; I wonder if animal experimenters have revised their value scales to match? It is a two-edged weapon to fall back on saying that of course we prefer our own species because other animals would do the same—for that lessens the gap between them and us which is the point at issue. (I have heard it said that different species of animals will show some consideration to each other at the waterhole when there is a drought; I don't know if that is true.)

Sometimes it is not because other lives are distant that they get ruled out of count, but because they are close at hand and it is convenient to exploit them. Hence the cultures which have taught that women have no souls, and that animals have none. Perhaps it's the past linking of these two classes that makes it easy for a woman to sympathize with the -dog half of underdog as well as with the under-half.

I know to my own satisfaction that my gerbils are sentient, and can suffer physically and even mentally. I don't keep breeding pairs, so as not to have to drown the young or sell them into slavery, but I always keep two together because they need each others' society. The first time one of mine died, I showed the corpse to the survivor, and she cried aloud (which was the more striking since they seldom make any noise once they are weaned). It is known that gerbils care

for their sick, by keeping them warm; recently when I had an old one with a bad ear, the other one massaged it daily, and took to chirping a long and cheerful song while doing so (neither made any noise otherwise). When the younger one died in an accident, the other lost all will to live, and died in its sleep a few weeks later. Gerbils are much used for research, and they illustrate one common form of parochialism, that the smaller the animal the less it is felt to matter. Perhaps it is hard to believe that there is much depth, so to speak, to the life of anything that can be very easily killed. But I should hate it if a whale reasoned that way about me. The ratio of nervous system to body size seems the main thing relevant. I don't know what gets done to experimental gerbils, but they are kept in abominably small cages—private owners and pet shops are also at fault there. They are very agile animals, and have a strongly developed topographical sense (so that they can home across several miles). The concept of “sensory deprivation” as a form of cruelty has been familiarized by the hooding of Ulster prisoners, and it is obviously a concept applicable to caged animals.

I compromise by using a very large cage. I suppose I also compromise morally whenever I eat meat. Principles are seldom absolutes, but a matter of discriminating between priorities. I won't eat battery hen if I can help it, or salt-starved, light-starved veal calf. But in Wales last July I saw lambs and cattle leading the sort of idyllic life all summer which I felt privileged to lead for three weeks, basking on scented hillsides with miles of free range. I didn't feel guilty that they are spared an old age of increasing decrepitude, provided the method of slaughter is really instantaneous—if that is hypocrisy, please someone tell me so. I can't value life as such, but consciousness; over-value mere life, and you get the horror of keeping people alive as vegetables after a road accident has induced irreversible unconsciousness. Death cuts short the individual experience, but doesn't tamper with its quality, as suffering and miserable living conditions do.

Part of my quarrel with animal research is probably the huge scale on which it is done. I know sociologists (at any rate) are capable of collecting ten thousand case histories, with an equal number as

control group, in order to prove something already fairly apparent to common sense. More wasteful still is the opposite kind of research where there are no *a priori* likelihoods. Statisticians have a lot to answer for, because they have popularized the fact that if you take a sufficiently large number of instances of anything you are bound to find regularities—and then you can get a Ph.D. by announcing the regularities, even if you haven't a clue why they happen or what they mean. No-one works like that whose raw material is felt to be valuable. Engineers don't put up twenty bridges of different materials and see which of them fall down; they do the paperwork and choose the most promising design. Surely hypotheses involving animal tests should be first refined into such a form that a quite small number of instances will be significant. The temptation of working with large numbers is to adopt what I call the Third Man outlook, from the Orson Welles film of that name. Harry Lime is asked how he can trifle with human life by selling dud penicillin to hospitals, and he looks down from the top of the big wheel at the people in the fair-ground and says "Look at them, crawling down there—they're just flies". Easier to drop a bomb on a town than bayonet someone.

What I'm trying to say is this. It is bad science to imply, as so often seems to be implied, that a distant perspective is "objective" and closer views are sentimental. Perspective falsifies, none the less for being systematic. Distant trees are not shorter than near trees; the real height of a tree in relation to yourself is only apparent when it is standing in your shoes. To exempt a research worker from doing something unpleasant to his own favourite dog is not to spare his sentimentality, it is to respect his first-hand acquaintance with the truth of that particular dog's existence. What he knows about animals he handles by the hundred is less authentic. Though I believe really that sensitiveness is indivisible. If our twentieth century society gave a higher priority to cultivating it in all its forms, perhaps some hundreds more people might die through a slackening in the rate of scientific advance, but some hundreds fewer might die under torture, and that would be a gain to say the least. God is dead, long live the godhead, in the form of every spark of individual consciousness—and if that's pantheism, why not?

**THE PLAGUE DOGS—RICHARD ADAMS**

I am reviewing this book a couple of years after writing the above article, but I do not want to withdraw or modify anything I said there. In fact, the quotation from the Littlewood Report on p. 369 of this book supports my contention that research does not have to have a specific objective, but can be done in the spirit of Let's see what happens if. In terms of a Richard Adams rhyme,

They shone a biscuit in his eye  
To see what lay beyond the sky.

This seems to me a book to be gutted, even read at a single sitting as I read it, skimming the sometimes over-long descriptions and dream sequences so as to conserve both the narrative excitement and the idea behind it—that freedom is exciting, “that consuming goal above doubt or criticism” (p. 44), the birthright of every live animal. (Why? Because to live is to choose, I would say, but there is no room to go into that.) The wish to make much of the relationship between dogs and Masters—men in their role of pet owners—is slightly in conflict with that vision, and leads in my view to the only sentimentalities in the book. I don't believe that dogs think men made the universe, I'm sure they see us more cut down to size than that. I'm better convinced when the plague dogs criticize us: “I don't know what they (=the researchers) did want, I don't believe they knew themselves.” “Humans never look happy.”

Richard Adams' brain as well as his heart is in the right place.

He knows there is no arguing with people who will not concede meaningful truth to any statement which predicates sentience; there is only a duty to oppose their proselytizing for this abdication of intellect as though it were a feat of intellect. Adams' ranging imagination helps him to reach beyond the outward animal to the inwardness of its consciousness, with results often vivid, touching or humorous (I like the dog which says to another, “That remark's in very poor smell”). His descriptive writing is splendid at its best, like this about a river “pouring southward in gleaming planes of noisy, wall-slapping, pewter-coloured spate.” He knows the research jargon with its aseptic, defused quality; “Fifty L.D.” means discover

the lethal dosage level at which fifty per cent of your animals will die: a routine requirement for testing hair sprays, etc. (Is this true please, Dr. Worden?\*) He is cunning; he leads us to think that he has an Achilles heel himself, a prejudice against Jews; then rounds on us with a sudden moving moment when his Jewish business-man cannot shoot the escaped dog because its scars of scalp surgery remind him of what was done to his own relatives at Auschwitz: "Armer Teufel, sie haben dich auch erwischt?"

After the first chapter of horrors the reader is let off fairly gently; the madness of a dog that has had brain surgery seems quirkily charming (a character akin to Fiver in *Watership Down*, this) rather than horrible. Perhaps rightly, for the book needs to reach wide and simple sympathies with its Western-style epic of Dogs v. Whitecoats, whose happy ending the author makes clear is really as post-humorous as that of *The Winter's Tale*. He indulges in no wishful muting of the harshnesses of nature, hunger, cold and the killing of prey; he simply convinces that, for example, a natural drowning on a sea-swim for safety does not disgrace the universe, while a daily nine-tenths drowning inflicted aforethought by the Whitecoats does. (No doubt this experiment is an extreme example, one would guess of U.S.A. provenance; it is factual, according to the author's preface.) To buy health or knowledge by condoning cruelty is to saw off the branch we all sit on. This book may serve its goal best by helping to create an atmosphere in which people do not want to work in animal research (or not without much stricter restraints), just as hanging cannot go on if nobody will be public hangman. Is that why the book's villain is called Dr. Boycott? Obviously there are serious-minded devotees of pure science, and of technologies for human betterment, who would deplore this. It's not a case for attempting rapprochement; one must simply decide where one stands.

CLARE CAMPBELL

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\*See *The Observer* 18.12.77, p. 4.

## II. ALASTAIR WORDEN

*If he were  
To be made honest by Act of Parliament  
I should not alter in my faith of him.*

Exactly 100 years have passed since the Ass intervened and the Cruelty to Animals Act was placed upon the Statute Book. Charles Hume, founder of the Universities Federation of Animal Welfare, has said that this Act “. . . is not an infliction devised by cranks for making biologists fill up forms. It is a contract laboriously hammered out by some of the ablest scientists and administrators of their day with two objects: to define limits for the sacrifice which the public is prepared to exact from animals as the price of medical knowledge, and to protect research workers against vexatious litigation and obloquy.”

Perusal of the records confirms that public and parliamentary opinion in the 1870's was as variably informed, confused or motivated—or in modern idiom, crazily mixed up—as that of to-day. Equally significant was the attitude of renowned Victorian scientists. Darwin, who would not fish with live worms (but who fished nevertheless) and whose son-in-law introduced the original Bill, wrote to Lankester that he was kept awake at night by the horrors of vivisection, and Huxley to Darwin: “I have felt it my duty to act as counsel for science, but if what I hear is a correct account of the evidence K. gave I might as well throw up my brief. I am told that he professed the most entire indifference to animals suffering, and said that he only gave anaesthetics to keep the animals quiet! . . . I declare to you that I did not believe the man lived who was such an unmitigated cynical brute as to profess and act upon such principles, and I would willingly agree to any law which would send him to the treadmill.”

To-day only a minute proportion of animal experiments involves surgical interference—a high proportion involves long-term feeding studies—and American colleagues remain astonished that our surgeons are not trained upon (anaesthetized) dogs. An inspectorate of medical and veterinary graduates visits all premises without



notice and also advises upon and monitors the suitability of research workers to hold licences. The feeding, housing and husbandry of laboratory animals has improved immeasurably, and most are bred specifically for the purpose and adapted to their environment. There is a happy bond between most laboratory animals and those who tend them. The recent “release” of dogs from the I.C.I. laboratories at Alderley Park may have been an act of good intent but was certainly no kindness. The longevity of laboratory Beagles, or such that are allowed to attain their life-span, exceeds that in the home. Adapted, healthy and seemingly contented animals are better experimental subjects than those which are not. Some appear also to appreciate that two is company: optimal cage occupancy in rats, as indicated by coefficient of response in gonadotrophin assays, is  $2 > 3 > 4 > 5 > 1$ .

C.C. is too well versed in Shakespearean studies to be reminded that conscience—whatever the word may signify—doth make cowards of us all. Her own conscience pales at animal experimentation and confinement, and she freely admits to some of the vitalistic concepts that torment many of our contemporaries. Not for her Thomas Peacock’s “obvious” role of animals in a man’s world. I share few of her convictions but all that is relevant of her concern, and for over 30 years have campaigned actively to promote the welfare and proper usage of laboratory animals. As one dubbed an animal-lover—it is to be hoped with justice—I cannot tolerate, any more than could Huxley, the indifference of a research worker, and would regard it anyway as indicative of scientific inadequacy. Even less can I tolerate failure to safeguard our own species and its food supply and habitat, and to promote medical and biological progress generally, by suitable animal experimentation—for which there is no complete substitute, nor likely to be for decades to come.

There are those who agree, albeit reluctantly, to the use of laboratory animals for the development of life-saving drugs and devices, but who are equivocal when contemplating the safety assessment of food-additives and pesticides—perhaps because these in themselves have a “chemical” image—and condemnatory of the exposure of rabbits and monkeys to cosmetics or smoking materials. Whether one *should* put on lipstick or smoke, or for that matter work

in or live leeward or downstream of a factory, is a separate issue: the fact is that people *do* these things, and that we are guilty if we don't do what is right and proper to minimize or at least lessen the risks. That implies the exposure of animals. Even risks to wildlife are assessed by animal experiment, sometimes with the species that would themselves be at risk.

Of course I deplore unnecessary and, still more, shoddy experimentation. Vague generalizations about numbers are, however, almost meaningless. There is an optimal experimental size, second in importance only to optimal experimental technique, and it is this, reinforced by economic sanction, that determines practice. One must also challenge the concept of glorious freedom. The wild progenitors of C.C.'s gerbils, which I assume to be *Meriones unguiculatus*, may have a home range of several miles, although my reference sources suggest otherwise. If so, it would still reflect the area necessary to obtain food and not primarily the joy of unrestrained *wanderlust*. Anyone who has studied wild rodents in the wild, as I have, knows well that their journeys outside the nest or burrow are restricted. Tennyson's "Nature, red in tooth and claw" would otherwise claim her victims. C.C. won't eat battery hen, if she can help it. I am not clear in what circumstances she has that opportunity, but I would suggest contrast between the seemingly contented clucking of the battery bird with the tyranny of the flock.

During 17 years as senior editor of the relevant journal I was invariably intrigued by, and sometimes amazed at, the behaviour of animals, laboratory or wild. The interpretations of their human observers were similarly a source of fascination and surprise. While I might suggest other possible explanations for the behaviour of C.C.'s gerbils, I could not refute her. I strongly support her implication of bonds and mutual understanding between ourselves and our animal charges or companions. It is only upon such a foundation that worthwhile experiments, particularly the long-term ones, can be conducted. A point often overlooked is that such studies, while usually carried out for man's direct benefit, are also designed to develop products for animal, including pet animal, use.

## ADDENDUM

Paternal storytelling with a zoomorphic bias is often superbly satisfying to the fortunate recipients, of whom I was one. Richard Adams differed from most fathers in eventually putting it down, and to the delight of a vast circle of readers he has since added two major as well as other works to *Watership Down*. *The Plague Dogs*, in this context, is a worthy successor, and his knowledge of some parts of the Lake District is matched only by his description of them.

It is unfortunate that two of the main bases of the story—animal experimentation and the behaviour of dogs that go feral—are so far from reality as to be almost ludicrous—and in the first case tendentious. The dust jacket refers to this as “the most exciting and moving book” that the author has written, and we are soon plunged into the horrors of A.R.S.E.—one of several seemingly superfluous vulgarisms—and as the principal characters are making their escape, treated to a round of this quite incredible establishment, run and staffed by wicked “whitecoats” whose researches are conducted in conditions the like of which have not existed in this country since World War II, and only sparingly for a long time before it. The author seems to have made up his eclectic score of bizarre experimentation by going far afield and a long way back in time. It is very, very sad that anyone can delude himself and his readers by pretending that such conditions and such people might possibly exist, anywhere in these islands. Rumour has it that some examples come from abroad, where animal protection and human attitudes may—and sometimes do—differ from those we have here. An experimenter indifferent to the feelings of his charges was uncommon a century ago: today he would not only be unacceptable to his fellows but also fortunate to be licensed and unlikely to survive as a research worker owing to the unreliability of his results.

There is no A.R.S.E., nor even any of its fanciful and often unhygienic components. That is not to say that conditions are as yet as nearly ideal as they can be, but in many centres—including that for which I am responsible—there is every effort to make them so. Nor do the dogs form an extraordinary collection of breeds and

varieties but are all bred for research, and come straight to a life that they seem to find congenial and where they do not lack human companionship nor, in most instances, that of their fellows.

One could be almost equally adversely critical of the deeds of Rowf and Snitter after their escape, but it makes a jolly good story and is largely without malice. It is the early parts of *The Plague Dogs* that may add to the texts of those antivivisectionists who plant suspicion and hatred into the minds of decent people with a love of, and respect for, animals, especially man's best friend. In some ways the author goes beyond the horror of animal experimentation and the sadism of its practitioners to belittle the motives for its performance. Even for the sake of a good tale, he goes much too far. It is difficult to believe that A.R.S.E. represents anything with which he is even remotely familiar. For *Watership Down* he did his research from a good source: for the offending parts of the present work he cannot possibly have done so.

### III. RICHARD RYDER

Those who are still searching for the "hidden" political message in Richard Adams' "The Plague Dogs" can stop discovering allegories and deciphering symbols, for the answer is staring them in the face. This splendid book deals with one of the fundamental and most ignored of all political issues—the relationship of man to the other animals.

In his "Introduction to the Principles of Morals and Legislation" in 1789 Jeremy Bentham, the great political philosopher, wrote:

The day may come when the rest of the animal creation may acquire those rights which never could have been withheld from them but by the hand of tyranny.

In arguing the discrepancy between themselves and brute creation, men tend to point to their own greater rationality or their use of language—

But a full grown horse or dog is beyond comparison a more rational, as well as a more conversable animal, than an infant of a day, of a week or even a month old. But suppose the case were otherwise, what could it avail? The question is not can they *reason*? Nor, can they *talk*? But can they *suffer*?

In his “Principles of Penal Law,” Bentham predicts:

Why should the law refuse its protection to any sensitive being? The time will come when humanity will extend its mantle over everything which breathes . . .

If Bentham could believe this more than 70 years before Darwin’s “Origin of Species,” then how much more should we do so, with our certain knowledge, that we, as human animals are but evolutionary cousins of the other species?

Unless morality is to be based entirely upon self-interest then it is high time that we based it on the logic of evolution. If we as animals respect the interests of other individuals of our so-called species—then why not extend similar considerations to the other species also?

Surely the crucial similarity that men share with other animals is the capacity to suffer? Regardless of the number of legs or wooliness of our fur, we can all suffer.

I have coined the awkward word “Speciesism” to describe the ruthless prejudice that man shows towards the other species—a prejudice based upon amazing blindness and colossal arrogance.

The twentieth century sees more exploitation of the non-humans than at any other time in history. Whereas the cruelties of the past took place in the streets where all could see them, today’s iniquities occur behind the locked doors of laboratories and factory farms. Admission to such premises by members of the public (for whose alleged benefit and with whose money much of this is being done) is almost invariably denied.

The recently published annual Returns under the Cruelty to Animals Act 1876 reveal that the number of British licensed experiments on animals “calculated to give pain” increased to 5,474,739 in 1976. Two-thirds of these were for commercial purposes and 2,271,633 of these commercial experiments were not accounted for by the mandatory testing of drugs and medicinal products; they will have included experiments in which hundreds of animals died miserably in the toxicity testing of cosmetics, toiletries, weed-killers, dyes, detergents, fire-extinguisher fluids and inessential luxury products. The swing has been away from high-level medical research towards routine factory testing. But the Government does nothing to encourage the use of humane alternative techniques.

Another disturbing trend is the steady increase in the numbers of licensed experimenters (which includes students and technicians) from 9,340 in 1964 to 18,666 last year.

If we are all God's creatures, if all animal species are capable of feeling, if we are all evolutionary relatives, if all animals are on the same biological continuum, then also we should all be on the same *moral* continuum—and if it is wrong to inflict suffering upon an innocent and unwilling human, then it is wrong to do it to members of another species. To ignore this logic is to risk being guilty of the prejudice of Speciesism.

#### IV. NOTE

U.F.A.W. (The Universities Federation for Animal Welfare), 8 Hamilton Close, South Mimms, Potters Bar, Herts. EN6 3QD, aims to promote humane behaviour towards animals so as to reduce the pain inflicted on animals by man; by seeking the aid of biological research workers and others, to foster consideration for the physical and mental comfort of experimental animals, and the avoidance of painful procedures.

Publications include "The U.F.A.W. Handbook on the Care and Management of Laboratory Animals" (5th Ed., 1976); "The Status of Animals in the Christian Religion" (C. W. Hume, 1957); The Proceedings of recent U.F.A.W. Symposia: "The Use of Animals in Toxicological Studies" (1969); "The Rational Use of Living Systems in Bio-medical Research" (1971); The Welfare of Laboratory Animals: Legal, Scientific and Humane Requirements" (1976).



## Comment on "Language and metaphysics"

I offer here some comments on language and metaphysics, in response to Dorothy Emmet's "Language and Metaphysics" introductory paper. I should note that I have not, when writing this, yet seen the other papers in the symposium; also that time and space allow only for comment on a limited aspect of her richly packed short paper.

Ever since metaphysical enquiry—as opposed to essays at the analysis of common and technical concepts—became suspect among philosophers writing in English, the tendency has been, for those who wish to justify metaphysics, to present it not as making factual claims capable of being literally true or false (like scientific or historical statements) but as using language in an evocative way, usually thought of as akin to poetry, to induce certain general emotions towards the universe, and thus as saying something not literally true or false but rather acceptable or otherwise in some looser sense.

This has not been Dorothy Emmet's view. She distinguishes three sorts of metaphysics: descriptive (as practised by Strawson), speculative, and human orientated. While agreeing with much that she says about these, I would want to make stronger claims for the significance of speculative metaphysics than she would perhaps allow, and to urge that the human orientated metaphysics should follow on from speculative metaphysics understood as concerned with the character of reality in general. I would, as a matter of fact, think that for speculative metaphysics human reality is an especially significant sample of reality in general, but this is a different matter from taking the nature of the human situation as the one fundamental

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question for metaphysics, as it would be, I suppose, for metaphysics of her third sort.

With regard to speculative metaphysics, I take the precisely opposite position of those who would defend it by giving it a goal other than the obtaining of literal truth. On the contrary, I believe that Bradley, Bergson, and, in effect, Spinoza were right in holding that it is the statements of so-called ordinary matters of fact which are incapable of being literally true or false, and that it is the special task of metaphysics to seek a knowledge of things which may be some aspect of the quite literal truth about them. How can this be so? In virtue of the fact that our ordinary linguistic behaviour is a system of pragmatic devices which help human individuals adjust to the nature of the reality in which they move and of which they are a part, without (for the most part) giving any literal insight into the essence of this reality. Literal truth comes only when the mind has an immediate grasp of an essence which constitutes the inherent character of what it is thinking about. Metaphysicians such as those I mentioned just now attempted to evoke in their readers intuitions of just such essences. Whether they were thus successful or not, success of that sort would be a movement away from the opaqueness which reality has for us under its ordinary descriptions to an insight into the inwardness of its being—or process.

Thus metaphysical truth, when and if attained, is (or would be) literal, while ordinary truth (historical, scientific, ordinary matter of fact) can only be pragmatic. There is, however, one sort of “ordinary” thinking in which the human mind may grasp literal truth such as is not typically thought of as metaphysical, namely when it attains an empathic insight into the flow of consciousness of another mind, or recalls its own past states. (Doubtless it always has an inarticulate insight into the character of its own flow, but this is that special kind of knowledge which is one with being; in any case, I am concerned with knowledge which is to some degree verbalised). This kind of literal knowledge is often given in novels and poetry, more particularly in novels of the “stream of consciousness” variety. Virginia Woolf’s novels supply an example. Of course, she is only up to a point describing actual fact, but she tells

us the kind of thing which is the literal truth about certain sorts of human consciousness.

It is to be noted that our knowledge of each other's minds stands in this interesting contrast to our knowledge about the merely physical, namely that the ideas in which it consists (when these have any vividness) are the kind of ideas which *could* be literally true, could give the real essence of these intended realities, and yet it is especially problematic so far as the evidence for its truth goes, while knowledge about the physical (as it is ordinarily conceived) stands on a much better evidential basis so far as its having its own kind of truth goes, yet is much less literal in the insight it gives us into its subject matter when it is true, giving us no real insight into the inherent character of physical reality as it is "in itself", since it tells us, at best, either merely how it appears or something about its structure which leaves the concrete filling of that structure opaque.

A real metaphysical enquiry seeks knowledge of the more generic features of the "in itself" of reality in general—not just human reality—having the kind of literal truth which we normally only possess concerning human consciousness. Whitehead's is the most promising attempt at such an enquiry in this century. The language of such a metaphysics may be what the analytic philosopher calls evocative rather than literal, but he puts the point badly because it is only pragmatic truth which can be nailed down once and for all in a sentence finally accepted as true; literal truth must be perpetually re-evoked and re-lived, and the language which best evokes it in one mind may fail with another.

Where, perhaps, I somewhat disagree with Dorothy Emmet is in her tendency, in the present paper at least, to see metaphysics of the kind she most favours as concerned especially with human experience for its own sake, rather than as being the most familiar sample of reality in the concrete, but that it, and the total reality of which it is a sample, is, at a level which goes deeper than the ordinary, best thought of in terms of process rather than in terms of substance, and that thinking of single sentences as isolable units of truth or falsehood may stand in the way of grasping this,

is something with which I largely agree—provided it is not precluded that there is a still deeper level at which the stillness of an eternal being or substance may be found and perhaps expressed.

As to whether the subject–predicate form is misleading about the character of reality, I think that those who pay it too much respect may close their minds to possibilities which should be considered, for example the possibility that the flow of thought may be more basic than the individual thinker, who may exist, as was held by William James, only insofar as the thought process posits him. On the other hand, language is infinitely flexible, and it may be the theory that something is unsayable rather than its actual unsayability which stops philosophers saying what is true. The theory of language at which Margaret Masterman is described by Dorothy Emmet as working may be more generous in this regard.

University of Sussex

TIMOTHY SPRIGGE

[In the next number we hope to publish an article by Tim Sprigge on his own metaphysics. Ed.]

## Comment

### A Grammarian on Linguistic Structures

The interdisciplinary discussion in the August 1977 issue of *Theoria to Theory* raises some interesting questions about language. I should like to comment on one of these: why do some of the contributors regard Subject + Predicate as the generally accepted theory of the basic structure of language? Perhaps West-European philosophers and logicians find this a natural assumption, but grammarians have never been unanimous about it even within the Greco-Roman tradition, and even with reference to familiar Indo-European languages. In fact, traditional grammars of Latin or English normally give several incompatible definitions of sentence structure in successive paragraphs! Rival definitions have flourished in recent research, and some of these can claim partial agreement with the newly appreciated ancient Indian theory of abstract case functions as the deepest level of grammatical description.

Of course, we must take care to avoid misunderstandings between grammarians and philosophers or logicians, because their definitions of “subject” and “predicate” tend to differ owing to lack of attention to details. However, I am confident that it is possible to combine their respective insights, with further refinements, in a single grammatical description in which none of them occupies the deepest level; indeed, that is just what I do in my own work (on Old English), and, furthermore, my colleague Dr. J. M. Anderson has shown that such a description can be expressed in formulae more economically than the derivations based on Subject + Predicate of Noam Chomsky’s earlier work.

Whether Margaret Masterman can prove that Subject + Predicate

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structures are totally superfluous is a wider question, which I believe to be bound up with some basic issues of the epistemological status of various linguistic theories. I should have to agree with philosophers or experimental scientists who thought that in recent years most theoretical linguists had been disappointingly confusing or heedless about the admittedly complex issues.

Lecturer in Old English,  
Department of English Language,  
University of Edinburgh.

DAVID J. TITENSOR

## Comment

### Thoughts From a Reader

Not only do I see *T. to T.*, and read (all I can cope with) in it regularly, but I have subscribed to it from your first issue. For what my opinion is worth, I think it is of vital importance with its intra-disciplinary approach, which so far as I know doesn't obtain to the same extent in any other periodical. I admire deeply the intellectual courage (a rare virtue) shown by you and your colleagues in giving serious consideration to so many "fringe" ideas which may not be academically respectable; it is indeed refreshing to find such a complete absence of snobbery and esotericism. I feel that you are dealing with the "growing points" of both *theoria* and *theory* as few others are—at least among those who are mentally disciplined. So it certainly is worth the sweat, and I only hope that your circulation will increase among those many who would benefit from it.

I have been looking back at your first issue, and it strikes me that your present approach is rather more secular than it was in 1966. This intrigues me, convinced as I am that we have to get away from orthodox religions in order to discover what is meaningful to us in the twentieth and twenty-first centuries. I would say that there is a desperate need for credible syntheses, or even hypotheses, whereby men can make some sense of the cosmos without loss of integrity. And it saddens me to find that few philosophers are prepared to help in this way, immersed as so many are in writing for each other on various lesser and esoteric issues. This seems to me to be the true *trahison des clercs* of our day.

The Manor House,  
Guiting Power,  
nr. Cheltenham,  
Gloucestershire.

RAYMOND COCHRANE

*Theoria to Theory*  
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## Comment

### Quakerism and Catharism

A copy of *Theoria to Theory*, IX, iii, with the article written about the Cathars has been passed on to me. My qualifications for writing to you on the subject are that my book, "The Cathars and Reincarnation," published in 1970, has been translated into several languages. It was followed by, "We Are One Another," which deals with Catharism and group reincarnation. This year I published a book on Catharism called, "The Great Heresy."

The idea that Catharism somewhat resembled Quakerism is true so far as practice goes, but even then the similarity is very superficial. So far as its origins go these are totally different from those of Quakerism. There are one or two frightening errors in the article. The idea that only Parfaits could be saved is totally wrong.

In your editorial you say that Catharism had no bishops. In the Languedoc there were, for the most part of its life there, bishops at Agen, Carcassonne, Albi and Toulouse. The fifth bishopric was established in 1225 at Razes. Certainly this was a simple hierarchy compared with that of the Catholic Church but these men were definitely bishops, and the names of the more famous, like Guilhabert de Castres and Bertrand Marty are known to us. There were also other ranks in the hierarchy such as filii majori and minori, and diacons.

140 High St.,  
Bathford,  
Bath.

ARTHUR GUIRDHAM

---

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## Sentences

I

Jerusalem! Jerusalem!  
You draw the fiery severity of Judea  
and cool it into worship;  
You gather broken austerities from the hillsides  
and bake them into walls.  
Rejecting the visions wrested from prophets,  
you make them monumental;  
The mighty are fallen in battle  
and their bones stacked high in shrines.  
You die in vain to preserve your sanctuary  
and re-create every pilgrim's dream.  
From the ruins of a trampled selfhood  
jut out the corpses of yesterday's noon.  
The stones cry out at the gate of triumph  
to echo the bounding feet of David's line.  
Yet bastion arms enclose this impregnation  
and blood drips slowly from a wooden scar.  
So prayers rise up where walls are made for wailing  
and still we feel the throbbing of the living pulse of God.

Lois M. Ainger

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*Theoria to Theory*  
1978, Vol. 12, pp. 85–87.

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## II

O what is Life & what is Man? O what is Death? Wherefore  
 Are you my Children, natives in the Grave to where I go?  
 Or are you born to feed the hungry ravens of Destruction,  
 To be the sport of Accident! to waste in Wrath & Love, a weary  
 Life, in brooding cares & anxious labours, that prove but chaff.  
 O Jerusalem, Jerusalem, I have forsaken thy Courts,  
 Thy Pillars of ivory & gold: thy Curtains of silk & fine  
 Linen: thy Pavements of precious stones: thy Walls of pearl  
 And gold, thy Gates of Thanksgiving, thy Windows of Praise:  
 Thy Clouds of Blessing, thy Cherubims of Tender-mercy  
 Stretching their Wings sublime over the Little-ones of Albion!  
 O Human Imagination, O Divine Body I have Crucified,  
 I have turned my back upon thee into the Wastes of Moral Law:  
 There Babylon is builded in the Waste, founded in Human  
 desolation.

O Babylon, thy Watchman stands over thee in the night,  
 Thy severe Judge all the day long proves thee, O Babylon,  
 With provings of destruction, with giving thee thy hearts desire.  
 But Albion is cast forth to the Potter, his Children to the Builders,  
 To build Babylon because they have forsaken Jerusalem.  
 The Walls of Babylon are Souls of Men: her Gates the Groans  
 Of Nations: her Towers are the Miseries of once happy Families.  
 Her Streets are paved with Destruction, her Houses built with  
 Death,  
 Her Palaces with Hell & the Grave; her Synagogues with Torments  
 Of ever-hardening Despair, squar'd & polish'd with cruel skill.  
 Yet thou wast lovely as the summer cloud upon my hills  
 When Jerusalem was thy heart's desire in times of youth & love.  
 Thy Sons came to Jerusalem with gifts. She sent them away  
 With blessings on their hands & on their feet, blessings of gold,  
 And pearl & diamond: thy Daughters sang in her Courts:  
 They came up to Jerusalem: they walked before Albion.  
 In the Exchanges of London every Nation walk'd,  
 And London walk'd in every Nation, mutual in love & harmony.

From *Jerusalem*, by William Blake, f. 24

I See thy Form, O lovely mild Jerusalem, Wing'd with Six Wings  
 In the opacous Bosom of the Sleeper, lovely Three fold  
 In Head & Heart & Reins, three Universes of love & beauty.  
 Thy forehead bright: Holiness to the Lord: with Gates of pearl  
 Reflects Eternity beneath thy azure wings of feathery down,  
 Ribb'd delicate & cloth'd with feather'd gold & azure & purple,  
 From thy white shoulders shadowing, purity in holiness!  
 Thence feather'd with soft crimson of the ruby bright as fire  
 Spreading into the azure Wings which like a canopy  
 Bends over thy immortal Head, in which Eternity dwells.  
 Albion, beloved Land! I see thy mountains & thy hills  
 And valleys & thy pleasant Cities, Holiness to the Lord.  
 I see the Spectres of thy Dead, O Emanation of Albion.

Thy Bosom white, translucent, cover'd with immortal gems,  
 A sublime ornament not obscuring the outlines of beauty,  
 Terrible to behold for thy extreme beauty & perfection:  
 Twelve-fold, here all the Tribes of Israel I behold  
 Upon the Holy Land: I see the River of Life & Tree of Life,  
 I see the New Jerusalem descending out of Heaven  
 Between thy Wings of gold & silver feather'd, immortal,  
 Clear as the rainbow, as the cloud of the Sun's tabernacle.

Thy Reins cover'd with Wings translucent, sometimes covering  
 And sometimes spread abroad, reveal the flames of holiness,  
 Which like a robe covers, & like a Veil of Seraphim  
 In flaming fire unceasing burns from Eternity to Eternity.  
 Twelfefold I there behold Israel in her Tents.  
 A Pillar of a Cloud by day: a Pillar of fire by night  
 Guides them: there I behold Moab & Ammon & Amalek.  
 There Bells of silver round thy knees living articulate  
 Comforting sounds of love & harmony, & on thy feet  
 Sandals of gold & pearl, & Egypt & Assyria before me,  
 The Isles of Javan, Philistea, Tyre & Lebanon.

Ibid. f. 86



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## Notes on Contributors

LOIS AINGER comes from the Channel Islands. She read history at Bedford College, London, and now teaches in a large comprehensive school in Luton. She is interested in the problems of slow learners, has written a number of songs, and has three teenage children.

RONALD BROWN, a graduate of Brunel University and Imperial College, London, spent 16 years in industrial research laboratories working in the general area of solid state inorganic chemistry. In 1972 he returned from the U.S.A. to take up an appointment at the North London Polytechnic, where he is now a Senior Lecturer in the Department of Chemistry.

CLARE CAMPBELL is a member and former research fellow of Lucy Cavendish College, Cambridge. Part of her translation of Sophocles *Philoctetes* was published in *T. to T.* V, iii. She has published a volume of poems and is publishing next spring a two volume edition of Shakespeare's Sonnets along radically new lines (Bell and Hyman).

JAMES J. HEANEY is a professor in the Department of Religious Studies at Notre Dame University, Indiana.

MARGARET MASTERMAN studied French Language and Literature at the University of Paris and Moral Science at Newnham College, Cambridge. She is Director of the Cambridge Language Research Unit and has been a lecturer in the Moral Science Faculty in the philosophy of language. She is Pro-President of Lucy Cavendish College, Cambridge.

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T. R. (DICK) MILFORD was formerly Vicar of the University Church at Oxford and Chancellor of Lincoln Cathedral and Master of the Temple. He is now retired and living in Dorset.

SALOME PELLY studied medicine in Oxford. She married the late Dick Pelly, a modernist theologian, and has had six children. She has worked in India and in Northumberland, and as a G.P. has been particularly interested in patients with mental troubles.

RICHARD D. RYDER read Experimental Psychology at Cambridge, did research in America, gave up experimenting upon animals and is now a clinical psychologist in Oxford. He is the author of *Victims of Science* (Davis-Poynter, 1975) and is chairman of the R.S.P.C.A. Council.

TIMOTHY SPRIGGE is Reader in Philosophy in the University of Sussex and Chairman of the Philosophy Group there. His first degree was in English in Cambridge where he also did a Ph.D. in Moral Philosophy. Author of *Facts, Words and Beliefs* (1970) and *Santayana: An Examination of His Philosophy* (1974).

KATHARINE TREVELYAN, mother and grandmother, lives in two acres of land in the New Forest. She runs a community and holiday centre for people seeking space, simplicity and silence. She finds that a heart at peace, unspoilt natural surroundings and God's eternal grace have power to heal.

ALASTAIR WORDEN edited the first standard textbook on laboratory animals; is founder-chairman of the Huntingdon Research Centre, the world's largest contract research establishment for experimental medicine and biology, Co-ordinator of Environmental Studies at Wolfson College, Cambridge, and non-resident Professor of Toxicology at Bath University. He was student president of the University of London Animal Welfare Society, and is a trustee of Lucy Cavendish College.

The cover design is by Bob Smith. Readers of Margaret Masterman's article will recognize the brackets.

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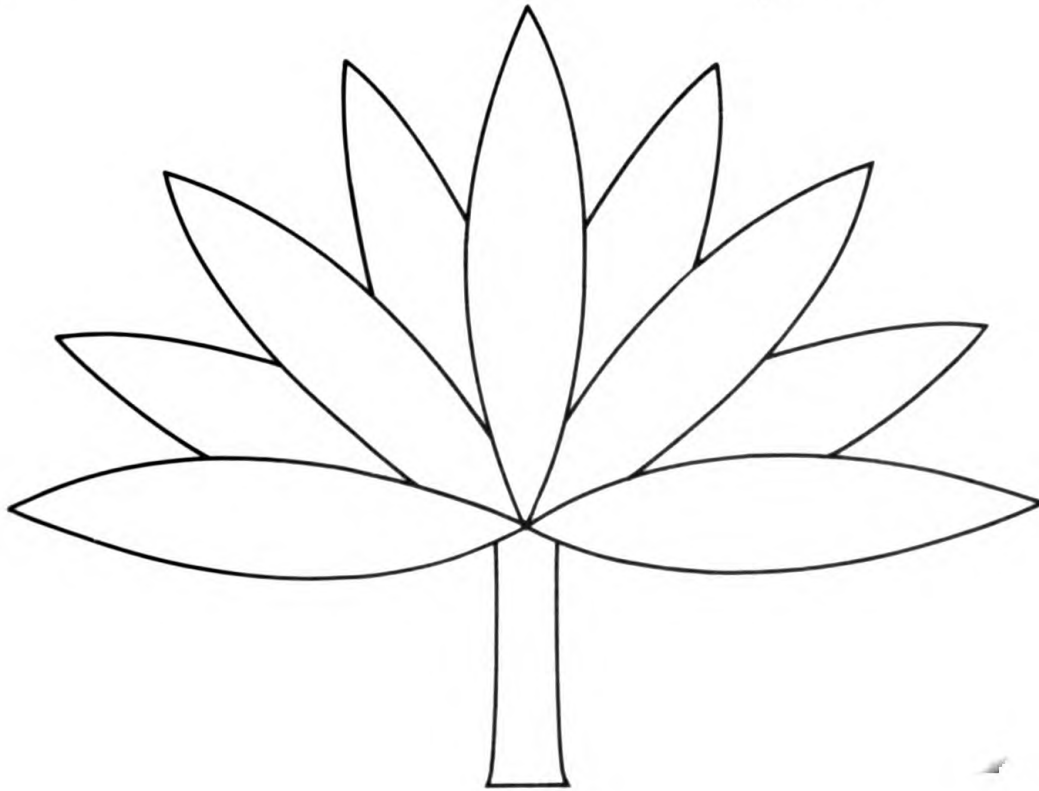
# THEORIA to theory

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# THEORIA to theory

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sometime Professor of Philosophy, the University of Manchester*

### Assistant Editor

JONATHAN WESTPHAL, *New England College, Arundel, Sussex*

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## Editorial

Although *Theoria to Theory* is not just a philosophical journal, it is concerned with thinking philosophically, especially about questions which arise in connection with science and religion. This includes thinking philosophically about those questions of truth and of how to live which people feel deeply concern them. They may look at the written work of professional philosophers, or listen to talks on the radio, and not find that these help their own thinking, as they seem to be going on in a world devoted to a special kind of expertise. Some of this expertise is necessary, and derives from the fact that philosophers have to think closely, and so have to make more distinctions and definitions than are usual. But some of the expertise hides the fact that the expert is not getting near to describing how people can be helped to think about the questions which really bother them.

This leader, written by one of the Editors who is himself a graduate student in philosophy, tries to see why much of contemporary philosophy has a narrowing rather than a liberating effect on its students, believing that this is a problem which does not just concern those who are formally studying it.

\* \* \* \* \*

Russell remarks somewhere that a great philosophy is always essentially simple. The complications in which such a philosophy is wrapped come from the attempt to defend it, meet criticism, work out implications, and so on. The way philosophy is sometimes taught today can prevent students from noticing that if they themselves really want to think, they will have to do more than apply in more or less interesting ways the standard philosophical techniques

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and patterns of argument, the philosophical patter, which they have learned. It is perhaps not surprising that a teacher should be unable or unwilling to set out to convey to students that thinking philosophically is a *simple* matter, although indeed a *hard* one as well. The student is misled into feeling that he ought to develop a complex and impressive philosophical position, when what he needs to do first is to describe the contours of his own thought, and *in fact* to uncover the images and half conscious considerations which incline him to think as he does and cause him to ask the questions that he does. He should also become aware of his own motivation, which might, for example, be religious or anti-religious, and not be ashamed of it. But nor should he allow it to enslave him.

If there is a criticism to be made of contemporary philosophy, it is not that it is too detailed or difficult (it always was), but that the tone and the way in which it is taught and carried on suggest, and often are deliberately used to suggest, that there has been discovered once and for all a single method or style which makes it unnecessary, and perhaps undesirable, actually to think one's own thoughts. When Aristotle said that "almost everything has been discovered already: though some of the things discovered have not been coordinated, and some, though known, are not put into practice"<sup>†</sup> he was saying something that was perhaps true of fourth-century Greek politics, but certainly false of philosophical and scientific inquiry today. A teacher of philosophy would rarely admit to actually holding such a view; but the way in which he treats the questions and thoughts of his students often conveys it better than words could. The American philosopher Saul Kripke is unusual in admitting that he does hold to some such position. In a recent interview<sup>‡</sup> he says that "most of the big moves have already been tried". Students do come to realize that perhaps philosophy is not altogether played out, but they too frequently retain a habit of mind in which the important moving forces of their thought are the counter-example and the skilled philosophical put-down.

---

<sup>†</sup> *Politics* 1264a.

<sup>‡</sup> Taylor Branch, "New Frontiers in American Philosophy," *The New York Times Magazine*, August 14, 1977, p. 67.

Their attitude to philosophy becomes curiously elaborate and ambiguous:

When my love swears that she is made of truth  
 I do believe her, though I know she lies,  
 That she might (not) think me some untutor'd youth,  
 Unlearned in the world's false subtleties. . . .  
 Therefore I lie with her, and she with me,  
 And in our faults by lies we flattered be.  
 (Shakespeare, Sonnet 138)

The thinking students need is probably best taught by example, by listening to and watching a thoughtful philosopher actually at work. Without such examples, and we have them among present day philosophers, they very easily fall into the habit of imitating the less important and perhaps less attractive mannerisms of their teachers. They adopt, sometimes consciously, what they take to be the fashionable turn of phrase or mind. Perhaps there is some excuse for this, since the philosophical world as a whole is not immune from the disease of fashion. Right now, for example, many philosophers have been bitten by the "causal" bug—they propose causal-physical theories of perception, of belief and knowledge, of meaning and reference, of action and emotion, and, it seems, just about everything else as well. There are, of course, good reasons for holding such theories. But what is bound to worry the observant student is that these reasons are not the only "causes" of the philosophical beliefs which his teacher proposes. Only the teacher doesn't let on, perhaps because he fears that if his overall reasoning became known, his theories would appear less impressive, more slipshod—simpler—than he wants them to.

What students need to be able to hear is not just how to make the right philosophical noises but how to attack a problem at the critical moment when it starts to part company with the understanding. There is a time at which questions can be touched before they take on an identifiably "moral", "factual" or indeed any other form, when their only form is "How am I to think?". Can this point be taken hold of and characterized? If it can, we have a point at which the philosophical and mystical-religious enterprises touch hands.



Philosophers, at least for the sake of their students, are going to have to be morally attentive to the working of their own minds, to keep a watch on their motives (fashion? vanity? irritation? fear? or good reason?) for deciding to adopt one general, and simple, philosophical attitude or programme over another. Such decisions cannot be ducked, but they are often covered with a fashionable remark or throwaway phrase, the object of which is not always to educate, and occasionally to wound. What is required is something else, of which some part at least is going to have to be formed out of personal morality and character. Good teachers will know what is meant here, and students are often aware of it. It is not surprising that many of the latter should turn to a Marxist way of thinking, in which they do seem to find the philosophical seriousness and kindness which they seek. For in what they are taught they catch, or seem to catch, an air of “final purposelessness and inner irresponsibility”§ which is not disguised by any pedestrian attempt to show how philosophy may bear upon ordinary life.

JONATHAN WESTPHAL

\* \* \* \* \*

Iulia de Beausobre, who died just before Christmas, was a reader of T. to T. from the start. Her set of back numbers, which has been returned to us after her death, is heavily scored with underlinings all through. She used to say that she especially appreciated the scientific articles. She wrote for us several times. Her first book, “The Woman who could not Die” tells of her life in the Inner Prison of the G.P.U. and then in a labour camp: her later books show the reaction of a Russian who is a born philosopher to the nature of the Christian mystical life. In her memory we are publishing part of a pamphlet “Creative Suffering”, in which she shows not only how she was able to withstand the prison interrogators, but to take them and herself up into an experience of the mystical body of Christ. The last time I saw her some months ago she said “I really am dying now, and it is the most interesting thing I have ever done”.

D.E.

---

§ A phrase from John Maynard Keynes' description of Lloyd George in *Essays in Biography* (1933).

## Discussion

### Morality and Cosmology in Hinduism

PRATIMA BOWES, with members of the Editorial Group, Q.I and Q.II

(This discussion arose out of a book by Arthur Danto, "Mysticism and Morality" (Pelican Books, 1976). Danto is writing for people attracted by the moral and mystical attitudes they see in Eastern religions, and is saying that the moral notions are only applicable in a context of factual beliefs about the world which he thinks are unacceptable to the West. Members of the Editorial Group, indicated here by Q.I and Q.II, discuss this thesis with Pratima Bowes, Reader in Religious Studies in the University of Sussex).

*Q.I.* Arthur Danto, in his book "Mysticism and Morality" says that "the civilizations of the East are defined through sets of factual and moral propositions pragmatically connected in the minds of their members since it is with reference to certain factual beliefs that those members would judge and act as moralists. The factual beliefs they take for granted are, I believe, too alien to our representation of the world to be grafted on to it, and in consequence their moral systems are unavailable to us".

Now this raises several questions; one is the connection of moral practices with cosmological beliefs; another, his sweeping assertion that these Eastern cosmological beliefs are unacceptable to us in the West; another, and incidental question, is how far his presentation of the Eastern beliefs is accurate. You, Pratima, are a Hindu, and we would like to know your views. On the question of unacceptability we may be seeing a change of attitude. For instance, reincarnation used to be thought of as something totally alien to Christianity. I

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believe that under the surface of current Christianity at present a number of people are getting new hope of the possibility of immortality by considering reincarnation. It has become a joke to ask "In your last incarnation were you a so and so?". When something becomes a joke it is also becoming deep-rooted. No one knows what it is. Agnes Sanford in her book "The Healing Gifts of the Spirit" rejects reincarnation because she says the truth is likely to be more complicated, not because reincarnation is a heresy. This, coming from a Protestant Christian, is a quite different attitude from what you would have had twenty years ago. The West has cheered up at the thought that we might reincarnate; but this of course is very different from what the East itself thinks.

*P.B.* Even the term is not quite right. I should say "rebirth". For incarnation suggests belief in an individual soul which will live on disembodied when the process of being born comes to an end, while rebirth does not have this connotation. In the Upanishads and the Gita you are said to have not a soul but a self within you; you have to take away the dross and you are then part of the totality of the cosmos. "Thou art That." I can't make the idea of rebirth intelligible without the cosmology. The cosmology is that behind creation and destruction is the inexhaustible source of Being, which manifests itself in this totality and goes through cycles, so that there are alternate stages of creation and destruction of systems of universes spread over millions and billions of years. Every human being's Karma is part of the process of cause and effect within this. Nothing comes out of nothing or ends in nothing. So they say that in the way you act you produce certain dispositions and unconscious impulses which we can call a psychic bundle. That does not disintegrate as the body does. It takes on another body, in which another bundle is created, and so it goes on until you have been liberated from desires so that you do not produce any more psychic bundles. Then you go back to the source.

*Q.I.* One of the good points in Danto is that he does succeed in making the Westerner feel how being a creature destined to do the same thing in life after life would be intolerable. One of the nightmares of the West, and for psychiatrists, is to think that you can go on committing the same mistake over and over again, im-

prisoned in a pattern of behaviour. It makes you desire to be something different, and if you are reborn with another psychic bundle, you think you would be different. The West has never faced the fact that you have to be in a particular frame of mind in order to say “Plus ça change, plus c’est la même chose”, and as long as you aren’t bored you aren’t going to mind reincarnating. You could think that to have rebirths could be the greatest fun.

*P.B.* For the Indian mind it isn’t fun to go round and round for billions of years. It begins to pall, and you long to escape to the peace and tranquillity and joy in the ground from which you came. Indian cosmology says that you are the totality, and you can break out of rebirths.

*Q.I.* I know it does, but it must say something a lot more convincing to persuade Westerners that other lives might not be fun—it might be fun, for instance, to be reborn as a Fellow of Trinity.

*P.B.* Even for millions of years?

*Q.I.* I grant you that even being a Fellow of Trinity might pall. But it would be more difficult to make Westerners see that being a winged Pharaoh in one life and an Egyptian priestess in another and a member of the Royal Family in another (they generally see themselves going up and up) wouldn’t be enormous fun. So the first stumbling block is that reincarnation means something quite different to the students who go to India from what it does to the Hindu.

*P.B.* But the Hindu says not everyone tries for release, and if you think being reborn is fun all you have to do is not seek liberation. Most human beings just go on going round and round. Another point about rebirth is that Hindus say one lifetime is not enough to achieve liberation.

*Q.I.* So, too, there are the Christian descriptions of Purgatory which are quite fantastically like some of the Hindu descriptions of what happens between incarnations. But do you agree that Danto has a certain force where he says this Eastern belief in reincarnation affects the procedures of daily life?

*P.B.* Yes; in the belief that what happens to us as individual human beings is not arbitrary. We suffer as the outcome of the way

our lives were previously moulded—personally, I believe in reincarnation, but I don't say *I* as an individual am reborn; but what I do now will affect another individual when I die. Generations of human beings are moulding each other.

*Q.I.* If you put the reincarnation hypothesis in the form not that *I* will continue but that other people before me have helped me and I can help other people who will come after me, then in referring to this actual bodily person, no morals follow just from reincarnation.

*P.B.* It is not simply that others have helped me and I will help others. It is that I exist now as an individual, with a certain kind of temperament and ability, as a result of an individual having acted in a certain way, and as a result of my acting in the way I am doing now another life of a particular disposition etc. will be born when I die. According to the Hindu way of looking at it it is the same life that is being reborn because the three different psychic bundles involved are tied together as causes and effects and their very existence is dependent on being a part of the same totality of processes. This is why I can say "I am being reborn". Even the Hindu knows that an exact duplicate of Pratima Bowes will not reappear in some place, and there will come to being a different personality with no memory linkage between the two. Nevertheless that different personality is in some sense a continuation, a different version, if you like, of what I am now and my actions which follow from my being what I am. If this is so, surely I ought to act in such a way as not to create a personality that will have to suffer, especially as there is some sense in which that personality could be said to be a different version of me.

*Q.II.* Danto is saying to students who think they will find the secret of life if they go to India "You may, but you will find a whole lot of other things".

*Q.I.* He is saying more, that in the nature of the case you won't find it because for Wasps (Western Anglo Saxon Protestants) truth is not like this. But can we go back to talking about Karma?

*P.B.* You said earlier on that the western man finds the idea of being punished for one's previous Karma unacceptable. But Karma is not a mechanism especially devised for punishment. The idea of Karma is primarily that of a cause/effect relation between actions

and dispositions—and fortunes that follow from such dispositions—spread over several generations of lives that occur in a connected series. The mechanism by itself is value-neutral. But we can and do morally interpret our fortunes as reward and punishment.

*Q.I.* Perhaps I have been too much brought up in the Western idea of the discontinuity of the causal universe and morality.

*Q.II.* Also I don't believe in causal *laws*.

*P.B.* A sequence is enough.

*Q.I.* Underneath this is an enormous query about the legitimacy of punishment. On the one hand we have the callousness in prisons, and, on the other hand, we see that you can't bring up children just on sweetness and light. We do not understand what was called the therapy of penitence in the Middle Ages was like, and we shrink from it. So we don't understand how to pull people up, and if we can't face discussing Karma, it may be because we can't face discussing punishment.

*P.B.* My impression is that when you take an idea cross-culturally, you take it in the way that suits your perceptions. So if Karma is going to come in for you, it isn't going to come in exactly in the way it is held in India.

*Q.II.* The Greeks had a notion of fate; and one can accept fate as consequences. But the notion that there is some sort of moral law in this seems quite incredible to Western humanist culture. So to the extent that this is a presupposition, I think Danto is right to say that it makes it very difficult for any Western humanist to take any views which depend on it seriously.

*Q.I.* Where Danto has gone wrong about Karma is that he has conflated three different and inconsistent conceptions. In this he is not wholly to blame—I have Indian friends who also switch from one to the other. In one of these, it has a moral connotation, but as soon as it is convenient people switch to saying it is just cause and effect. Then there is another conception that says it does not affect the detail, it affects the general framework within which you have to work, so it is only a sort of guide to why you are one kind of person rather than another kind of person. Then there is another view of Karma for which startling evidence is now coming out in Western

deep hypnotism, when people are hypnotized back into childhood—some people are now using this in psycho-analysis for cases they can't cure—when memories come out that make them say they were e.g. an alcoholic in a previous life. Now how you interpret all this is a question, but it is a conception of Karma that can be used for therapeutic, not punitive purposes. So you have mutually inconsistent, variegated conceptions. The one that is in Hindu cosmology *per se* is, I do think, very like genetics.

I was told by someone in a molecular biology laboratory that 97% of the genetic material is not known to be used. I don't know if this is correct or not, but if it is, some bright spark might then say that it might encode memories of past lives, and Karma and genetics might have a confluence, so there might be a limited reincarnation, of that accumulated memory of the evolved organism, which was in that 97% of genetic material. This would not be metempsychosis, or a descent into being an acacia tree.

*Q.II.* This is quite different from saying that we here are reincarnations of people who have previously lived on this earth. The size of the present population would make it impossible for us all to be reincarnations, because there are more of us alive now than have previously died.

*P.B.* Yes, that is true. But Hindu cosmology also says there are millions of universes, so it isn't just this earth, and there are continuous changes with animals and plants, and so on. All you say is that you are connected in a causal way with another life.

*Q.I.* If you there substituted genetic for Karmic words, Karma would be much better understood.

*P.B.* I would say rather that genetic and Karmic explanations are two different languages, with their different explanatory variables, for understanding the same fact, why an individual has the characteristics that he has, and these do not conflict. I would like here to take up the prevalent notion that the end of rebirth means that one becomes nothing. This is not so. If you get free from desires, you work off your old Karma, and do not create new Karma. If you do not act with desire for effect, there will not be these effects. But you do not then have to be nothing. You can decide to remain, not as ordinary people do, but as an ethereal

being can do. This is not as a psychic bundle. There are two terms in Sanskrit, *jivatma* which is the individual self, and *paramatma* which is the Self which is the same in all of us. So it is not right to say one dissolves into nothing; rather one dissolves into everything.

*Q.I.* Let us come now to the possible effects on moral practice of the belief in Karma and reincarnation. There are accounts in the literature where belief in Karma has an effect on action, but this is not in quite the crude ways that Danto mentions, when he refers to caste, and so on. There was a famous case where the disciples of the Buddha said, surely some one must heal the sick, and the Buddha said "If you prayed properly there would be no sick". Under that kind of Buddhism, even when Westerners get it there is a feeling that there is not much point in healing, you must hope for a better rebirth for the sufferer. This is a real issue, that comes up among actual students; they begin to ask, "What is the use of trying to heal people?" I would like your mind on whether this is a live issue for your own students, and whether it ought to be, because if it ought to be, then Danto wins.

*P.B.* I personally do not believe that there can be any culture, religion or society, and I am not just talking about the Hindu, where moral considerations like helping others can be absent, although there can be different degrees of inducement for behaving morally, especially in specific areas, in different cultures. The tremendous emphasis of Buddhism on compassion surely suggests that we ought to help others in distress in whatever way we can. "Karma" certainly was used to justify privilege and to boost up the more objectionable aspects of the caste system. But every idea is a dangerous idea, not just this one, and can be used by interested parties for their own advantage. Now the caste system has nothing to do with religion; nevertheless, it was given a religious sanction, as is everything in India. So people used the law of Karma to justify it. But there have been people, Buddhists for instance, who believed in Karma and not in caste. So belief in Karma does not commit one to believing in caste or to indifference to other people's suffering.

*Q.I.* Are you saying the alleged callousness (I say "alleged"), the fact, for instance, that they didn't develop hospitals before the impact of the West, the feeling that it is not necessary to try and heal



people, is just human wickedness and has nothing to do with the belief in Karma?

*P.B.* No, it is much more complex. I think if you take life in 1978, you would find more callousness among Indians than in the West, but I don't see a necessary connection with the beliefs. We must look at Hinduism historically. Islam invaded India about A.D. 1000. Islam was very intolerant and destroyed Buddhism. It didn't destroy Hinduism, because Hinduism didn't have the organizations to attack, but Hinduism lived under tremendous pressure. Then came Christianity. So the vitality of Hindu culture has been going down for centuries. It took the Western orientalist to dig out the Hindu writings. So the callousness and the apathy are not just Hinduism, but the break down of Hindu culture over many centuries, though Hinduism has somehow survived.

*Q.I.* Were there hospitals in the ancient Hindu culture?

*P.B.* Not only for human beings, but for animals. There was surgery even. Anyone can read about this in the books that exist on these subjects.

*Q.I.* I know the Chinese used to go across the Himalayas to get Indian surgery.

*P.B.* If you read the old books you see it was the bounden duty of every householder to give to charitable things—there are instructions about how to look after orphans and widows and so on.

*Q.II.* But can it be claimed that it logically follows from the adoption of the law of Karma that one shouldn't concern oneself too much with the sufferings of others, because they are working out their Karma? The same theory might be said of some versions of Christianity: the Marxists called religion the opium of the people. If each person could win salvation by acting morally in the conditions in which he was placed, why should one bother about the poverty of the masses? Is Karma more logically related to this kind of quietism than Christianity?

*P.B.* It is not true that Karma means that you don't have to bother about the world. In the old books, there are listed the four aims of life. *Dharma*, righteousness; *artha*, material prosperity; *Kama*, pleasure; and *moksha*, liberation. You define life in four stages, and

the fourth stage is liberation, so it isn't true that you are totally averse to worldly things.

Nevertheless, I would say that the whole cosmology, of endless time, that things come back again and so on, doesn't produce the same kind of urgency that you have in Christianity. It doesn't produce callousness, but nor does it produce the urgency that you must improve the world.

*Q.I.* That is a parody of Christianity. Christianity doesn't tell you to improve the world, but to ask for grace that God through you may improve it.

*P.B.* Suppose I accept that. I would yet say that nevertheless within Christianity, or at least the cultures within which Christianity exists, people have a sense of urgency about improving the world, while in India people do not have this impetus about doing good.

*Q.I.* Say "relieving suffering" rather than "doing good". You must put it as the Christian sees it if you are to be fair to Christianity, just as we are asking Danto to be fair to Hinduism. The Christian notion is that Christ is potentially in every human being, and therefore it is blasphemy to leave Christ unfed or uncared for.

*P.B.* O.K. I will put it in your terminology. The Hindu does not feel in the way the Christian feels that he must alleviate the sufferings of human beings at large. He doesn't. He alleviates them in those near him.

*Q.I.* For him there is not a concrete image like "Christ", as in the parable when people at the Last Judgment say "Lord, when did we see thee sick or in prison?" and they are told "In as much as you did it not unto one of the least of these my brethren, you did it not unto me". Here, the spiritual discipline is to see Christ in the other man.

*P.B.* The Hindu spiritual discipline is to see the unity of all things, but in spite of that, the Hindu doesn't feel he should alleviate every suffering he comes across.

*Q.II.* There is also the point that the religious have their paradigmatic figures, and Christ was a healer. Then there is the notion of the "*Imitatio Christi*", living like Christ in the different circumstances of the world.

*P.B.* I think the Hindu sense has something to do with the

different timescale. This big panoramic scale can well take away a sense of urgency. There are responsibilities and duties, but they are more in terms of the people you know.

*Q.I.* I think part of this has nothing to do with beliefs. I know when you have family connections in India there are a number of people you can call on for help up to death, so you can't say this culture has no sense of personal responsibility. Just because of their tremendous sense of responsibility for what the Scottish call "the clan", they don't at the same time take on responsibility for people of another clan, and then yet another. Also there is the fact that if you go outside your clan, anything you try to do won't come to good because society is so unreliably organized—not perhaps now, but in the past.

*P.B.* I think this is true. Indians criticize Westerners for not having family feelings. This may not be true, but Westerners have more sense of justice, while the Indians have more sense of the in-group.

*Q.I.* It is a big and generous in-group. But can I get you back to what you said about Hindu culture—yes, it practically died; yes, there is this strong family feeling; yes, caste is not now important. But I am not convinced that Danto is totally wrong in theory, though he may be in detail, in saying that the associated metaphysics can alter the moral sense. There was a book on the British occupation of India by Tanya Zinka, in which she unearthed a lot of documents in the India Office by people who first went to India. They said "We are going to a civilization higher than our's. We shall not stay there. While we are there we can learn from them, and we can also assist them. Then, having enriched them and being ourselves enriched, we shall leave". This was from people like generals in the first stage of the occupation. Then it degenerated, with feelings of superiority. But there were relics of this older attitude even at the end. Gandhi with his *ahimsa* was dealing with the British who always had a love-hate relation with Indians.

*P.B.* To come back to the theme of morality. I think it is true the sense of justice is much stronger in England than in India. There is indeed a difference of moral perspectives.

*Q.I.* Is Danto right that it is a difference of moral practice? Or

would you say there is a difference in the stories, but not really in life?

*P.B.* No. I think there is a difference, but probably it works on two levels. It is true that, because of the cosmology, Indians do not look on death quite in the same way as you do. When my mother died, like anyone else I was desperate, but because of these beliefs I was willing to accept her death. As I see it the function of “Karma” and other concepts of this nature is to help you to accept what cannot be changed, or looks like not being amenable to change, rather than to produce a general attitude that nothing can or should be done about anything. No society can survive on that basis.

*Q.I.* If there is no point at which going into this cosmology—I am not saying this culture—is going to affect people morally, then Danto’s argument falls to the ground. Instead we would have the notion of the pervasiveness of the moral sense—people’s moral intuitions are more similar than it appears. But if there are situations where even Westerners are going to act in a different way morally if they receive Hindu training, then Danto’s argument holds, and it is not a question of culture but of cosmology.

*P.B.* All that the acceptance of Hindu cosmology can do is to modify what Hindus consider to be the overstressing of morality vis-à-vis self-understanding and the realization of man’s potential infinitude here on earth. It certainly would not mean the disappearance of morality altogether. I am a true Hindu in believing that there should be a diversity of cultures and religions, but also that all religions provide a basis for an adequate social morality, with different emphasis on the importance of different areas of life.

*Q.II.* Danto says on several occasions that a condition for having morality is the belief in separate selves. He says in Indian cosmology, there is the belief there are no separate selves they are all part of the great whole. He doesn’t only say that because of the cosmology there are different moral ideas; he is saying the cosmology cuts off the branch on which morality sits. Therefore he takes the sayings about being beyond good and evil in a literal sense.

*P.B.* Suppose you got a great guru—a Christ-like figure—in the West, who said because we are all part of the same thing another man’s suffering is my suffering, and, because of the Christ-like

notion I have got to treat him in a certain way, then along with this cosmology you would still have the Christian morality. Anyway, the fact that the ultimate oneness of things is beyond any judgment of good and evil does not mean that in the world of diversity, where we are and where we act, such judgments cannot be made. All that it means is that to see things as divided up into good and evil does not constitute the final wisdom about the nature of reality. But a good deal has to happen, moral purity for instance, before we can reach this final wisdom.

*Q.II.* I should want to say that even if you believe that there are not separate persons, to the extent that you obey the biological rules of sexual reproduction you are automatically accepting other persons. You are using some other notion, of the soul or something when you say there are not separate selves. You allow for other persons to the extent that you are not being ascetic about sex. One of the things, incidentally, that attracts me about Hinduism is their frankness about sex—though there is rather too much about sex with children.

*P.B.* There are two views about sex. In the Upanishads the sexual union is a symbol of this totality and so is a sacred act. Another theory is that if you want to develop your spiritual potential you have to conserve the energy within you; and the sex energy is part of this, and so asceticism is necessary. This isn't the same as being puritanical about sex.

*Q.I.* Besides the cosmological notions there were notions about the psycho-biology; that the human substance has many layers. The Hindus spoke of seven sheaths. I don't know if this is connected with seven as a sacred number, or whether it may be true that modern medicine will find this susceptible to scientific investigation. What in Eastern terms, is called the aetheric body may turn out in Western terms to be another system underneath the endocrine system, which you can see operating and even photograph. So, insofar as the Hindu cosmology had a far deeper conception of the human substance than any to which we have yet been able to give scientific proof, we may be going to find that all sorts of Western discoveries are implicitly there. This has already happened over the function of the pineal gland. It used to be thought it was vestigial,

but now they have come to see that the Hindu notion was right. The Hindu's put it symbolically, as the gateway to reality; now it has been shown by sophisticated surgery, starting with a boy who had cancer on the pineal gland, that it regulates the rest of the endocrine system. So if there is a whole tradition of Himalayan medicine about man having seven sheaths, how do we know they are not right? This may also affect our notion of what happens at death, which is beginning to be seen as a far more gradual process; and it also affects notions of healing. This part of the Hindu cosmology, though not in its symbolism and possibly not in its exact form, may be something about which they may have forgotten more than we have ever known. So in this respect Danto is totally wrong as well as being right. He is right in thinking cosmological beliefs affect conduct, but wrong in thinking notions like the seven sheaths hypothesis must be false. The Indians may have had procedures of discovery about which we need to know.



## Creative suffering†

IULIA DE BEAUSOBRE

The English mind sees the world divided, as it were, horizontally. Above this division are the spacious rooms of the well-to-do, of all those who are successful, fortunate and, probably, virtuous. Below it, in the basement so to speak, the very poor are herded together in a mass where it is difficult to distinguish individuals. Here can be found all those who are unfortunate or unsuccessful, incompetent or unreliable; men and women who have, possibly, been found lacking in some important virtue.

English pity investigates conditions in the basement, finds them intolerable, and does what it can to fit those who are capable of it, to rise and join in the life above stairs. But to go down there and stay down, without any thought of return or reform—that would be silly, it would not lead anywhere.

Now to the Russian, the line of cleavage that divides humanity seems to run vertically, cutting through the whole of human life. Indeed it does not divide humanity alone; it is a wound that mars the whole of creation; it severs the world of spirit too between good and evil so that the whole world we know, both for thought and action, is split, from top to bottom, between good and bad, between joy and wretchedness. It could never occur to a Russian that, as was once suggested to me by an Englishman, even the basest of men owes some gratitude to the devil, for even the basest of men knows that the devil is lowest of all, lower than the basest of men; or

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† Part of a pamphlet published under this title by the Dacre Press (A. and C. Black), and reproduced here by kind permission of A. and C. Black.



that, as Charles Williams says,† “While he (the devil) exists there is always something to which we can be superior”. As the Russian sees it, there is in the created world a sunlit order of good and bliss, and a dark order of evil and woe; between them the two embrace all creation, man belongs to both and, in his own order, the devil is supreme.

How does the Russian pity, then, strive to mend the ill, to heal the wound, to bridge the gap? On the grand scale it simply cannot be done; it cannot be done at all without losing caste. It can only be done from man to man; by no amount of organization or subscriptions, but only through a complete dedication of oneself—because the Russian’s chief aim is not to sweep away relatively superficial, secondary conditions of poverty but to help the wretched individual to overcome his misery of heart and mind. Monetary help, and all that money can buy, can well be given impersonally, even anonymously. But to speak of impersonal compassion or of giving consolation anonymously would be to use a contradiction in terms. Therefore, concludes the Russian, he who pities another must leave his own place among the good people on the sunny side of the gap, must go out and find the other where he is—in the darkness, on the side of evil—and to be ready to stay with him there; if he returns at all, it is with the other and at his pace.

This looks an unpractical attitude; maybe it is: the risk of both getting left on the wrong side of the gulf is great. But this attitude rests on a conviction, on our profound conviction that evil can be overcome by man only through knowledge, the knowledge of evil; and it seems to the Russians that man can know a thing, as man, only through participation.

This matter of participation brings us to a figure as popular as he is typical in Russian history and life—to the *yuródivy*, “the born fool”, so hard to describe to anyone who has not grown up in Russia.

It is perhaps best to begin by pointing out what the *yuródivy* is not. He is not a monk, though there is much about him that might lead the passer-by to think that he was: his speech, intonation, cant

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† *He came down from Heaven*, London 1935, p. 16.

phrases, sometimes his clothes, and always his absolute voluntary poverty lend him a monkish air. He is nobody's son, nobody's brother, nobody's father, and has no home. He is as old as the history of Christian Russia and wanders over the whole of that huge country feeling equally at home everywhere. But he settles down nowhere and is usually to be met on the road. As often as not he practises a trade, but prefers for the most part to live on the people, and in return for his meal and night's lodgings will give them a piece of his mind, seldom mincing his words. Though he has no schooling at all, he is always ready to express, in chant and rhyme, his views upon the world of matter and the world of spirit; on Russia, her friends and her enemies, and on infinity; on the past, present and future, and on eternity. And yet he remains somehow lovable, and he is loved; cherished in fact, because he is a living personification of what most Russians take to be the true Russia, and in him every Russian is confronted with something of his own essence.

From a practical point of view, no useful purpose is served by anything that the *yuródivy* does. He achieves nothing. Yet there must be some strong attraction at work to draw men (and women too), poor creatures most of them, to choose such a rough and comfortless life, manhandled from time to time, pelted by children and set on by dogs. The attraction is found in participation, participation in all the dregs of life. The aim of the *yuródivy* is to participate in evil through suffering. He makes of this his life's work because, to the Russian, good and evil are, here on earth, inextricably bound up together. This is, to us, the great mystery of life on earth. Where evil is at its most intense, there too must be the greatest good. To us this is not even an hypothesis. It is axiomatic.

The *yuródivy* sees godliness and spirit shining out from all that is lowliest and "worst"; from the dust of the highway, the sharp stones that cut his feet, the thorns that tear his flesh, the biting winter frost, the intolerable heat of summer, the stench of the doss-house; from the most degraded types of men and women. He participates in all the badness and the degradation, and believes fervently that in so doing he helps in the great drama of redemption.

An understanding of this attitude towards evil is essential to the understanding of the Russian attitude towards suffering—the out-

come of evil. For, though the *yuródivy* is an extreme type, he is far from being alone in his attitude.

Some of you may have come across the English translation of *An Heroic Legend*,† taken down in North Russia in 1925 from the words of the peasant woman who composed it. She describes, in the traditional manner of the *bylina*, the great Russian fight against one-eyed Falsehood, and ends with George the Valiant brandishing his sword to cut off the head of his foe. Suddenly he falls, as if struck by a hammer, for Christ appears to him shielding Falsehood. Eventually, the Archangel Michael succeeds in overcoming Falsehood; St. George comes to himself, and understands that the figure that appeared to him was in reality Antichrist.

I first read this legend only a year or two ago, in English, here in England; but in the early thirties, when I was doing time in a lumber camp in Russia, I heard over and over again a variant of it, according to which it is indeed Christ himself who shields Falsehood and, when the battle is over and won, tells St. George that the reason why he was not worthy to be the slayer of Falsehood was that his knowledge of evil was still too limited. The narrator, whoever he might be, would always end by saying that only those who have themselves drained every drop of the cup of evil may, after their regeneration, shatter it without fear of bringing woe on themselves or the world, without danger of spilling the dregs over their fellow men or mother earth.

This was the ending that I had always heard in Russia, where the legend, never having been written down, continues to enjoy the privilege of oral tradition, and is unerringly adapted to the prevalent taste.

There is a current phrase in Russian which is equally significant: *iskat' Bóga y kabakyé*—“to scour the drinking houses in search of God”. This undertaking, according to our own estimate, is the constant occupation of every Russian, from a Dostoyevsky down to the most unassuming ploughboy.

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† *An Heroic Legend*: a modern *bylina*, tr. Gleb Struve and Bernard Pares, London, 1935. The *bylina* is a traditional type of Russian folk-tale; it consists of a long and rather formless poem which may be chanted or recited without chant.

The intuition, underlying the popular legend and the popular phrase alike, is that evil must not be shunned, but first participated in and understood through participation, and then through understanding transfigured.

It is this intuition which governs the attitude, predominant in Russia to-day, towards the evil of Bolshevism. Bolshevism, undoubtedly, is considered there as the arch-enemy, as a thing supremely bad: but, just because of this, it follows, for a Russian mind, that something supremely good must be bound up with Bolshevism; and *that* good must be found, and helped to emerge.

I wonder how I can convey to you the extraordinary atmosphere of the prisons and concentration camps, where a vast number of mystically minded men and women accept, in the temper of the *yuródivy*, the torture that they undergo at the hands of ascetically-minded rulers, bent on destroying every vestige of personality in their victims so as to reduce them to undifferentiated, smooth-running parts in the great machine of their idol-worship—the State.

The variety of the means employed to this end is devised with consummate cleverness—that diabolical cleverness which is one of the most frightening characteristics of the sadistic mind (it stands to reason that sadism is more obviously to the fore than masochism among the rulers of Soviet Russia). This indeed is the greatest, the universal, the most acute and inescapable suffering of all Russians in the U.S.S.R. to-day: sooner or later they must all be dragged to prison, there to be confronted by examining officers who find a deep, an intimate delight in the suffering of those they examine. Thus the whole of Russia lies, to-day, at the mercy of the sadistic mind.

When you are in direct contact with this type of mind, you very soon learn there is only one way to make your torturers stop torturing you, and that is to become invulnerable. To a sadist you are of interest only for a particular series of reactions which he makes it his business and pleasure to provoke from you. These reactions will be variously tinged in different individuals, but even so it is reasonably easy to foresee, to foretaste and to plan them. For the victim there is only one way open to save himself, and that is to fail to react at all: then, having ceased to be interesting, he will eventually be left alone.

Now there are two ways to achieve this end. The first, the way of passivity, follows the line of least resistance, and is accordingly barren at best. This easier way involves rendering yourself completely unfeeling. It can be done: and once it is achieved, your tormentors weary in time, and your immediate aim is thus gained. But, as Berdyaev has remarked: "Inability to suffer sometimes proves to be the greatest evil of all"<sup>†</sup> and, if you follow this course, you very soon become clodlike, indifferent, sub-human. Your intrinsic human worth wanes; which is a terrible thing to happen to anyone, anywhere, under any circumstances. But under the circumstances described, if you once lapse into such a condition, it is unlikely that you will ever get out of it without the help of a psychiatrist.

The other way of coping with sadism is very hard. It is pre-eminently active. It exacts of the victim who undertakes it a heightening of consciousness, which is inseparable from the pain that goes with any expansion of awareness. It demands simultaneous participation, by an intense effort of sympathetic insight, in the particular and the general context of the action; insight into the entirety of your present situation; clear perception of all the most trivial details that are occurring around you; penetration, as far as possible, into the mind of the men who have staged the "cross-examination", and insight into the breadth of God's composition for this particular event on earth. That is very hard, because clear perception, penetration of another's mind and insight, all require a tremendous heightening of sympathy, while, on the other hand, any tinge of sentimentality as well as an impassioned reaction to anything, will immediately damp your attentiveness, deflect you from the only sane course open to you, and prove nothing but a stepping stone to hysteria. Such pure "distilled" sympathy, if I may use the term, requires a heightening of all the mental and moral faculties. And yet it is imperative that this heightening should be brought about in a mood of complete selflessness. Without it, some will fail to steer clear both of self-pity and of a slurring over of their tormentors' responsibility—either of which would be sentimental. Others, with-

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<sup>†</sup> *Spirit and Reality* p. 113 (London, 1939).

out it, will fail to avoid fear and despair—which invite the more tempestuous passions. All this is very hard. But the point is that once it is achieved, you realize that you have been privileged to take part in nothing less than an act of redemption. And then you find that, incidentally and inevitably, you have reached a form of serenity which is, if anything, more potent to counteract sadistic lusts than any barren impassivity could be. But to your mind, now, that is a minor matter. The direct and positive work of an effort applied in this way towards redeeming the deed is far too big and too thrilling for anything else to matter to you very much at the moment.

This second way of meeting such an evil as sadism takes it for granted that any and every deed of ugliness can and should be redeemed and transfigured, and that, in all ordinary circumstances, a man must participate in the deed done, if he is to participate in its redemption. You can, of course, participate in such an evil deed either as agent or patient, as causing or enduring the suffering that marks it. And so intimately are good and evil entwined that it is possible to gain your insight into God's composition for the deed from either side. Possible, though far from inevitable. You may be on the side of evil and be fully aware of the good you are crucifying, fully aware of the real place of the event in God's composition and of your own holy place within it; or you may be a participant on the side of suffering good and, in this case, see its crucifixion, so to speak, from within. In either case, though you can only reach an understanding of the event through your personality, yet this understanding remains impersonal.

To achieve such insight from the side of evil is, of course, far, far more difficult (perhaps one in a million can do it); because to take your stand within evil is to invite the onslaught of terrible lusts, the lust for power, and what, in its lesser degree, is lightly termed "bullying". What this latter really means, in its fullness, is the lust to see pain, to know pain, not by experience, but almost as God does, by "simple intelligence": this lust no man can in fact ever satisfy, for sadism will drive him mad first.

Where insight is gained through participation on the side of good, however, the indulgence of some form of the corresponding masochistic lusts is very unlikely. The serenity that has been attained

is a sure safeguard against all self-deception and any petty distractions.

But there is one condition which, though it would seem to be a personal concern of the tortured, is actually of vital importance to the objective value of the positive results obtained by them: It matters greatly if the tortured belong to the Church or if they do not.

I once heard Mr. Middleton Murry say that "man is 99% conditioned". Whatever the extent to which man's freedom is limited by his own past and his present environment, it is certain that the effect of these factors is at any moment variable. And in the gruesome situation which I have been trying to describe from the side which is not gruesome, the effect of such factors dwindles to vanishing point.

The past-masters of psychology who hold you in their power do all they can to shatter you completely. One of their avowed objects is to "recondition" their victims while these are kept in custody. And, accordingly, the worse than third-degree methods that you are subjected to gradually uproot all previous conditioning and lay bare the deepest layers of your subconscious. This no one can escape or fight against. And it is therefore vital for you to feel and know beyond all possible doubt that, notwithstanding all the tormentors' devices, there is, and always will remain, within you something that is built on rock. That this something cannot be torn out of you or severed from the rock, because it is the core of your personality and one with the rock it is built on. Being both of you and of the rock and not being anywhere outside of you or the rock, it cannot be uprooted. Besides, being of eternity, the more it is laid bare the brighter it shines.

I have often been told that it should be enough for a man to have a firm faith in God, deep consciousness of God's love of him, and of his own love of God. No doubt there are many circumstances in life when this is quite sufficient. But when you are being slowly, systematically and cleverly tortured by living men, who base their actions on the authority of dead men (their teachers, Marx, Engels, Lenin) and justify their actions by proclaiming unflinching devotion to the man of the future, it is difficult, if you love God at all, not to

love him to the exclusion of man, difficult not to fly to him as a refuge from detestable mankind. It has been found in the prisons and concentration camps of Russia that obedience to the commandment "Love thy neighbour as thyself" cannot be perfectly followed outside of the Church, which is to the Russians a meeting place of men dead, alive and yet to be born, who, loving one another, come together round the rock of the Altar to proclaim their love of God in a way prescribed by him. The tone of the fortitude shown by the tortured is very different when they think of themselves only as poor, or brave, lonely wretches and when they think of themselves as members of the mystical body of Christ. Only the latter are likely to come through without succumbing to hatred. Moreover it is only they who can pool their terrible experiences with the redemptive work of others. They alone can raise their harrowing experience from the level of a personal evil, or even of a personal matter at all, and make of it an impersonal enrichment, a universal good, a part of the redemptive work of Christ in his mystical body—the Church. And though, at the crucial moment in which they must not waver, it is after the Church in its universal and triumphant aspect that the tortured aspire, it is their inclusion within the aspiring Church, and their consciousness of *its* sustaining impetus, which, at a moment of such complete nakedness of soul, is vital to them; vital if they are not to get lost, if they are not to lose the Way.

It is obvious that the suffering multitudes can feel united with the Church, in the manner here described, only in a country where the masses are, and always have been, deeply devoted to the Faith. Anyone who does not know Russian life intimately may therefore well be puzzled to see the *yuródivy*, "the born fool" (so Christian a figure and so Russian a type) choose his odd and difficult way of participating in evil with the intention of redeeming it through participation, in preference to the obvious way of the contemplative monk; a way which is equally common in Russia. Only those who know Russia well can realize that his choice is dictated by his deep humility.

The monastic state is usually known in Russia by the name of "the angelic state"—*ángelski chin*. And in the popular mind it is its mystical, not its ascetic, side that is stressed. The latter is, of course,



accepted; but its place in the life is granted only because in the Russian monk, as one fondly imagines him, the evil possibilities of asceticism have been Christianized, that is, illumined by mysticism, or, as Jung might put it, the lust for power has been shorn of its evil possibilities through the grace of love. The resultant of a mystic's inward acceptance and transfiguration within himself of asceticism is—the angelic state. The *yuródivy*, always a “simple” man of true humility, reckons the angelic state too high a summit for him to aspire to, and chooses instead the lowly path of direct participation in the least spectacular and most sordid forms of evil.

There is a Russian saint, Iuliánia Lázarevskaya, whose attitude towards monasticism was much the same. She was an extremely devout woman, selfless and loving, who spent herself in the most arduous good works, carried out with a characteristic personal touch, and at a period which put great obstacles in the way of such activity, living, as she did, at the end of the sixteenth century, in the reign of Ivan the Terrible. She was married very young, had many children and was mistress successively of three large households, that of her husband's family, her own, and, on her widowhood, her eldest son's. The servants of all three households were serfs, as was habitual in those days, and here gentle solicitude for all their needs soon became a byword in the neighbourhood.

From her earliest girlhood and all through her active life, there had always been with her the unexpressed wish to be a nun. And when two of her sons were killed within a short time of one another, the one in battle, the other in a shooting accident, she begged her husband to let her retire to a convent. She never gained her wish, however, and on her deathbed, “praising God for all”, told her children that she had rightly not been found worthy of the angelic state.

Iuliánia was canonized some short time after her death, when already numerous miracles had been performed at her tomb: an illiterate housewife, who seldom went to church, because there was no church within reasonable distance; who prayed long, indeed, and fasted strictly, in an age when neither was rare; who was otherwise distinguished only by the generosity and intelligence with which she spent her time, money and energy in meeting the needs of those around her.

Monasticism has seldom been criticized and never condemned by the majority of Russians, but many of Russia's most devout Christians have easily accepted the humble conclusion that it is too exalted a mode of life for them, personally, to follow, Iuliánia Lázarevskaya does not only exemplify this somewhat paradoxical attitude of the Russians to monasticism. Her whole life and the spontaneous recognition of her sanctity would seem to indicate that, radically though the English and Russian attitude to freedom may differ among the rank and file and also what I have described as the English and Russian modes of pity, yet the latter, at least, blend easily and naturally enough at a higher level.

At a time such as this, when all ideas on nationality and race and on their negation, internationalism, are being revised and reassessed, it is encouraging and consoling to find concrete proof that nationality is a pronounced characteristic and a barrier only on the lower levels of humanity. And we may perhaps conclude that the right way to outgrow one's nationality can only be found along the path of sanctity.

Here, in England, Julian of Norwich provides another example of this possibility. Here *Revelations* often read as though they had been written by one versed in the Eastern Christian tradition; her words of Pity and Love for the Creature, and the Shewing of the Soul in the Heart, have a familiar ring to the Russian ear.

The life of one of these women and the writing of the other prove that the blending of outlooks as different as the Russian and the English is possible on the level of sanctity. They may also be taken to indicate the only direction in which national differences can be healthily outgrown and overcome. And they should inspire us with a firm resolve to refuse the temptation to seek any more superficial solutions to the most pressing of our difficulties. It is with these thoughts in mind that I should like to end with St. Julian's words: *But all shall be well and all shall be well and all manner of thing shall be well.*



## **Reiterative semantic analysis of a simile : Part III**

The third instalment of a philosophic serial

MARGARET MASTERMAN

The rhetorical punctuation of the text [cont.]

As was said in the note at the end of Part II, the overall objective of this philosophic serial is 'to connect a new way of looking at language which has grown out of technology, with a very old way of looking at language which has grown out of liturgy and poetry; and to connect both with some current thinking in philosophy'.

In Part I, a general account was given of the modern technological background. In part II, an overall description was given of the actual piece of technology to be used, together with a strong appeal to religious contemplatives not to be afraid of using machines. In particular, they were asked not to be afraid of using an imaginary machine, namely, an online reactive proof-corrector, or text-editor; and they were asked to imagine themselves using this, not as a labour-saving device, but as a conceptual telescope, to explore the rhythmic and reiterative foundations of language.

It was next shown how to simulate the action of this text-editor by making it perform, on any stretch of text, the two very simple operations CUTINHALF and QUARTERCUT.

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In this third part, we now proceed to the next stage of the reiterative analysis: that of simulating, on a written piece of text, the

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effect of the underlying “rhythm of the prose”, by making the text-editor do rhetorical punctuation. To justify this operation, and without arguing the matter with scholars, I now flatly assert what I think, namely, that the objective of the classical and mediaeval world’s ancient system of punctuation was, evidently, to make written text look more like spoken speech, in order to help a reader to read it aloud.

#### The unit of rhetorical punctuation: the rhythmical phrasing

In order, using the text-editor, to turn ourselves into rhetorical punctuators, we have got to become clearer about two things: (i) the units or stretches of text, which we are looking for, in order to punctuate between them, and (ii) the method by which we are going to attempt to find them.

Any form of analysis of language has first to set up a unit; but usually, the process of setting it up never becomes explicit, since the unit is assumed to be already there. Thus, when we are doing grammar or syntax, the unit which we want to look for is the sentence, the end of which is already marked by a full stop. When we are looking up foreign language words in a dictionary, on the other hand, the unit which we are looking for is the word; and we assume that this unit of speech will be detectable by being marked on either side by spaces in the written script. But here, where it is we ourselves who have to create the boundaries between the units, we immediately have to ask: what units are we looking for?

What we are looking for is the length of stretch of text which, when we are declaiming at normal speed, we can read aloud in one breath. This *breath-group* of words, which is sometimes also called a *tone-group*, is also, owing to some underlying mechanism of our bodies, that same length, or stretch of text, which, when we are reading rapidly, we can “take in at a glance”; and it corresponds further to the length or stretch of talk which people (and particularly sick people whose memories have weakened) can still, without strain, instantly remember. So, though it is not usually marked in written text, this unit of spoken speech corresponds to something which is really there. Sometimes it is marked. It is shown, for

instance, in the length of each line in a normal address on an envelope; and in the tendency to divide long telephone numbers into units of three or four numbers by hyphens or slashes. Sometimes, also, it is visible in the flow of written text; as when the successive items of a list are separated off by commas. But normally, not only do we have to infer, from written text, that this unit underlies it; but also there is not even an established name for it. Therefore, a new name has had to be coined for it: namely, *phrasing* (or, in French, *phrase rythmique*).

Here, in order really to use our text-editor as a conceptual telescope, we are going to make it start to look for this unit without any consideration of syntax (thus showing that it is a rhythmic unit, not a syntactic unit, which we are looking for): and then, later, perform certain tests to see whether we have punctuated right, which take account indeed of certain facts about syntax. This is because syntactic requirements both can, and do, accentuate or distort the underlying rhythm of the prose. In verse, it is the other way round. For in verse—and particularly, in bad verse—it is the syntax which both must be tailored to fit in with the requirements of the metre, and also, often, distorted still further, in order to cause the rhymes to come out right.

So the rhythmic phrasing is the unit which we have to find. Now for the method of finding it, that is, of doing the punctuation.

As we saw in the cases of CUTINHALF and QUARTERCUT, in order to make a machine chop off any piece of text, no matter of what length, you have first got to make it count something, and then perform some operation upon the number obtained from the count. In CUTINHALF and QUARTERCUT, we made if count the actual words of the text, with punctuation marks counted in as extra words; and then find (with qualifications) the midpoint of the count. Here, in an operation which we will call PROVISIONALLY-PUNCTUATE, what we will make the machine count is not all the words of the text, but the stressed words; and then, up to a maximum number, add the stresses together. And to do this, of course, we must first make the text-editor attach numbers to the words of the text which distinguish the stressed words from other words, as otherwise we shall have no numbers to add up.

We will do this by saying that we will number the stressed words of any stretch of text with the number 2, and the unstressed words with the number 0.

It hardly needs saying that the moment we actually start to try to do this, we get into difficulties. Some (such as the fact that, strictly speaking, it is not whole words, but syllables, which are thought of as carrying stress) we can ignore, by saying that we are not using the notion of “stress” here professionally and phonetically, but colloquially, in the ordinary vague, English colloquial sense. Other difficulties (such as the doubt as to whether all the words of a text can really be divided into just two classes, stressed and unstressed) we will defer. But there is one difficulty which hits us hard, right at the outset, and which we can neither ignore or defer. This is that there are many words in English—pre-eminently the auxiliary verbs, but also many other monosyllabic words, and, in special circumstances, any word—which, according to context, sometimes are stressed, and sometimes not. To these, we will attach the number 1.

How many 1s shall we have? This is indeed a great question. When one is compiling a general stress-dictionary, which the machine will have to use to assign stress-numbers to any piece of text, of any kind, which is fed into it, a great many short words will have to be labelled 1; and, as well, provision will have to be made to detect exceptional syntactic constructions the object of which is to alter stresses, such as, “It was not *he*, it was *she*”. At the other extreme, and especially for provisional research purposes, we can make a stress-dictionary which is single-text-oriented; that is to say, we can go through a single long text, marking the words in it as either 2s or 0s according as to whether they are, in that text, actually stressed or unstressed; and then search to see (or, better, make the text-editor search to see) whether there is any word which, even in this one text but in two different occurrences in it, we have marked as being in one place a 2, and in another place, a 0. Any such word we must then re-label as a 1.

Here, since there is only space and time, in this serial, to analyse few and short stretches of text, we will pursue a middle-path strategy; that is to say, we will make a guess as to which words, if the

text went on long enough, would have to be labelled 1s, and label all the rest, from the actual text, 0s or 2s. And we will attach the labels ourselves as we need them, not make the text-editor attach them by matching the words of the text with a pre-stored stress-dictionary; and then begin to compile the dictionary by sorting out the words of the text by stresses, afterwards (see on this, below).

Next, having numbered our words, how do we add the numbers together?

To answer this question, we have to draw on a second hypothesis about the nature of the rhythms of language, the first being that prose does indeed contain rhythmic units. This second hypothesis states that preponderantly, and especially in unremarkable discursive prose, the number of stressed words in any normal rhythmic unit is two: thus, if the phrasing is *normal*, the addition operation will give a total *stress-score*, for each phrasing, of 4. Of course, by no means all rhythmic phrasings are normal: there can be *short phrasings*, containing only one stressed word (or *stress-point*) and bounded by a punctuation mark: there can be *long phrasings*, i.e. phrasings with more than two stress-points in them; and there can be *problem phrasings*, long or short, which contain 1s. Nevertheless, there are enough normal phrasings for it nearly always to be worth while looking for the normal phrasings first (see, for instance, the two sentences analysed at the end of Part II, which contained between them twelve phrasings of which nine were normal).

To find the boundaries of normal, or indeed of other phrasings, we draw on a third hypothesis about the rhythms of language. This is that, in spoken speech, there is a stressed word at the end of nearly every tone-group, in pronouncing which the speaker's voice tends to rise, followed by at least one unstressed word, at the beginning of the next tone-group, in pronouncing which the speaker's voice tends to drop. Therefore, to find the boundaries of any phrasing, we have got to locate the final stressed word in it, which in a normal phrasing will be the second one and which we will call the *stopword*, and then look, immediately following it, for an unstressed word, which will be the first word of the next phrasing, and which we will call the *dropword*; and then draw our boundary-line between them. If no dropword is found, the situation is not desperate, because the



phrasing may be a long phrasing; you merely move the whole operation on one place, and look again for a dropword; and continue thus until you have found one.

All this becomes clearer if we work through even just one example. I will take as example the first sentence of this instalment, since it happens to be a favourable case (and, don't forget, it is part of our analytic strategy to start with favourable cases); and then sort both the words (into a dictionary), and the units (into a glossary).

*Example of a rhetorically punctuated sentence*

					<i>drop-</i>					
					<i>word</i>					
IN	ORDER	,	/	USING	THE	TEXT-EDITOR	,	/	TO	TUR
0	2			2	0	2			0	2
					<i>drop-</i>					
					<i>word</i>					
<i>stopword</i>										<i>drop-</i>
										<i>word</i>
OURSELVES	/	INTO	RHETORICAL	PUNCTUATORS	,	/	WE			
2		0		2			2			0
					<i>stopword</i>					
					<i>word</i>					
HAVE	GOT	TO	BECOME	CLEARER	/	ABOUT	TWO	THINGS	.	/
1	1	0	2	2		1	2	2		

*Dictionary of words sorted by stress-values [stress-dictionary]*

[This can be thought of as the output of an imaginary text-editing operation SORTWORDSBYSTRESSVALUESANDALPHABETIZE]

2	1	0
become	about	In
clearer	got	into
order	have	the
ourselves		to
punctuators		to
rhetorical		we
text-editor		
things		
turn		
two		

*Glossary of phrasings sorted by stress-count pattern [phrasing glossary]*

[This can be thought of as the output of an imaginary text-editing operation PHRASINGTYPESORTBYSTRESSCOUNTPATTERN]

*normal phrasings*

using the text-editor

2 0 2  
[2 + 0 + 2 = 4]

to turn ourselves

0 2 2  
[0 + 2 + 2 = 4]

into rhetorical punctuators,

0 2 2  
[0 + 2 + 2 = 4]

*long phrasing*

we have got to become clearer

0 1 1 0 2 2  
[0 + 1 + 1 + 0 + 2 + 2 = 6]

*problem phrasings*

we have got to become clearer

0 1 1 0 2 2  
[0 + 1 + 1 + 0 + 2 + 2 = 6]

about two things .

1 2 2  
[1 + 2 + 2 = 5]

*Note 1* . In the actual analysis, I have put the sentence to be analysed in upper case letters throughout; partly to distinguish it from the *stopword* and *dropword* labels, and partly because many computer consoles, even now, can only operate with upper-case script. In the dictionary and glossary, however, I have gone back to normal English writing habits; both because information can be gained from capital letters and also to show how more natural the phrasings immediately look, when properly scripted.

Ordinary script is trying to tell us something about language-rhythms; only normally people remain insensitive to this fact.

*Note 2* By performing these same two sorting operations on the two sentences analysed in Part II, and then merging the results with the dictionary and glossary given above, a start can be made towards building up a more general stress-dictionary and phrasing glossary.

#### Further development of the analysis

You may think that this one analysis of this one sentence is not much, even when supplemented by the two analyses of Part II: that before we can say anything about this method of punctuating, we need to analyse many sentences more. This is true; one analysis is not much. Nevertheless, this one analysis already shows us the nature of the next range of problems which confront us, and also points towards the resources which we have and haven't got to solve them.

The nature of these problems is to be ascertained by looking at all the categories of phrasing which are not *normal*. What, if anything, have such phrasings to tell us? What shall we do with them? How shall we test the validity of their analysis?

There is evidently one category of phrasing which we must, in any case, examine, namely, the *problem phrasings*, which contain 1s in their stress-pattern; because all these 1s have got to turn into 0s or 2.

The tests which deal with this problem we will call *light stressing tests*.

There is also the question of *long phrasings*. Are they genuine outsize rhetorical units? Or are they two phrasings glued together, which need to be split up?

The tests which deal with this problem we will call *heavy loading tests*; and they are ordinarily performed after the light stressing tests.

Lastly, there is the problem of *short phrasings*; particularly of those which occur at the beginnings of sentences. Some of these (but not all) are what some linguists call "openers"; that is, phrasings which have to be very highly stressed because what they specify is a long-distance connection between one whole stretch of text and another one; say, between the beginning of one paragraph and the beginning of the next one. Not all sentences have openers; not all openers are short phrasings; not all openers come right at the

beginning of the sentences; nevertheless, when a stretch of text has an opener, we need to know of it.

The tests which deal (or fail to deal) with this problem, we will call *extra-stressing tests*.

Here, a moment's reflection tells us that, in proceeding further, if we are to be in any way realistic about language, our tests will have to be on three layers; that there are three kinds of resources, if you prefer it, which the text-editor can draw on to solve its problems. Firstly, there are any further tests which can be made using only the stress-patterns; secondly, there all the many tests which can be made using information derived from syntax; and lastly, there are tests which can be made which require knowledge that some particular word is present in the stretch of text.

Tests which require knowledge of syntax are, of course, what we most immediately need, as will become evident from the examples further discussed below; but also the prescription for making the text-editor handle syntax must wait until the next instalment. Tests which require the machine to make a search for some particular word, such as "however", or "respectively" are quite easy for a human being to handle, but very difficult and expensive for a machine; the aim, therefore, is to have as few of them as possible. Tests which only require knowledge of stress-pattern, that is, tests of the first sort, are usually believed to be either non-existent or useless. This is not quite right; three such tests, for instance, are given below. Nevertheless, what the analysing human being always feels at this point is, "How can we get further with this stressing without bringing in the syntax?"

Since we can't, yet, bring in the syntax, I am going to conclude this section by saying a little more about problem phrasings, a little more about long phrasings and a little more about openers; so as to show, in the concrete, the kinds of problems which come up.

Meanwhile, it is hardly necessary to point out what a good effect having successfully rhetorically punctuated the text has upon the operation of cutting it into halves and quarters; since, if there is no existing punctuation mark, to serve as a guide for adjusting the provisional cut, the rhetorical boundary cuts can be used to do this (see on this, Part II). In language processing by machine, it is always

thus; you have to find a way of helping yourself, by using information from the stage of the analysis which you have not done yet, to guide you in the stage of the analysis which you are doing or have done; so strongly do all the differing aspects of natural language, which, the machine being only a machine, has to handle separately, in fact, in real life, interact. Nevertheless, if the text-editor is to be used as a telescope, they must be examined separately, in order to discover their nature; and, with this fact in mind, we will go back to our examples.

Let us take first the two problem phrasings; that is, the two phrasings which contain 1s. The second of these is really a normal phrasing, since, in this sentence, “about” is not stressed; it should be, therefore, analysed as below:

ABOUT TWO THINGS .

0        2        2

The first problem phrasing, however, I suggest should be re-stressed with the two final words bracketted together, which requires a far more complex transformation:

WE HAVE GOT TO BECOME+CLEARER

0    0    2    0            2

So the problem is, how to make the machine make these changes?

In this connection, it is worth putting forward the following top-level test: that is, a test which only uses consideration of stress pattern. *If a 1 occurs immediately before an 0, change it into a 2; if it comes immediately before a 2 change it into an 0: if two or more 1s occur in sequence, convert the last one first, and then work backwards.* This test by no means always works, but it works surprisingly often; and note that it successfully effects both the two transformations given above—except that it does not insert the plus sign bracketting “become” and “clearer” together; which insertion, indeed, many would regard as optional. Without drawing on syntactic knowledge, it is difficult to do much better; and this test shows that, in this sort of analysis, quite simple devices can quite often take one quite a long way.

Now about long phrasings. The first problem which confronts

one here, as soon as one starts to go at all deeply into the nature of long phrasings, is that of distinguishing the genuine triad:

OF THE MODERN TECHNOLOGICAL BACKGROUND /

0 0 2 2 2

from a long phrasing which really consists of two phrasings which have become attached together:

OF THE CLASSICAL AND MEDIAEVAL WORLD'S ANCIENT

0 0 2 0 2 2 2

SYSTEM /

2

Here, if the “’s” were treated as a separate word, with the stress value 0, the segmentation would come out right; but provision has to be made to attach it back to the first phrasing, after it has served as a drop word to start the second one.

About “openers”. All that we can do about them here is make a rule that any short phrasing (i.e. one bounded by a punctuation mark, which occurs right at the beginning of a sentence), shall count as an opener, and be given the stress-number 3 with a pause mark, ( ), after it. This turns “In order,” into an opener, and restresses it thus:

IN ORDER, /

0 3 ( )

when it is by no means clear, from the context, that it does connect the sentence which it opens with any other piece of text. But it is all that, using a syntax-free device, can be done. In part II, and assuming availability of syntactic knowledge, I converted the theme-announcing abstract noun “Norway” into an opener by re-stressing it thus:

NORWAY

3 ( ) /

But these two examples alone suffice to show what a very delicate matter the detection of openers is . . .

Oh, there is one more immediate cause of embarrassment. The text-editor has to make a phrasing-cut at every punctuation mark; and, in particular, it cannot afford to ignore full-stops. Taking notice of them, however, can lead to segmentation aberrancies like the one below;

T . / C . / SHEARME , / LTD . /

which oblitative action has to be taken to correct . . .

\* \* \* \*

By now, the reader who is interested will be asking innumerable questions, such as, “How many other kinds of text, or how many other languages, could PROVISIONALLYPUNCTUATE apply to?”

Since we are now doing science—that is, simulating the use of an instrument to discover and investigate the nature of a hitherto ignored rhythmic unit of language—he is invited to answer these questions for himself by actually trying something: for in science—and particularly in very new science, which is what this is—the scientist has to do the hard work himself: he cannot assume it to have been done by somebody else. Even if somebody else alleges that he has obtained some result the experiment which obtained it has to be repeated.

The reader is particularly invited, in cases where he tries to operate PROVISIONALLYPUNCTUATE and it fails, to make a note of any additional information—and particularly of any syntactic information—which would have turned this failure into a success.

Meanwhile (which means in the next instalment) we must equip our text-editor to make use of syntax.

[To be continued.]

## Metaphysical enquiry

Timothy Sprigge

What follows is a brief description of the approach to metaphysics of one who wants to defend the intellectual respectability of metaphysics taken, in a fairly traditional way, as an attempt the better to understand the nature of reality in general as a result of reasonings of a type generally thought of as philosophical. I have, as a matter of fact, a book more or less completed which is an attempt to establish certain metaphysical conclusions about the world which run counter to any of the alternative orthodoxies of contemporary philosophy. On the whole it has been my wish actually to do metaphysics rather than to discuss the nature of metaphysical enquiry. There has been a tendency for those philosophers, at least in the English speaking world, who think there is value in metaphysics to spend their energies defending the significance of this sort of intellectual activity rather than directly to engage in it. However, if metaphysics is a significant intellectual activity it is appropriate for some of us to return to the task of being metaphysicians and not remain mere commentators on its viability, meta-metaphysicians as one might put it. I am not, indeed, suggesting that there has not been a certain amount of direct metaphysical enquiry in recent years, but it remains the case that most philosophers continue to be suspicious of any attempt to establish general and substantive conclusions about the world by a method which is largely *a priori*.

My main interest in metaphysics, then, is not as one who wishes to comment on its methodology but as one who wishes to advance certain arguments within metaphysics. All the same it would be foolish not to spend some time reflecting on the general nature of a type of thinking the viability of which is so widely contested. The

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invitation to contribute a paper on this subject to *Theoria to Theory* gives me a welcome opportunity to air some of these reflections, though I do not think I can usefully undertake this without some adumbration of my own metaphysical reasonings and conclusions. The reader will appreciate that these are no more than adumbrations of arguments and positions which can only really be explained at book length, or in extended discussion.

The metaphysics with which I am concerned is directed at the question “What is reality really like?” It is not directed at the question “What are the most basic elements in our conceptual scheme?” It is more like what P. F. Strawson calls revisionary than descriptive metaphysics.<sup>†</sup> But this title can be a bit misleading—since the upshot of the metaphysics of my concern does not always have to be a revision of common views; it may sometimes be a matter of their retention. The aim is to know how things are—not to explicate how we commonly think about them—but there is no commitment to revision for revision’s sake.

But how can mere thinking lead to any reliable conclusions about the nature of the world? Must not an informative statement be regarded as established only when it has been tested by observation and is not the role of reasoning restricted to charting the relations between concepts whose applicability or otherwise to the world, being a purely contingent matter, cannot be decided merely by thinking?

I believe it will be helpful to consider, at this point, the relation between metaphysical enquiry and conceptual analysis since it is probably still orthodox to regard the latter as the one appropriate activity of the philosopher as such.

When I myself started philosophy in an academic way (in the late fifties) the standard view was that philosophy, since its method was essentially just a process of pure thinking, could not add to our stock of factual truths. Its task was the humbler one of clarifying the concepts, or the meanings of the words, used by those engaged in genuinely factual enquiries. I do not think attitudes have changed as much as all that on this fundamental point. Those who engage in

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<sup>†</sup> P. F. Strawson—*Individuals*. Methuen, London, 1959, pp. 9–12.

“descriptive metaphysics” are still concerned to cast light on the nature of our concepts rather than on the reality to which concepts apply, their difference from earlier conceptual analysts lying in the fact that they are concerned with our conceptual scheme as a totality rather than with problems about individual concepts. There is, indeed, some flourishing of what approximate to being systems of materialistic metaphysics, but even here the tendency is to claim that the philosopher, as such, cannot properly establish the truth of, say, a purely physicalistic account of human beings; the most he can do is show that certain conceptual objections to accepting the physicalistic account of human beings supposedly suggested by the relevant sciences do not hold.

The dominant view, in short, continues to be that philosophy is confined to second order investigations. A second order investigation is one which is concerned to characterize the nature of some other investigation, which is not itself concerned with the nature of any sort of investigation. Typical first order investigations are those of the historian, concerned to establish historical facts and their explanation, those of the physicist, concerned with the constituents and structure of physical nature, those of the moralist concerned with the rights and wrongs of various sorts of conduct, and, more puzzlingly, those of the mathematician. Philosophical enquiries are into the nature of such first order enquiries as these, and this is essentially a matter of clarifying the concepts used in them. This is a case of thought reflecting on itself, and therefore it seems possible for thought to supply the answers to its questions from its own resources, thus *a priori*. Since philosophy is usually thought of as essentially a reflective or *a priori* activity, and since it is thought that all we can establish *a priori* is the nature of our own concepts, it is concluded that conceptual analysis is the sole task of philosophy. (As to how mathematics and logic fit into this scheme, opinions differ, but the most usual view is that these, in their pure form, are concerned with concepts rather than realities, and are not directly concerned with the world outside our own thought, though they contrast, in their strictly formal nature, with philosophy.)

Philosophy, then, is supposed to be concerned with our concepts and not with the realities to which our concepts apply. One who

possesses a concept, attaches a certain meaning to a word, only has to consult his own mental processes in order to explicate the concept and resolve any apparent paradoxes about it. Or, as the matter is sometimes seen, all that he is required to do in order to become conscious of the character of his concepts is to become self-conscious regarding the rules which, in fact, he follows in his verbal behaviour, so that philosophers need only ask themselves what they would say in a variety of possible situations in order to get a grasp of the real meaning of some problematic linguistic expression. No similar process which is open to the philosopher who merely sits and reflects will tell him whether his concepts *apply* to anything, and this must always be settled by some kind of observation, which, at least in cases of any interest, cannot be merely a matter of glancing around one's study or of attention to one's own mental processes. Thus the philosopher might seek to clarify in his own mind the meaning of "x causes y", but it was not his business to decide what causal relations actually hold in the world. What is wrong with metaphysics, according to this train of thought, is that it professes to have, and does not have, any method at its disposal other than the reflective *a priori* approach of the conceptual analyst, and yet it claims to arrive at substantive truths about the nature of the universe.

Can metaphysics, of the type we have specified, be defended against this kind of attack? Well, as I have already hinted, my own reason for taking metaphysics seriously is not that I initially reflected on matters of methodology, but rather that I find myself forced to certain opinions about the character of the universe as a result of certain more or less *a priori* arguments. Both these opinions and the arguments behind them are of the sort typically called metaphysical. It is not that I deliberately adopt a certain method of enquiry and that it leads to these results, but that arguments have come my way which seem to establish the points prior to my reflecting on how arguments of that general character can establish anything. It seems the best way in which I can approach the matter of the justification of metaphysics to attempt what will have to be the very sketchiest of an outline of some of these opinions and of the arguments which lie behind them. Then I will step back and see how

far the argument against the possibility of metaphysics which I have indicated bears on this argumentation and on its conclusions.

The first opinion I might mention as figuring largely in the metaphysical outlook I want to defend concerns the content of all that is truly acceptable in our knowledge concerning the physical world as such (i.e. qua physical). I believe that this boils down to facts of one or other of two kinds about the physical, or to a mixture of the two. Facts of the first kind concern only how things appear to observers and thinkers such as ourselves, thus leaving the inherent nature of what thus appears uncharacterized. Facts of the second kind do tell us something about the inherent nature of the things of the physical world, but what they tell us is something highly abstract, concerned with their realizing of certain highly abstract structural features, such as leaves the more concrete nature of what realizes these abstract features a complete blank. All we know about physical reality, as such, is either a matter of the way it presents itself to our senses, or a matter of its formal structure, or a mixture of both.

I cannot argue for this position now, but it will be recognized as a position not uncommon, and whatever refinements may have to be made upon it in a more exact statement I do not believe its main gist can easily be rejected. What I now insist on is that adequate attention be paid to the fact that if this position is correct, then there must be some real essence of physical reality which cannot be characterized in physical terms. It cannot be characterized in physical terms since they, insofar as they are valid characterizations, concern only how what has this real essence appears to minds such as ours, or certain purely abstract aspects of the way in which what has this real essence is organized. This real essence of the reality we call physical can be called its noumenal nature, or what it is as a thing in itself; while acceptable physical descriptions can be described as specifying its phenomenal nature. It is convenient to have a pair of expressions like this and they have a certain historical suitability for my purpose, though in the case of "phenomenal", at least, more is included under it than might otherwise seem quite suitable, since it covers not only the way the things in question appear but also the more intrinsic matter of their "structure". However, to know the structure of a reality is really only to know

that there is some interpretation of those expressions of an uninterpreted system, such as a geometry, which are not purely logical or mathematical, under which that system would apply to the reality; it is to be utterly and completely ignorant of what the actual properties and relations are which would supply these interpretations. Hence there is reason to say that so far as we only know a thing's structure, we do not know at all "what it is in itself". (If "cube" is used only to refer to structure, then in knowing that an object producing certain sensations is a cube, I know only that it has *some* property which in a certain possible, but unknown, interpretation of a certain geometrical system, an interpretation which would make true most of our usual predications, would be the designatum of "cube", but I have no idea what this property actually is.)

Is there any possibility of knowing the noumenal nature of physical reality? We must set aside the idea that this could be anything physically describable, since such descriptions will, if the preceding is correct, never do more than enlarge upon its phenomenal character. Nonetheless, I think there is some possibility of a reasonable surmise as regards the sort of features which constitute its noumenal nature. We may note, first, that there *are* realities of which we do know the inherent or noumenal nature. In knowing myself as a centre of experience I know a certain reality as it really is in itself, and not merely as it appears to something other than itself, or as having some unknown property or standing in some unknown relation to something else such as is the designatum of a certain symbol in a formal system on that unknown interpretation of it on which it becomes true of the world. But it is not only in the case of myself as a centre of experience that I know a certain reality in its inherent and concrete nature. The same applies, to a considerable extent, in the case of other centres of human experience and to some extent with the centres of experience of animals. It is true that I may often be grossly ignorant in detail about centres other than myself, but still I know—so to speak—the kind of concreteness such centres possess and not something merely abstract about them.

I must absolve myself from dealing with the "other minds" problem at this point, as I feel I can use my space to better account.

I feel justified in assuming that I may treat as a certainty the existence of such companion centres of experience as those indicated, as also the correctness, at least to some degree, of much that I believe about their detailed content.

The crucial thing about these centres of experience, from the present point of view, is that we know them as things in themselves and not in terms simply of how they appear, or the abstractions they incorporate.

It seems, then, that we know about things in general in two sorts of way. Some things we know in terms of the way they appear and otherwise only in a very abstract way. I have called this knowledge of things in their phenomenal aspect only. All objects in the physical world, specified solely as such, fall under this category. Other things we know in terms of what they essentially and inherently are. Our knowledge is of them as things in themselves or in their noumenal aspect. All centres of experience about which we know belong to this category.

There is something else, however, which we know, and that is that physical realities must have a noumenal aspect, must be things in themselves. There must be something more to a thing than how it appears or than the facts of a highly abstract kind about it which I have vaguely gestured towards and which are often said to belong to structure rather than content. If one were satisfied with a purely phenomenalistic account of the physical world in the tradition of Mill's view of it as "a permanent possibility of sensation" meaning that its existence and character is entirely a matter of certain sensations being available to us, one might seek to resolve a thing wholly into its appearances. There are, however, in my opinion decisive reasons against this which I must be content merely to gesture towards once more under the slogan that a distinctive possibility must be grounded in a distinctive actuality such as, in the present case, will be the noumenal aspect of what presents the appearances. That a thing might be purely abstract in its character, answer only to logico-mathematical descriptions, is a view that cannot seriously be held once it is realized that this is to say that there is an interpretation of a system of which nothing is true but that it is such an interpretation.

There is, then, undoubtedly a noumenal aspect to physical realities and I now suggest that the one possible insight we can expect to get into it must rest upon taking the noumenal aspect of the things which we do know as things in themselves as a clue to the noumenal aspect of things of which we would otherwise know nothing at all as things in themselves. If we adopt this clue, we become panpsychists and hold that the physical world consists in groupings of centres of experience which appear to us *en masse* as physical things extended in space.

In the book I am working on which I mentioned above I argue at length for a panpsychist view of nature, presenting a number of different considerations which point towards such a view of nature, and I also deal with a variety of likely objections to it, so it should not be supposed that I regard what I have just said as a complete defence of such a view, still less as an adequate specification of what it implies. It will serve, however, as an adumbration of one line of argument which I believe to be very strong. It is a line of argument which will be recognized as having quite a similarity to a key argument used by Schopenhauer in defence of his metaphysical system. There are important differences, however. For one thing, I eschew, for reasons I could give, his claim that the one thing we find ourselves as being, qua noumenal reality, is will.

The doctrine I am propounding may be put briefly thus. A physical thing is, in itself, *either* a centre of experience, *or* an aggregate of centres of experience, which is not itself sentient as a whole, *or* an aggregate of centres unified in such a way as to give rise to a further centre which is somehow the dominating centre of the whole. Tables, presumably, are not sentient but aggregates of the minimal sentient beings. We are sentient beings because our consciousness is the centre dominating a group. Sub-atomic particles may be, though I do not say they are, examples of sentient beings of the simplest kind, whose noumenal essence is that of a single centre of experience.

It will be recognized that this is very like Leibniz's system, but, in fact, it is even more like Whitehead's. I cannot go into the point here, but I must insist that I completely reject the notion that the ultimate individuals or monads are "windowless", i.e. are in no real dynamic interaction with each other.

Where I depart from both Leibniz and Whitehead is in thinking there are reasons, the force of which I do not see how to avoid, for regarding all finite centres of experience as aspects of the mental life of one infinite cosmic whole or centre of experience. We must, I believe, think of the universe as a whole, as an infinite centre of experience which feels the life of each of the finite centres which are its parts, aspects, or modes in a harmonious and organized unity. This brings my position close to that of Spinoza and Bradley. A subsidiary line of thought, which I might mention, in favour of regarding nature as a conscious being is that it provides a way of explaining the difference between a law of nature and a mere uniformity more satisfactory than any available on a purely naturalistic scheme. This line of thought favours any point of view for which the laws of nature can be seen as akin to the deliberate ways of acting of a conscious being, whether pantheistic or more conventionally theistic, though I do not think the distinction between these two ways of viewing the relations between God and Nature is a sharp one.

I mention this sort of argument just as a further illustration of the type of argument I think appropriate in metaphysics. The main argument pushing me towards belief in a cosmic centre of experience is the fact, as I think it can be shown to be, though I cannot effectively argue the point here, that one can only think of items as in a real relation one to another by thinking of them as aspects of a totality at least as concrete as themselves. To think of things as in spatial relations, for example, is necessarily to think of a larger spatial object, at least as concrete as they, which includes them. To learn the spatial relations between Earl's Court and Bayswater is to learn the way in which they contribute to constituting London, or a part thereof, in short, to become aware of a whole of the same general sort as themselves in which they are comprised. It is similarly true, I believe, that one cannot seriously bring home to oneself a way in which different centres of experience can relate together so as to be in a common world without thinking in terms of a larger system of experience which they make up. If it seems possible to do so, that is because one tends to regard their relations as derivative from the spatial relations between their bodies, but, on the panpsychist view we have indicated, these spatial relations are



the appearance of noumenal relations which must be spelt out in terms of some sort of fact about centres of experience.

The kind of argument I am advancing is often thought to have been dealt with by various supposed refutations of the views of certain idealist philosophers, particularly Bradley, about relations. In these disputes I believe there has been a good deal of confusion on both sides, but I also believe there is a compelling case along the line I have indicated which does not make use of any principles which have been shown to be fallacious. It is impossible, however, to go further into the matter here.

Such then is the kind of metaphysical position which I reach by arguments which I, at least, find convince me even when they go against much that I used to find it natural to believe. Let me now step back a moment and examine the style of argument proposed, to see whether the method of reasoning can be made to look a possible instrument for reaching truth at a time when it is still felt by most thinkers that the idea of reaching substantive conclusions about reality by *a priori* reasoning is an absurd one.

When I consider what types of reasoning in metaphysics seem actually to get us somewhere in the better understanding of how things really are, I have the impression that there are two main forms thereof. The first may be called in a rather loose sense "dialectical", the second is related both to the seventeenth century notion of clear and distinct ideas and to the insistence of some empiricists that something we think of as existing but which we can in no sense imagine is more likely to be some sort of verbal fiction than an item in the real furniture of the world.

What I have in mind under the first heading is something which is closely related, in fact, to conceptual analysis, but such as includes a criticism of concepts and readiness to replace them by more coherent ones, rather than one which is purely descriptive in its approach to ordinary ways of conceiving things. The normal assumption of those engaged in what is known as conceptual analysis is that the concepts investigated are coherent and have actual application in reality. The task of the philosopher is, however, not to decide to what they apply but to clarify what it means to apply them to something, while treating it as a defect in the philosophical

analysis of them, and not in the concepts themselves, if some philosophical account makes them look incoherent. With such an assumption the analysis of concepts cannot be thought of as something which might help determine in any really substantial way, our views as to how things actually are, but serves only to sharpen our thinking. Metaphysical reasonings often start off in just the same way in attempts to clarify ordinary concepts in terms of which we think about the world, but, since they do not incorporate the assumption that ordinary concepts are in order as they are, they may lead to the recognition that these concepts, or systems of concepts to which they belong, are incoherent, and that their holding of the world cannot therefore be the truth about it. The metaphysician may then see whether this critique of those concepts does not suggest another way of conceiving things which will do justice to whatever features of reality made the concepts he has discredited vehicles of thought with at least some utility, as instruments for dealing with what we encounter, while lacking the incoherence which shows these traditional concepts to be finally inapplicable. These revised concepts may later themselves have to be rejected but they are more likely to give literal truth than the old ones.

If one undertakes to analyse our ordinary system of concepts with the possibility of developments of the sort indicated allowed for, one is practising metaphysics, for the analysis is undertaken in the hope of seeing whether the concepts analysed have actual application. It is possible, in principle, that one who sets out on this task will decide that ordinary concepts are in order. His purported results will then be a defence of the metaphysics of common sense. It will not be descriptive metaphysics in Strawson's sense, for the concepts are retained only because they withstand the most fundamental criticism, not because they are fundamental to our normal modes of thought. However, the procedure only amounts to something which can reasonably be called dialectical if the original concepts are substantially modified.

This type of method is crucially present in the defence I would offer of my own metaphysical position, since much of this would consist in attempting to point out contradictions in our ordinary concept of a physical thing, which is thought of as a thing in itself

adequately characterized in physical descriptions which, however, can only be rendered coherent if interpreted, in a way which certainly narrows what they are ordinarily thought of as achieving, as specifications either of how the thing appears or in terms of it and its environment's abstract structure. This critique of the ordinary concept of a physical thing, then, shows that it needs to be replaced by the concept of a thing in itself whose inherent and concrete nature is non-physical, and whose physical characteristics can be called "phenomenal". Another argument I touched on briefly aims to find a more satisfactory conception than that of a law of nature which, so it may be maintained, is an incoherent amalgam of the notion of a rule according to which an intelligent being guides his behaviour and a merely universal generalization.

Let us now turn to the second element in metaphysical method which I mentioned. In explaining it, I think one may start with a distinction between two different sorts of truth, pragmatic and literal truth, and linked to this, one between two different sorts of thought. Roughly, a thought is true pragmatically to the extent that it is an item of mental activity which serves as an efficient instrument of adaptation to the world, because it assists, via a network of associations, both with other similar mental items and with behavioural practices, in promoting appropriate sensory expectations and adaptive behaviour, granted reality is as it is. What such mental activity does not consist in, however, is in the actual intuition of the essence of the reality to which we are adapting, which remains quite opaque to us. We may classify thoughts, whether true or false, as of the pragmatic type insofar as that is the sole type of truth they might have had, and is one which they will have or would have under certain conditions.

In contrast to this are items of mental activity which seem to themselves to be actual graspings of the essence or real independent character of some reality beyond them onto which they are somehow directed. To the extent that the essence present to such a thought actually is the essence of that onto which it is directed, then it is literally true, to the extent that it differs from the actual essence of the thing, it is literally false.

A sentence, as understood on a particular class of occasions, may

be spoken of as pragmatically true or false if the entertaining of it in an affirmative way is an item of mental activity which is pragmatically true or false. It may be spoken of as literally true or false if its entertainment is such as prepares the ground for a thought which is literally true or false, or, in a stronger sense, if it is intimately fused with, indeed an element in, a thought which actually brings the essence of the thing thought of to mind. I hope it may be evident that it may be possible to come nearest to the grasp of literal truth by language which, in terms of a rather different contrast, is metaphorical rather than literal; certainly much of the language which people are most inclined to call literal is on the pragmatic side of the contrast I am making.

I now suggest that most of the knowledge we think we have about the world consists in thinking which is, at best, pragmatically true, and that what distinguishes the metaphysical quest is the desire to possess the literal truth about things so far as possible, and where we cannot, at least to salute a reality as unknown or unknowable in its inner essence, rather than be satisfied to count as adequate knowledge of it what is merely an element in a system of behavioural adjustments. Thus the metaphysician, as I conceive him, will reject as inadequate for the deep sort of understanding he desires, any formulations which, when one tries to treat them as literal truth, either remain opaque, or perhaps provide only incoherent essences for intuition. One might put it another way by saying that he is seeking an account of things to which one can give what Cardinal Newman calls *real* assent—*notional* assent is not enough. Thus he will have a test by which many accounts of the nature of things will have to be rejected, giving way either to statements of an agnostic kind, or to others which provide coherent essences for intuition.

It is important to note that there is one case, and, it would seem one case alone, where we may sometimes possess ideas which are literally rather than pragmatically true and which are not, at least to any extent I can consider serious, metaphysically controversial. Such cases are those in which I really grasp the character of the experiences someone else is living through, or has done, so that I can correctly imagine what it was like being him at that time. In such

a case the real essence of the experiences in question is immediately present to my mind, at least to some degree. Such knowledge is less firmly based empirically, in most cases, than knowledge about physical reality, and therefore more likely to be wrong, but the kind of rightness and wrongness it has is more literal. That is why it is, as I see it, a paradigm of knowledge for metaphysics, and not because metaphysics must place mankind at the centre of the stage ontologically. I believe that the Cartesians thought that one could have the essences of geometrical figures present to one's mind in the same immediate fashion, so that their clear and distinct ideas were not so far from what I see the metaphysician as seeking. My difference from them is in thinking that the essences of geometrical figures thus grasped are really the essences of what has status only as the content of perceptual acts. It is true, of course, that the Cartesians sharply distinguished clear and distinct ideas from any kind of imagery, but in part what they were concerned to condemn under the latter head were mental processes governed purely by laws of the associations of ideas. Moreover, as I understand it, imagination (if by that is meant something with great sensory vividness) is only one way in which the real essence of an object can be present to one, though I cannot elaborate on this. In any case, I would say that, whether it is a method which would be approved by all traditional metaphysicians or not (and it is a method quite clearly used by some of them) the true metaphysician ought to reject as an adequate account of how things really are anything formulable in sentences to which only pragmatic truth can be ascribed. As already emphasized, this leaves open the possibility that literal metaphysical knowledge of most aspects of reality is unattainable.

With reference to the metaphysical views I myself have expressed above, the method just described is rather obviously in use. The inherent nature of the reality we call physical cannot be something specifiable in purely physical predicates, since, if taken as saying more than something as to how this reality appears, these concern only abstract features which we cannot think of as specifying the full concrete nature of something as that would have to present itself to any literally true grasp, as does not apply if we think of these realities as psychical in their nature. One need not claim to grasp the

actual essences in question, but at least they are essences of the same general kind as those we can grasp, and this puts us in a better position, at least, than mere agnosticism. Our argument about relations is also essentially a report on the kinds of relatedness which one can either imagine or grasp in some way not merely verbal. As for metaphysical claims about a Cosmic Mind, it would be absurd to claim to be able to imagine the full essence of this or anything remotely approaching it, but, as a centre or system of unified experience it at least comes under the same category as that of which we can grasp the literal character.

So much must suffice as a sketchy indication of the ways in which I think metaphysics may aspire to arrive at truth, and of my own reasons for thinking that application of this method will lead one towards a view for which Nature, both in its individual components and as a whole, is sentient, and in some sense conscious, and thus to a kind of panpsychist pantheism for which the pathetic fallacy is a noble truth.

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*Note:* A preliminary draft of this paper was read at a gathering of the Epiphany Philosophers in December. It has been much improved as a result of comments made at that meeting. I am most grateful for that helpful discussion.



## Food and health†

RICHARD MACKARNESS

My book is called *Not All in the Mind*. I want to tell you a story about a case where it *was* “all in the mind”. A little boy was one of a large family—he was the youngest—and his mother became a bit worried because he never said a word. She became terribly worried about this, and went to doctors who said there was nothing wrong with him, no reason why he shouldn’t talk. One day she was having lunch with him when he turned to her from the plate and said, “Mummy, this food is bad.” She said, “But darling, why didn’t you say something before?” He replied, “Well, the food’s never been bad before.” This illustrates that even young people are aware that nutrition is important.

My talk tonight is really going to be about nutrition. In fact, all my interest now is on this subject (even though I am a psychiatrist). I have introduced in Basingstoke a clinic called the “Ecology Clinic” or the “Clinical Ecology Unit” which tackles mental illnesses and certain other illnesses which are often called psychosomatic or “all in the mind”—things like colitis, asthma, migraine, urticaria—by saying or assuming that possibly the person is not adapting to his food properly, or is being fed the wrong type of food.

If you look back at evolution, we have evolved on four types of diet. Originally when we were monkeys in the forest, we lived on a sort of Bernard Shaw type of diet—leaves and shoots and fruits and a few insects and things we could catch—largely vegetarian—so that our metabolic processes, our enzyme systems are adjusted to a

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† A lecture given to the Teilhard de Chardin Group in Shaftesbury in October 1977. Dr. Mackarness’ book, *Not All in the Mind* is published by Pan Books (1976).



vegetarian diet. Then, if you read your anthropology, your history of evolution, you will know that the rain forests which housed these monkeys and apes began to shrink, and we got the plains, the savannahs, the prairies, and often these began to run large herds of animals like antelopes, the ancestors of modern cattle. Some of the apes came down from the trees, learned to catch these animals and eat the meat. This must have been quite a change for them; they must have had a lot of indigestion; but they adapted, and there is a case for saying that the change from apehood to manhood was brought about by this change of diet to fat meat, because the nervous system, which is the thing that keeps man on top, is made largely of animal fat, and if you don't get any animal fat, you've got to eat an enormous amount of vegetable if you are going to get the same substances to build a good nervous system. So these people, these early hominids, who lived on meat and ate the fat of free-running meat, were able to build good nervous systems, and through evolution they learnt to throw their spears better and invent things, and they became the top race. So that was the second diet, and that went on for two or three million years. Then the population increased, and somewhere around the Nile valley they began to learn how to grow cereals—wheat which was derived from grasses; and instead of feeding the cereals to the animals which they had begun to keep, they started eating the cereals themselves. Of course, these were unrefined cereals, and our early ancestors, about six thousand years ago, did quite well on the early cereals.

Well, that was fine, and then about 60–80 years ago we had the fourth diet, which followed the Industrial Revolution, and the industrialized production of food which I call the Chemical Diet, and this is the diet on which we are now living. It may surprise you to know that the food manufacturers now put 20,000 different chemicals, new ones, which have been invented largely in the laboratory, into your food, and if you are living in a town, a big city like Birmingham, London or Liverpool, and you are dependent on the supermarket, you are going to eat 20,000 odd chemicals which our enzyme systems were not really designed to cope with. Our metabolism has evolved on an earlier diet, what I call a “stone age” diet—we are all stone age people inside, and if we confront humans

**with** these new substances which are really like drugs, I think that **there** is bound to be trouble. This is the theory I have been working **on** in my "Ecology Unit". I take a sick person who has been right **through** the hospital mill, had all the tests, been to all the **appropriate** specialists who say they can find nothing wrong and it **must** be in the mind. Of course this was old Freud, who gave us the **idea** that it was all in the mind, that it was what happened in the **woodshed** when you were a little girl; you envied your brother his **penis**, and therefore when you were thirty five you became **depressed**, because when you were four you had envied your **brother** his penis. Now of course, this is absolutely rational, the **most** reasonable explanation of mental illness! So I thought, well, **maybe** that's not right, it could be something else. Could it be that **this** food we're eating, this mucked-about stuff, with all these **chemicals**, is interfering with our metabolism, and possibly even **with** our nervous system; and of course, we have the example of **what** happened to the dinosaurs. I don't know whether any of you **have** read a marvellous book called *The Hot-blooded Dinosaur*—it's a **super** book. It tells you why the dinosaurs became extinct when they **were** most successful. People think they were reptiles, but they **weren't** reptiles at all, they were hot-blooded animals, and they gave **rise** to the birds. The birds evolved from the dinosaurs but the **dinosaurs** died out, and they died out because of a change in the **climate**. Because they were not reptiles, because they were hot-blooded, they could not survive, and their food supplies ran out **because** of the cold, and because they were largely vegetarian, **though** some of them were carnivores. What happened was that they **started** producing what our chickens are now doing, very thin-shelled eggs, and these eggs were so fragile that they burst before the **baby** was evolved enough to get out and live on its own. So the **dinosaurs** died out, and I think this is what is going to happen to the **human** race if we allow the industrialized production of food to go **on** at the present pace and to accelerate in the way it is. We will make **ourselves** first an inferior race, who will probably go under to some **race** like the Chinese, who arrange their food supplies more **sensibly**, and then we will die out. So really we haven't got all that **long** to change our ways, and this is why I am very keen on the Soil

Association, because they have for a long time been saying that we ought to change the way in which we produce our food, and we ought to eat food which is more adapted to our early history.

Now, that is a sort of preamble, trying to tell you what I actually do. I assume that it is the food that is causing the trouble, or the chemicals in the food, and I apply three criteria to the patients who come:

1) I take a diet history from the patient, find out what actually goes into his mouth. Then I make him fast, usually for five days. This must result in improvement and loss of symptoms, migraine, depression, or whatever it is the patient complains of, if there is a food allergy.

2) Specific sensitivity to a food can be assumed only if a test feeding of the food, by itself, more than three days after its elimination or exclusion, is followed by a return of symptoms within hours or minutes. This is the sort of testing I do—we call this “Challenging”.

3) The patient must remain symptom-free while restricting his or her diet to those foods found not to cause symptoms on test feeding.

Now that sounds perfectly reasonable—it’s something you can test—unlike the woodshed theory, it’s entirely testable, and if it doesn’t work, you say, “Well, it’s not food allergy” (which is what we call this subject) or, “It’s not Clinical Ecology.” If it does work, well then, it’s very simple. I have been doing this for long enough now to have built up a file of hundreds of cases who have lost their symptoms and who are kept well, not on drugs, not on operations, but on food to which they have been shown not to be sensitive, and this has usually turned out to be plain food, organically grown, and uncontaminated with added chemicals. This is where I link up with the Natural Food Movement, and the Soil Association, and so on, because they are the people who are actually providing the sort of food that I need to feed to the patients in my own department. Now, in order to do this work, you have of course got to have the co-operation of the Hospital Authorities (and this has been quite a battle). I have been to our Community Health Council in

**Basingstoke, and I'm glad to say they have backed me—they have done various things to try to shut me up, but they have all failed so far, and I think now that my work has been confirmed by a number of other doctors who have been down to see me, and who have gone away and done it themselves, I think that now they can't "shut the stable door", and that I shall even be able to expand this work.**

So what has happened in my hospital is that having got on to this idea long ago, in 1958, when touring in the U.S.A. trying to sell my other book *Eat and Grow Slim*, I was introduced to some doctors over there who had been doing this work since the 1920s and 30s, but nobody over here had even heard of it. I was introduced to a man called Dr. Ted Randolph in Chicago, who had a unit in which he did this. It was a hospital unit of about twelve beds which was specially screened for allergens, for airborne pollutants like tobacco smoke, petroleum fumes, the smell you get from new plastic hangings and furniture, nylon—all these things which have come into our lives in the last sixty or seventy years. These were excluded from Dr. Randolph's Unit, and he then fasted patients on nothing but spring water for five days, and then, if they got well, he would challenge them. In those days (in 1958) he used to make them sit down and eat the stuff. It took quite a time, because if they did react, and a lot of them did, and if they got ill again, then of course they'd got to get the stuff out of the bowel again by taking bicarbonate of soda and things like that. It was rather slow, so a bit later on they evolved a form of challenge which I now use, called the "Sub-lingual Provocative Food Test", which means you fast a patient, but then you take the foods which you are going to test, and you mash them up in a cup with some distilled water, and you draw the resulting solution or emulsion into a 10 ml syringe up to the 1 ml mark. You get the patient lying on a couch (you take the pulse beforehand) and put two drops of this stuff, say it's white flour mashed up in water, under the tongue. They have to be well, that is, they must have got well after the fast, and if they are allergic to the white flour or the additives in the flour, within two minutes they will go bonkers, or whatever it is they were before; they will start to weep, or have an epileptic fit, or come out in a rash, or become extremely agitated, or the pulse may rocket up to 130, or something

of the sort. Then you say, "Well, are you sure you are ill?" The patient says, "Yes, I am very ill, doctor" and then you've got to turn it off. So you dilute this stuff down in the syringe by a factor of 10 by drawing up distilled water from the 1 ml mark to the 10 ml mark, and you put that in, and this, for some extraordinary reason, turns off the symptoms, or usually. If it doesn't, you shoot down to 1 again, and you come up to 10 again (that's 1 in 100) and you give them the 1 in 100 dilution. That usually turns them off, and if it doesn't you can use oxygen inhalations, about 9 litres a minute through a Venturi mask, which is the sort of mask they use in hospital. Then they get better and you can do another test. So this is how I conduct my work. We get through something like six foods in an hour, and you can do more than one patient at a time—you can do five if you've got five nurses to sit beside the patients and doing five patients at once becomes like a party game; they're watching each other to see who is going to go bonkers next, who is going to start crying, that sort of thing. Having done that, and maybe done it several times, you try to build up a compatible diet for that patient. I always slip in distilled water, because all my psychiatric colleagues say, "Well, Mac, of course you are using mesmerism, aren't you? This is your bright eye that does it." And I say, "No, it's not that" and we slip in distilled water to make sure that it's not a psychological effect. I have never had a patient react to distilled water, and I must have done hundreds of them, so it's not psychological. Having done all these tests, you then sit down with the patient and say, "Look, there are your bad foods—milk, eggs, white flour, white sugar, or whatever it is; and here is your list of good foods—lamb, potato, tomato, beans, etc." You make them out these lists, and they hang them in the kitchen (of course, all the drugs have been stopped long since; they stopped them on the five-day fast).

I would just like to say, in conclusion, that the only patients I get are the ones that the other doctors have given up, and yet my success rate is something like six out of ten, which isn't bad. I must have been doing it now for four years in the hospital, and about ten years as a G.P., and we are now reaching a point where other doctors are doing it here, and there are about three hundred of them in the U.S.A.

## Review

### *The Essence of Yoga*

by Georg Feuerstein

Grove Press, Inc., N.Y. 1974

### *Textbook of Yoga*

by Georg Feuerstein

Ryder and Co., London 1975

Two new books on Yoga are particularly welcome now that there is such a widespread interest in its physical practice (Hatha Yoga) and some of its simpler techniques for mental control (the three stages of Yoga meditation).

Certainly much of it is superficial. “Keep Fit” classes and half digested “transcendental meditations”. An experienced Yogin pours scorn on a group of ladies exercising to reduce their waistlines, and there is a story of an oriental philosopher who has come to the West, and is discovered by one of his disciples sitting in a strange posture, having grown an enormous beard and a bush of hair. “Master, why this strange behaviour? Why the meaningless jargon, and why the peculiar robes?” and the reply, “Not so loud, my boy; they might hear you. Once these Western people begin to suspect that I am in real earnest, they will cast me out”.

So these two books are timely and welcome. For anyone seriously wanting to understand Yoga and to see it in its own historical setting they have much to give. But there are two difficulties to be faced: the first, which Feuerstein deals with—and I shall quote him—is that it

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is born of a civilization alien to our own, and it needs a great effort to set aside our own concepts to understand its background. The second is that Yoga is not something that one can with benefit read about and grasp intellectually. One must try to practise it if it is to make any sense. So three cheers for the ladies' keep-fit classes, and three more for those who regularly attempt to control and centre their thoughts and so discover how devastatingly hard it is, but nevertheless, manage not to give up.

To revert to the first difficulty: if we are to get anywhere we have to put ourselves to school, and set aside our own critical and largely intellectual apparatus so as to let it speak to us. Only after doing so, and pondering it, might it be useful to attempt to make some judgement, and that would be not so much a judgement about Yoga as about what in Yoga can helpfully be developed by us, with our Western, largely Christian, heritage. Even that must be tentative and humble.

So to the books themselves.

*The Essence* starts with what Feuerstein calls the "psycho-history" of Yoga; the unfolding of consciousness in a human civilization through its successive stages—the archaic, the magic, the mythic, and the mental. Mythical Yoga teaches renunciation by Self-realisation as "the only antidote to man's involvement in suffering". He describes the eight-fold path of Classical Yoga as set out by Patanjali, which culminates in "Ecstasy", which is the point of the whole exercise. Yet "it cannot be described, not even understood by those who lack the experience". This realization is completely distinct from "absorption" (comparable to intense Christian prayer) or normal consciousness. It is a merging of subject and object "which shines forth as the sole reality". It is an immediate, transparent awareness, and this step into the void is final and irrevocable.

In a fascinating survey of the history of how the indigenous people were invaded by Indo-Europeans, who were men of action, he shows how the tension between the two produced a continual creative impulse, rooted in the direct apprehension of Being.

The subsequent history is more fully developed in *The Textbook*. This gives details of the complex techniques employed by Tantrism, developed from the sixth century A.D., practical, and balanced

between sterile materialism (magic) and barren spiritualism (mysticism). It shows a living, developing tradition, always interwoven with a stringent insistence on the individual realization of Being. Its detachment is in the midst of action, as is supremely shown in the Bhagavadgita: "in action alone is your rightful interest, never in its fruits. Let not your motive be the fruits of action, nor let your attachment be to inaction". While its great tolerance of the means used to attain this realisation opens the door to extreme and unattractive stunts, it enables the Yogin to seek his own path and find his own guru. Its ritualistic treatment of sex seems to offer a refreshing contrast to the ascetic attempt to ignore it on the one hand, and to orgiastic indulgence on the other. An important development of Tantrism, in about our Norman period, concerned the Siddhis (the perfected ones), who aimed at the immortality of the body. "The transubstantiation of the body attempted by the Siddhis possibly has its biblical analogy in the ascension of Jesus Christ".

There is a brief account of late developments and of some of the great figures of Yoga in modern India which include Ramana, Paul Brunton's Maharishi of his "Search for Secret India", and Sri Aurobindo and the Mother, a French woman and "one of the greatest mystics of modern India".

Absorbing as this historical survey is, the last part of *The Textbook* is of supreme interest to us, Western men, seeking for what Yoga has to say to us today; for its implications for our own spiritual crisis. Take this, for instance: "Modern man has lost contact with the ground of his being. His self-alienation has progressed too far to be cured by an act of blind faith, be it in revivalist Christianity, in Zen, or in Yoga. How can one expect to actualize Transcendental awareness when not even one's everyday awareness is functioning properly? Copying the techniques and accepting the ready-made philosophies of the East is to play a dangerous game of make-believe. The other danger is to regard the Eastern mentality as inferior to the rational consciousness of the West. Both have their intrinsic value".

Or this—quoted from Jean Gebser. "The dilemma of modern man cannot be resolved by any human manoeuvres. The only solution is by actualizing the present mutation of consciousness, if



man is still capable of such at all. . . . To create the stepping stone into the new mutation in us requires a certain caution, much patience, the discarding of many preconceived opinions, many anticipatory wishes, many blind demands; and it calls for a certain distance to oneself and the world, a gradually maturing balance.”

The last chapter, “The Hidden Reality”, is concerned with the nature of the relationship between body and mind, and ends with an important but difficult passage on Kundalini Yoga, the serpent-power coiled at the base of the spine. It is worth quoting its concluding paragraph. “No school of Yoga has been subjected to graver misunderstanding and greater hostility from uninformed critics, both in India and in the West, than Kundalini Yoga. True enough, its principles and practices are difficult to understand, though they possibly hold the key to many of the problems with which contemporary psychologists and biologists are battling. No field of research on Yoga seems to hold out a better prospect of yielding real core information about man, which is so wanting today.”

So perhaps, at the end, one is left, like Socrates, knowing only how ignorant one is. And perhaps that is a healthy thing on which to end.

JOAN DISNEY

## Comment

### The scientists and the saucers

*Theoria to Theory* has published several articles referring to the UFO phenomenon. There is an aspect of this on which I wish to comment.

The flying saucer as we know it began in 1947 in the United States, with the sighting by Kenneth Arnold. Thirty years later, after numerous governmental and private research initiatives throughout the world, a massive literature on the subject, and, according to the computer catalogue of the Center for UFO studies in Chicago, more than 80,000 observations, we are still no nearer an understanding of *why* people see flying saucers. Individual cases often appear highly impressive, involving multiple observations, qualified military personnel, radar sightings, air pursuits and the like, yet the phenomenon as a whole is extraordinarily elusive. When one penetrates through the layers of second-hand reporting, few cases can be found which are even remotely convincing. Professor J. Allen Hynek used the analogy of radio noise, and said that research must identify the "signal" in that noise; others have used the "80,000 people can't be wrong" argument, including Paul Davies in *Theoria to Theory* June 1975, assuming that there must be some external stimulus giving rise to UFO observations. Practically all of those who have written on the subject, scientists and laymen alike, share a belief that the subject can be solved "scientifically": if the phenomenon exists, it can and must be studied in a rational manner, by application of the rules of scientific methodology. Paul Davies, for example, writes: "If competent scientists could sit down together in a sensible atmosphere without any beliefs or preconceived opinions and study properly-organized data presented in the appropriate way, then the

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long and meaningless debate about UFOs would soon come to a welcome end.”

Yet when Jaques and Janine Vallée wrote “Challenge to Science”, I doubt whether they envisaged that “Science” would be as resoundingly defeated as it has been in its confrontation with the UFO phenomenon, and in my opinion this failure is due to a consistent misconception of the subject of study. The issue is not so much one of whether the phenomenon “exists”, as of how it is perceived. The impression one has looking at the attempts that have been made to investigate UFO’s is of the confrontation of two myths—the myth of “Science” and that of the UFOs themselves; and the consistent victory of saucers over scientists—people do, after all, still see saucers—is, I think, one that calls into question the whole idea of “Science”.

In the literature and among lay UFO researchers, among witnesses and the general public, “Science” is ambiguous. On the one hand, it will “solve” the problem of the UFOs, on the other hand, it cannot. The UFO is a kind of trickster, an elusive visitor perpetually cocking a snook at the stuffed-shirt scientists who pursue it with theodolites and computers, and solemnly proclaim that it does not exist. In a society where the dominant myths are scientific, it is the people’s champion, a technological Robin Hood. It is, as many scientists dimly perceive, irrational, and they condemn it as such.

As anyone who has dealt at first hand with UFO observers will know, the observation is more than the simple perception of an airborne object: it is an experience which is lived by the witness, sometimes a profoundly disturbing one, usually associated with a personal crisis, or with a crisis occurring to the whole society: most major waves of UFO sightings can be fairly well correlated with political and social crises of one sort or another. It is not my purpose to contribute to the sociological and psychological debate on the “return of the angels”. The real significance of the UFO controversy for our understanding of the modern, technological society we live in, is more the persistent level of public belief in the existence of the phenomenon than the particular observations themselves. A number of writers have commented on the resem-

blance of UFO cases to older patterns of supernatural experience, but it would, I think, be a mistake to assume that the core phenomenon is some form of physically real stimulus subject to varying interpretation. The modern UFO is, paradoxically, a supernatural experience expressed in a form that is implicitly natural—the extra-terrestrial spaceship.

Our dominant myths are scientific and technological, and few these days would admit to seeing or believing in the existence of boggits or goblins. A UFO, however, has greater respectability. It is apparently technological, it must and will be studied by Science.

The scientists deny that there is any evidence for the existence of UFOs, the partisans of the UFO retort: how do you know, you haven't studied it? It is a dialogue of the deaf. In a recent BBC documentary on Erich von Däniken, millionaire entrepreneur of the Ancient Astronauts, the issue was clearly, albeit unintentionally, expressed. To controvert von Däniken, the BBC interviewed two scientists, although arguably a psychologist or sociologist would be better qualified to comment, and Isaac Asimov angrily asserted that the growing tide of the irrational was undermining the work of the scientists in saving civilization. Certainly, many scientists feel disquiet at the UFOs, Ancient Astronauts, Loch Ness monsters, Bermuda Triangles, Yetis and Uri Gellers that proliferate in the reading and viewing of the general public, but the ritual exorcism of them as "irrational" or "unscientific" is surely inadequate. The ambiguous attack on "Science" that such beliefs represent suggests that the world has not, as Max Weber said it would, become "disenchanted", and that there continues to exist a deep psychic need that the myth of Science, technology and progress does not meet.

The UFO is a protest of incomprehension by people's concern at a world of which they have lost control. If part of that loss of control is represented by the threat of a nuclear holocaust, part of it is also the remoteness of the scientist, a man who in mysterious and ill-understood ways influences their lives, and—if there is a lesson to be learnt from the "80,000 people can't be wrong" argument, it is as a protest against the "Science" that has itself become a myth, ill-explained to, and misunderstood by, the public. Until that gap is closed, the revolt will continue.

*Note:* The following could be added to Paul Davies' excellent booklist:

*Passport to Magonia*—Jaques Vallée

*The UFO Controversy*—David Jacobs

*The Unidentified*—Jerome Clark

*Status Inconsistency and UFO Observations*—Donal Warren ("Science" No. 170)

*Merseyside UFO Bulletin*—1, Braddon Ave, Urmston, Manchester.

BRIAN JEFFERY

*St. Catherine's College  
Cambridge*

## Sentences

J. A. HERBERT BELL

*I am not blind. I am registered as partly sighted. I cannot see to read a newspaper under any circumstances. Handwriting in black well formed letters, or black print I can see with a magnifying glass. I can see people, as it were, as small "trees walking". I can distinguish them by their shape, and sometimes by the colour which they wear. Children's eyes who know me, shine like two stars. What makes children's eyes shine, while mature eyes do not?*

*When a good neighbour offered to read aloud to me, we disputed what book we should read. I decided that we should read "The Travel Diary of a Philosopher" by Keyserling. We came upon the passage where the author tells of his temporary blindness, and of how he regretted the prospect of returning to full sight. My mind was alerted. I knew what he was talking about. My half blindness was giving me something which was lacking when I had full sight. This was "the advantages of blindness"—a phrase taken from the index of Keyserling's book.*

*The first advantage of blindness is that it enables a person to know where he stands in the physical world which surrounds him. Perception through the senses is the only method by which the brain knows what is going on. The eye forms a picture of what we think is going on around us. But it is a small picture. There are other eyes which belong to other living creatures, which can tell more than our eyes can tell. A hawk's eye in the sky can see things on the ground; minute objects of prey which no human eye could see. Ingenious persons have invented the telescope, by which the human eye can see that which it would not naturally see. What natural eye can see the moons of Jupiter?*

*Human eyes vary in their power of seeing. Crossing a ridge of the Southern Alps, night overtook us as we approached the precipitous descent into the valley. Frank Kingdom Ward, who had lately come from exploring "The Land*

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*of the Blue Poppy", took the lead and led us safely down, while we were blind. But the best eyes are blind. So are our other senses.*

*It was the pheasant's ear which caught the sound of bombs dropping during the war, seconds before we were aware of it. Some persons have a brain or an ear which can distinguish chords and tones apparently from infancy. Others of us are dull-witted in the matter of hearing. None approaches the dog or a wild animal in its capacity to hear what is going on. We are all deaf as well as blind. A dog's sense of smell shows us that our noses are almost completely blind. There appears to be another sense by which a bat flying in the dark escapes bumping into our faces or the wall, and which guides the bee and other non-human creatures on their way to their food or breeding places. So the first advantage of blindness is that it shows us where we are in the physical universe in which we live. The first advantage of blindness, then, is that a blind person is realistic.*

*When we could see, we thought we could see much of the universe, but through blindness we perceive how little we could see when we had good sight. In our far-sighted way we tried to penetrate the mystery of creation, and soon, quite soon, we got out of our depth. There was more of creation to which our vigorous sight was blind.*

*Another advantage of blindness is in the matter of adventure. Adventure is when a person oversteps, or tries to overstep, the boundary of his senses. The astronomer knows what he has seen through his telescope. His adventure is when he pictures to himself the mysteries of the space between the stars. The runner runs as fast as he can. If he runs faster than his heart will allow he collapses. He has gone too far, defying the limits of what his brain and his senses ought to have dictated.*

*The biggest adventure which I have had concerns personal relationships. When a person has full sight he is surrounded by a sea of faces. Blindness reduces their number. Each one stands out as an individual.*

*For several years when I went for a holiday in North Wales, I made a practice of going alone up the central gully of Glyder Fawr, to test my ability.*

*I once experienced complete blindness in the daytime. We had gone up to a mountain ridge expecting to find a track to the valley below on the other side. We came to the summit and we were blind. There was bright cloud and nothing else. We could not tell whether there was a flat snow slope in front of us on which we could walk, or a precipice immediately at our feet. We were*

*blind. I threw a splinter of rock into the dimness. The consequent light and shade showed us that there was a gentle slope down into the valley.*

*I learnt to go carefully in rough places sixty years ago. We had crossed Les Ecrins, and night overtook us when we were in the stony desert at the foot of Glacier Blanc, and I learnt how impossible it was to distinguish a boulder from a hole in the ground.*

*In the Alps, sometimes with a guide, the adventure was shared. Descending the broken face of La Grivola with Malcolm Slater, I set my foot on a rock as big as a house which slid away beneath me. I was alert enough to withdraw my foot and the danger passed. An advantage of blindness is that such adventures, which have seemed far away in the past, come back to the present. I was going alone in Tyrol in June before the summer bridges had been replaced. I came upon a dangerous glacier stream about to flow over a precipice. I debated whether I could jump over it safely. I calculated its length and the power of my muscles and did so. The mental effort I used then is not unlike the mental effort I now use when I set out to cross a street in the middle of Cambridge. Blindness brings physical adventures nearer home. Friends whose company sweetened travel have now given way to the kindness of the world. When a stranger touches me to guide me across Market Street to avoid the danger of the traffic, I want to embrace them with the whole human race for its kindness.*





## Notes on contributors

IULIA DE BEAUSOBRE (Iulia Michaelova, Lady Namier) was born in St. Petersburg in 1893. In 1932 she and her husband Nikolai de Beausobre were imprisoned by the Soviet authorities and he was shot. She came to England in 1934, and married the historian Sir Lewis Namier in 1947. Her books are "The Woman who could not Die" (about her imprisonment), "Flame in the Snow, A Russian Legend" (about St. Seraphim of Sarov), "Lewis Namier: a Biography", "Russian Letters of Direction" (a selection from the Starets Macarius, translated and edited with an Introduction).

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PRATIMA BOWES is Reader in Religious Studies in the University of Sussex, having previously been Lecturer in Philosophy. She studied in the Universities of Calcutta and Pittsburgh, and besides articles in philosophy has published a book "The Hindu Intellectual Tradition" and has one on "The Hindu Religious Tradition" forthcoming.

JOAN DISNEY studied mathematics at Lady Margaret Hall, Oxford, and taught mathematics and history in high schools and training colleges, until she married, went to the Sudan, brought up 5 children, taught in a Training College and, during the War, inspected girls' schools in the Sudan. She is now retired and living near Salisbury.

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# THEORIA to theory

VOLUME 12, NUMBER 2

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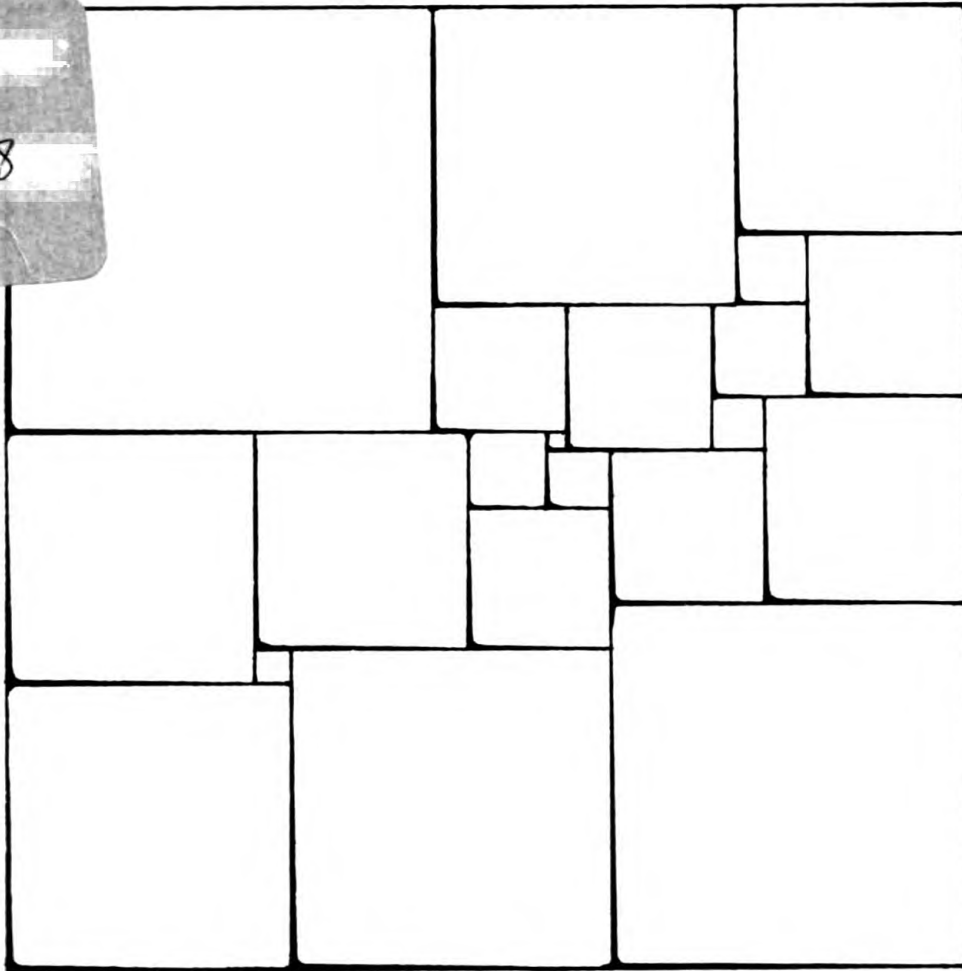
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## Editorial

In the Editorial to *Theoria to Theory* XI i and ii (the double number), which started our second decade, we said we were resisting the trend in philosophy and science to retreat into increasingly specialized and abstract sub-categories of specialisms: academic specialities “proliferating into pointlessness”—and we were going to try to see what it would be like for applied philosophy to attempt synthesis. In that number we made various suggestions as to how we could do this. One was the interdisciplinary dialogue. Another is by groups of people having brainstorming sessions in which they try to show each other the detail of what they are doing in their own fields, and see whether they can detect a convergence of underlying principles. If so, they must then be prepared to go much further in looking at each other’s work in detail to see whether any suggested convergence is more than a vague analogy, since only then can they draw comparisons between the principles shown in each other’s examples, and analyse these same examples by their own methods.

So far so good. There then followed three articles written independently, but brought together in one symposium; in the first Margaret Masterman used an example of a simile taken from a hymn to illustrate reiterative and stress patterns in language, which might be very exact, in the sense that they might be detected by a computer. In the second article Kathleen Russell distinguished structures which, following Arthur Koestler, she called “holons”: reiterative patterns with sub-patterns repeated, with variations, in the successive movements of a classical ballet. In the third article Margaret Bottrall in a literary criticism paper on Gerard Manley Hopkins as a metaphysical and religious poet in fact showed (without this being her direct purpose) how Hopkins relies for his effects on reiterative patterns of stresses. So there was a common

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synthesizing general idea—reiterated patterns picked out with stress points—illustrated in all three articles. In the symposium each of these authors described their methods of analysis by applying them each to a particular example, but they didn't get to the point of discussing each other's examples. They wrote academic type papers in which each independently brought out, in her own field, the factors of reiteration and stress, but they did no more. Moreover, judged as papers of an academic type introducing new approaches, both Margaret Masterman's and Kathleen Russell's were highly compressed. It was clear that they showed new ways of looking at language and dance, but they could not develop new approaches.

The editorial group therefore returned to rediscussion of the nature of synthesis. In the end, in XII i we picked up again the question of getting new topics into philosophy, and since this is a policy matter, we shall take stock of what we said there. We recalled our original challenge in our very first editorial about the need for philosophers in our present culture, having *curiosity*. We connected this with looking at what was happening both on the frontiers of science, and in developing new science, where revisionary ideas are nearly always called for, which could eventually affect philosophy itself. And there is great need for this. For philosophers nowadays still tend to assume that the common sense ways of thinking are sacrosanct, when in fact the case is getting stronger and stronger for saying that these have been largely conditioned by out-of-date science.

But the problem remained: *how can new topics calling for (or actually producing) revisionary ideas be introduced?* One method is that of the recently published *Encyclopedia of Ignorance*. Here you have a very large number of juxtaposed short papers, none of which can do more than call attention to the need for new approaches and for new concepts. The authors of such articles may not only say they are needed, but also suggest them, but they do not and cannot develop them.

If, however, neither the dialogue, nor the separate academic-type article, nor the short encyclopedia-type article is producing this progressive development in synthesis which it is agreed we need, what else could we do?

The answer is that we have now decided to try the programme of philosophical serials as we said in XII ii. In these a new approach is presented much more slowly in instalments, and readers were invited to try the new techniques themselves. This has been done by Margaret Masterman in the subsequent development of her original "Reiterative Analysis of a Simile", where the style now differs from the compressed abstracting style of Part I by giving a step-by-step progression almost without notes and references. (These will presumably come right at the end, where a final article of a more academic type will look at the interest of the series for philosophy.) This serial has already aroused a great deal of interest, especially in quarters where people interested in the foundations of natural language, on the one hand, and in possibilities of developing an interlingua for machine translation, on the other, are having to come together. The reasons for this appeal are shown in what Margaret Masterman says at the beginning of the instalment in this number.

So the first serial has indeed aroused interest and practical comprehension, though not yet in the public for which it was originally designed. Nevertheless, partly encouraged by this, and partly for its own sake, we are now publishing the first instalment of a second serial, in the shape of a series of articles by Fraser Watts. He is a senior practising psychologist at King's College Hospital, London, and is concerned with the "divorce" between views of human personality which are based on people's religious experiences and most of the views current in experimental psychology. In spite of this gap, he believes that some of the approaches in the newer Cognitive Psychology contain possibilities of rapprochement, and he proposes to try and show this in the successive instalments of his serial. He has been a reader of *Theoria to Theory* for some time, and he sees it as being pre-eminently a journal in which psychologists and psychiatrists who want to make this connection might try out their ideas.

So it seems as though this form of the applied philosophic serial which we have initiated does have a role to play in the promotion of synthesis, provided that it does not make too high a demand on

readers of individual numbers of *Theoria to Theory*. We should be grateful to receive readers' reactions on this.

. . . . .

In this number we also have a discussion with Tudor Rickards of the University of Manchester Business School, who, with many others including de Bono, is developing a new subject under the claim that it is possible to teach human beings "Creativity"—or at least some kinds of creativity. We start examining this claim, and are hoping that this discussion in its turn will lead to a follow-up. If it does, we may have a third serial.

It seems already possible that some of the serials will eventually turn into books or monographs. But it must be emphasized that they are not books being serialized in instalments. They are too exploratory for this; they show the actual stages and difficulties in pioneering new subjects which can be tried out here *in statu nascendi* before they become formulated in books, and they invite comment and collaboration as they develop. The nearest analogy would be some kinds of lectures—not many, as lectures are mostly expositions of the state of an art for teaching purposes. But even the exploratory kind of lecture is given in a particular place to a particular audience, and audiences are not usually able to participate with paper and pencil.

In other words, philosophic serials, like the narrative serials of the Victorian novelists, are a new form on their own with their own style. At a later stage we shall be approaching publishers to gain their opinion as to the prospects of publishing works written in this style. In that case, readers who collaborate with the writers of the serials will have helped in the writing of the books.

## Discussion

### Teaching creativity

TUDOR RICKARDS of the Manchester Business School talks to TIM EILOART, BERYL GREEN and members of the Editorial Group (Q)

*Q.* The title of this discussion arose out of a suggestion of Tim's, who said he thought creativity was being taught in industry. *Theoria to Theory* is an applied philosophical journal, and some of us want to ask Tudor Rickards whether he believes that creativity can be taught to a far greater extent than people realize, because this is a philosophically important claim. Or is what is being taught really a practical form of general education? There can, therefore, be a stronger or a weaker claim.

*Tim.* Tudor, tell us something of your methods, and perhaps you can tell us what you think can be taught, both in terms of general education and of "philosophy".

*Tudor.* I am not sure that "teaching creativity" impinges on what I do at all. I am very worried about what one teaches. I offer something to students, and as a shorthand I offer the term "creativity". To a certain extent I feel I am playing some sort of a game with them within the formal system in which they have to be assessed. What I want to do is offer the fruits of some experience I have gained in industry to a group of young people within the University system. This has been derived mostly from work with industrial managers concerning themselves with the development of new products, industrial artifacts, and I became interested in "creativity" as a means of producing these artifacts. My concern at

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the time was not with the essence of the process, but the value of the product. When I moved to an academic environment, having had this pragmatic attitude, I began to read as widely as I could what people in various fields had had to say about creativity, and the first observation I made was that there seemed to be several paradigms besides the industrial one, which was very messy indeed. I believe the idea of creativity in its industrial application can be handled with fewer inconsistencies if you take it as referring to some kind of internal process, and if you take the artifacts produced by it as almost incidental. If you start from saying creativity is an internal process by which individuals, either by themselves or as part of a group, arrive at some new interpretation of part of their universe, then there are fewer complications than if you start by talking about the creative product.

*Q.* What do you mean by a “creative product”?

*Tudor.* Sometimes it is defined as something produced in a “creativity session”. This bothers me—people seem prepared to say, “That is a creative kettle” because someone invented its whistle, but you then have to say things like, “Can you have more and less creative kettles?”

*Q.* It raises the problem of what would be a creative man.

*Tudor.* Exactly. Don Mackinnon, the American psychologist, in a summary speech in Manchester recently told us,<sup>1</sup> after twenty years studying what he called “the creative personality”, he would urge us not to bother about the niceties of definitions of creativity but to seek questions to which empirical research can provide some answers. If we start with creativity as some sort of inner process, I feel happier. About twenty-five to thirty years ago there was an event which exercised the Americans very much: the Russian launching of Sputnik. The President of their Psychological Association stood up and said, “It is ridiculous that we can’t be as creative as the Russians”. As a result vast amount of money were passed around psychological institutes and so on. Coming out of that, one particular school established some sort of supremacy in terms of practical industrial applications, and that was the one at the University of Buffalo. They were led not by an academic, but by an advertising executive called Alex Osborn.<sup>2</sup> In the 1950s his system

for stimulating creativity became very popular and swept industrial America like a disease. Osborn identified lots of problems of individuals and groups of people trying to come up with new ideas, and suggested that their social pressures led to suppression of new ideas.

*Q.* Did he get together selected groups of people interested in some problem, or were they just groups taken at random?

*Tudor.* Osborn said that any group of people could produce better ideas by using a method he called “brainstorming”, which had certain rules.

*Q.* Could you say briefly what the system and the rules were?

*Tudor.* No, but I can describe it a bit. Osborn wrote a book which sold over a million copies called “Applied Imagination”,<sup>2</sup> in which he claimed imagination could be simulated, both within the time scale of a single brainstorming session, and over a much longer time scale as practitioners develop more open behaviour towards the world outside the formal sessions. Very simply he said brainstorming was a conference technique in which a group of people tried to generate a wide range of ideas in as uninhibited a fashion as possible. The rules were in essence: (1) Criticism is ruled out (as far as possible). (2) Judgment is deferred. (3) Each person tries to integrate the ideas which are being produced with his own flow of consciousness—in the American expression “hitch-hiking”. (4) Finally, more as an exhortation, “freewheeling” is encouraged.

*Q.* By “freewheeling” do you mean speculating?

*Tudor.* Yes.

*Tim.* Doesn’t it also mean wandering deliberately away from the point? You don’t have to stick rigidly to, “What is creativity?” but you can talk about, “What is teaching?” or even, “What is freedom?” but you all know you are going to come back to the point.

*Q.* Is it sometimes fantasy?

*Tudor.* I want to come to fantasy later. For the moment, let me just say that the initial notion of brainstorming was in a way important just because of its superficiality. People who thought they could never produce ideas found they did. But there is no evidence that the work of Osborn regularly produced insightful or exciting



ideas. It was more a matter of self-discovery. There are, I believe, a range of techniques which ultimately stemmed from this. One I have just come across: a group of scientists who say that every fortnight they have a “punch-up”. Its rules were almost the opposite of brainstorming.

*Q.* Everyone interrupting everyone else?

*Tudor.* Yes. It creates a licence to operate in a certain way. Brainstorming enabled people to sit down together in a room for two hours when some of the fears of the day were shut outside, and it may be this, rather than the rules like “Postpone judgment” and so on, which helped them. Osborn was very careful not to say that brainstorming directly stimulated creativity, but his followers have drifted into this.

*Q.* Is industry more open than, say teachers, to new ideas, as they may end with a saleable product?

*Tudor.* Ironically, industry doesn't want too many new ideas. Its public face is that everyone wants them, but in fact often what is needed is the idea with the minimum risk to get over the current problem.

*Q.* I suppose one problem is that if you are going to develop the idea, you may have to put a lot of money into it, and you can't do this with too many ideas at once.

*Tudor.* Yes. Also, if you have a great ability to generate new ideas, you may be less committed and motivated to pushing one through. I have noticed this with some very bright people in industry. If they produce a new idea and the organization criticizes it, there is no need for them to defend that idea; they can always generate another one.

*Q.* Sir Charles Darwin once said, “What this country needs is more second-rate scientists. The first-rate ones are a nuisance”.

*Tudor.* Your second-rate scientist may have an idea once in ten years, and persist over it.

*Q.* I don't think people who have original ideas should be down-graded in a discussion about “teaching creativity”. Surely creativity, at least in the abstract, is a good thing, even if in actual behaviour it has to be tempered by other qualities.

*Tudor.* Quite so.

*Q.* Freud, in talking about creativity, described ways of breaking down repressions which in some ways were like the methods you describe. He saw them as ways in which people could regress to being more like children. Now Henry Ford used to wander round the factory, chatting, looking around, and so forth, and most of the ideas in his notebooks show a childlike mind, full of strange connections. In his case this had a great deal to do with neutralizing time, getting rid of clocks, of pressure, like a child playing. In his mind this had to do with more general things, about what he believed about life. He wrote in a notebook, “If you truly ask, you will always be guided”. He believed in reincarnation, so he believed he had all the time in the world over lots and lots of lifetimes to develop lots and lots of motorcars, so he wasn’t worried.

*Tim.* But he then had the production line, and how does that abolish time? What did he mean?

*Q.* He wanted to produce cars instantaneously; that was how he hoped to abolish time. It means in the early days he had very little organization, and people were encouraged to work out their own time. There were no titles or positions in the company, no particular rôles or pressures. Everybody was encouraged to do what they were best at. But later it ended up with a great speed-up and pressure on the production line.

*Tudor.* I think this point about “play” is one of the most interesting aspects of the question. What type of psychological service is this regression producing? Are there two types of regression, one of which is beneficial and one which slips into fantasy which doesn’t serve any useful purpose? One type of playfulness seems to link the individual with reality and the other to be an escape from it.

*Q.* It might be that ordinary playfulness doesn’t go into the depths of the personality. The delusional playfulness does—but it may also be not delusional, as when dreams can sometimes be veridical in telling you things. So one can’t just accept sedatives for the second and encouragement for the first, but you want to know when you are doing which.

*Tim.* Can we come back to the link with teaching?

*Tudor.* Some writings of the “Creative Problem-Solving”

school derived from Osborn tended to keep personalities and techniques separate, and treat the techniques in a very mechanistic way, and assume teaching has taken place as a result of using them. But my feeling is that there is a great deal of value in thinking about the personality characteristics of people who get creative ideas, and the concepts I find exciting are willingness to risk, tolerance of ambiguity, determination. If there is any kind of learning that takes place through regular practice of these techniques, you should be able to evaluate it through appraisal of how people using them end up, whether they develop certain personal qualities.

*Q.* What is tolerance of ambiguity?

*Tudor.* Willingness to live with uncertain situations, and not jumping to decisions where there is insufficient information.

*Q.* This is related to withholding criticism and letting a thing develop in your mind. When you should jump on people and criticize them, when you should let them have a run to develop what they are trying to say, even if it is vague; in teaching there may have to be alternations here.

*Tudor.* Some years ago I was very hostile to the test-and-criticism attitude, but I have changed my position. I think if you are able to develop a student's confidence, the criticism is very important.

*Q.* Teachers often pull students to bits when they are in the fallow, developing stage, and then when they have the creative idea, the teacher doesn't see it.

*Beryl* There were two things I learnt in my first year of teaching. One was that the pupils were learning in spite of me rather than because of me. The other was that, although my pupils were only six years old, some of them were very much more intelligent than I was. Only when these facts were grasped could I begin to teach in any meaningful way. Presumably in teaching creativity there has to be awareness that the students are learning outside the structure of the course and that by the very nature of the problem a receptive teacher will indeed be a creative one too. Coming to what we were saying about fantasy: it was said it should be encouraged in brainstorming, as the one time it can safely be encouraged. When I went into architecture I realized that when you get out into practice,

you are not going to be allowed to be fantastic. The great advantage in brainstorming sessions is getting people away from their backgrounds or their usual management structure so they aren't thinking about what will jeopardize their jobs. Then in architecture, and I suppose in industry, you have to be thinking about where there is scope for evolutionary change—is it in the methods, or materials, or processes?

*Tudor.* One of the difficulties is to realize that the changes may not be along the lines of the old professional specialisms, but in rethinking what the field is.

*Q.* Can you say some more about the actual product very often being a spin-off of the creativity? This would show why people are wrong who ask, “Why should you go to the foundations and tackle the deepest and most frightening problems?” If you have dragged these into the light and you do get a spin-off, it can seem a quite simple matter of application. Your researchers will have the peace of knowing there aren't any awful fundamental problems awaiting for them. In World War II Bronowski was chairman of a technical committee that was supposed to be producing a new bomb device. He said, “Let's spend a year going into the theory of this”, and all the Service people said, “We are in the middle of a war”. He said, “Suppose you don't produce it after a year, you will know a good deal more about why, and that may lead you on to produce it. But if you charge ahead and produce your bomb device and it doesn't work, then you have wasted your year”. They voted him down, but he asked for the discussion to be minuted. They made their bomb device and it didn't work, and in the meeting after a year, he read them the minute recording that discussion. So I think people like you have got to go into the relation between tackling the deep problems you may be frightened of, and then getting people into the state where there is a spin-off, as opposed to starting with the spin-off, so that when it goes wrong you don't know why.

*Tudor.* I think one of the things that has gone wrong is that the techniques have been seized on as a way of evading the deep issues, and people have been enticed with the offer of instant creativity.

*Q.* The people in industry who are letting the fundamental speculation go forward have got to know what they are doing, and

the people who are doing the fundamental speculation have got to realize industry is paying for it, and be aware that they are doing something that may eventually be helpful.

*Tudor.* There is also the question of relating something called a “creative problem-solving technique” with the creative process in the development of personality; for instance, how you set up an operational mechanism to instruct someone to postpone judgment.

*Q.* Like being told to go to the corner of the room and not think of a white bear.

*Tudor.* Sidney Parnes,<sup>3</sup> Osborn’s successor at Buffalo, suggested that what we seem to be doing is trying to create a *mental set to break set* I believe brainstorming has a much humbler practical use with groups than the immediate generation of exciting new ideas—an efficiency device, normally for “cobbling” problems, which enables you to organize a group of people to behave robustly, without too much selection, and get them to generate some sort of ideas quickly, and then one can connect this output with more traditional kinds of evaluation.

After “Brainstorming”, interest moved to other techniques (there are now between 20 and 40) in which one can see the same rationale. One is called “Synectics”, and another is “Lateral Thinking”. Synectics is interesting because the originators have some claim to have operationalized psychological states that lead to new ideas. William Gordon, working for Arthur D. Little, took a large number of tape recordings of conversations between engineers working for the company, and also encouraged them to talk on tape to themselves.<sup>4</sup> He concluded there were definable psychological states during the process ending with a product. The best known is the use of metaphor. Now there is a difference between using metaphors naturally in the course of thinking, and saying deliberately, “Let’s think in metaphors”. Nevertheless in Synectics managers are encouraged to do the latter. I ran a session for the invention of a new kind of pump for a factory that wanted to be able to measure the effluent it was pouring out into the river. To think in terms of metaphor, we said, “Let’s think of something different from ordinary pumps that could catch and measure

something”, and we thought of how a spider traps a fly, and from this developed a mesh pump that before discharging it trapped that sort of effluent.

*Q.* How is a mesh a pump?

*Tudor.* The mesh part was distinct from the suction; the spider’s web suggested the mesh, but the suction hadn’t anything to do with the fly. The idea was of a certain kind of cobweb-like mesh. So Synectics tries to make the familiar problem strange, and the strange familiar by finding a new similarity.

*Q.* But also by using your nous about *which* metaphor. What exactly does “Synectics” mean?

*Tudor.* Bringing things together which had seemed unconnected. My intention in sessions is to suggest metaphors that take people away from their usual mental sets. The leader of the session must be an expert in doing this, but not involved in the problem itself.

*Q.* But he will be in their universe of discourse; the spider’s web was a very engineering notion. You could safely free-wheel because you were subconsciously an engineer.

*Tudor.* In a good group you need someone with a genuine problem and others who can stimulate him with random suggestions.

*Tim.* The originator of the method said, “Let’s take different kinds of people. They could be, for example, a housewife, a boy scout, a biologist”.

*Beryl.* What you are trying to do is accelerate something which is going on all along. An inventor has a puzzle that comes partly out of his background and education, and he has a sense of intense discomfort. He may spot something when he is on a walk, say, that seems unconnected, and that is a point of illumination. You are saying your group will throw in a number of ideas which will intensify this process.

*Tudor.* Gordon likened it to speeding up the incubation before the moment of insight. The person with the problem has to seize on the metaphor among those thrown up. (This can strike him first at a subliminal level.) The rest of the group have to be prepared to be servants to his need.

*Tim.* He may evaluate what comes up, but very often it won't have come from him.

*Tudor.* In practice, people will try and tell him what his problem is and this makes him defensive and spoils the process, in which he has to make the connection.

*Q.* What about really intransigent problems of a social kind, such as areas of high unemployment or urban ghettos? Can these techniques help?

*Tudor.* One problem is that most of these techniques are highly verbal. Take, for instance, Lateral Thinking. It had its origin with de Bono in Cambridge, who says Lateral Thinking is a route to practical creativity which can be learnt, practised and internalized. He thinks he can get people to break away from stereotyped views by using his techniques, which tend to be individual rather than group.<sup>5</sup> For example, he holds that a problem-solver can introduce a random element into his thought—one way would be to open a dictionary and select a word, and find a relation between it and a new perspective on the problem. I demonstrate this by asking people, for instance, to take a child's rocking chair and think up new ideas for one. Most people come up with new structures for a rocking chair. Others convert it to a different use. There is a range of possibilities; for instance, "Add a little potty under the seat", "Give it a horse's head". The next part of the exercise is to think of something reasonably tangible which cannot be linked to the rocking chair. Whatever is suggested, someone in the group will find a way in which it might be connected; de Bono's point is that we change our focus by admitting something normally excluded.

*Q.* Aren't you demonstrating something more about language? The Massachusetts Institute of Technology generated a set of random sentences like, "She makes boilers, and is tragic and a new leg", and you had to tell a tale in which this was the final clinch, and in time you always could. This tells you more about the stretchiness of the meaning of words than the stretchiness of the universe.

*Tudor.* It seems that if you can encourage people to become more aware of the stretchiness of words, this can help them in the way they perceive things.

*Beryl.* Is it also a question of visual things and not only language? When you were talking about your rocking chair, I happened to be looking out of the window at that stack-pipe with a cage on top; immediately what flashed into my mind was, take a ball, put a stick through it and a little chair on top of the stick, and then you would have a rocking chair. It is very limiting to think of our means of communication only in terms of language.

*Q.* Do you encourage people to draw pictures, for example of their rocking chairs?

*Tudor.* Some people will. Some are much more concerned than others with the physical shape of the object.

*Q.* If you start with language, you are all too likely to end with language, a poem, for instance. If you start with objects there is some faint hope you may end with one, and though the product may be a spin-off, you are concerned to get a product. What does de Bono say about this?

*Tudor.* He is rather silent about his theoretical basis. He sees Lateral Thinking as a practical device although it seems to me that he is influenced by the Gestalt psychologists.

*Q.* But what we want you to say is how this relates to products. Metaphors are essentially a device of language, but if you want to create a product, what more do you do?

*Tudor.* Managers often have a false notion of the connection between the first idea and the development of the product. They think you have the idea and you must go out and see if it is good or bad, as though it was created *in toto* and had to be so judged. I passionately believe in the acculturation of the idea before you move to the artifact, and this process requires accommodation of the original idea to all the forces it will have to meet in the real world. There is a big gap between the first idea and the product. Unfortunately people identify with the idea and resist any modifying to accommodate it to fit a culture. This may explain why people are seduced by techniques. If they believe the technique is a short cut to the product, it is a convenient scapegoat to say the technique hasn't worked and to stop developing the idea further. It is very important that one approaches creativity with a sense of the responsibility to develop an idea further and push it through.



*Beryl.* One of the exciting developments in architecture has been when there has been a new concept of some purpose. In medicine and education, it gave rise to new hospital design in the nineteenth century and new school buildings in the twentieth. But when you talk of “following through”, is this always done after awareness of the need? Two station masters were playing about with the just invented telegraph and then when a criminal had to be caught on the train, they telegraphed down the line and showed how useful it was.

*Q.* One of the ways of seeing things in a new light is to look at what the consumer might need, and consult groups of consumers, and find out what they would like to see invented.

*Tudor.* I try to get technological people to do this, but they aren't too keen on it. It is surprising how what they believe is the scientific ethos pervades all their thinking.

*Beryl.* Also advertisers are prepared to spend money to sell the product, not to spend money telling people they don't need it.

*Tim.* What interested me was when you said there was the temptation to look at the easy aspects of something and avoid the difficult ones, and that might be a reason why people like techniques. Besides asking people, “What do you need invented?” it would be interesting to ask students, “What do you need? For instance, would a daily swim help?”

*Tudor.* We have talked about this general problem, but approached it obtusely rather than head on. A useful method is Kelly's “personal construct theory”. Assume people have sets of constructs in interpreting the world, shown, for instance, in how they contrast things.<sup>6</sup>

*Q.* That is language again.

*Tim.* You take, say, your mother, your father, your best friend, your worst enemy and two others, and think of two things which your mother and father have in common and one which separates them; for example, both are argumentative, both tall, but Mum is kind and Dad is unkind. Then you know that this person thinks in terms of these words, and a lot of people have only a very small set of constructs.

*Tudor.* We ask a person after a day's work to think of the things we and he have been talking about over the last two hours, and say

which are alike and which are different, and so elicit his key constructs. This can show that what you thought you were teaching was quite different from what he was picking up. But this doesn't answer your question, Tim, about finding out what students need. Educationalists, particularly Americans, pay lip service to this, but I don't think much is really done about it. I am trying to work out ways in which my students can devise their own assessments, in so far as they are still having to work within the rules of the system, and write a self assessment essay on what has happened to them over the course. One of them shows the assessment system is impossible—I haven't yet broken the news to the external examiner.

*Tim.* What specific points have been made?

*Tudor.* I may be misrepresenting his case as it only arrived on my desk shortly before leaving for this meeting. The general argument though has been made by most of the group, I think independently. On one level the artifacts from the option have been up to my expectations. We (and I include myself) have been able to supply a list of over a hundred ideas for possible uses of a certain range of chemicals to a local manufacturer. Some have already been thought of, but quite a few are promising and new to him. There have been other examples of problems tackled leading to action by someone outside the group—at the request of the School we supplied a strategy for re-marketing the doctoral programme to attract a wider range of applicants from industry. And one of the students has been offered a piece of New Product Consultancy. But we reject this as a means of assessment—for one thing it assesses me as well as them. Now there remain the self-assessment essays. The point is there is no objective yardstick against which a student can judge his performance. Maybe you can't *prove* the yardstick does not exist—but we certainly cannot find one. Some were discussed and quite rightly rejected in my view. How hard one worked, and perceived improvement in idea generation skills for instance. Neither can you accept the traditional yardstick of demonstrated comprehension in the subject matter being taught—I don't feel able to say precisely what that is.

*Q.* Does this bring us back from the techniques to the fundamental issues?

*Tudor.* The students said in their essays they didn't see themselves using the technique when they graduated, but what they had got from them was valuable.

*Q.* Were they able to say what this was?

*Tudor.* Yes. Flexibility of ideas and multi-dimensionality instead of seeing things in black and white.

*Q.* If the result comes out in a set of introspective diaries you are teaching, as well as literary ability, self-analysis, hopefulness, confidence. You might connect these qualities with creativity by saying it is the natural state, and what you are doing is removing blocks. But in so far as it is like the creativity that made Beryl Green just now imagine a ball with a stick and a little chair on it, a glorious drunk rocking chair, I'm not sure this will come out in what you are giving, which is really spiritual training.

*Tudor.* It is in things like autonomy—self-dependence, confidence and accepting responsibility. It is changing the way you work with other people, for instance, listening to them.

*Q.* Besides getting a technique which may be effective, you find you are developing certain personal qualities, and this will probably mean you must have a conviction about what you are doing. At the back of the Osborn methods, there was surely a general assumption that the kind of products they wanted to produce would enhance life. There are places where this underlying philosophy breaks down, but in teaching you must surely be assuming that some of the products are desirable.

*Tudor.* I look on this part as the individual solving his own problems, and he has to decide whether the products he wants are what he can approve of.

*Q.* But if in fact what you are giving is a general spiritual training, then it will impinge on other parts of the personality, and questions about the value of industry will come up sooner or later. This kind of questioning can only be limited if there is a common background philosophy which assumes that *all* this kind of production isn't wrong, and also that the personal qualities the students are developing may help them when they come to question certain things in industry.

Can I recap? At various points I think the strong claim is

justified: that there is something called creativity that can be taught to a greater extent than is realized, and you have shown some devices by which this can be done. In this context it would be worth separating out what teaches people more about language, and what teaches them more about various sorts of realities. But now you seem to be saying that it is really a matter of bringing out the ancient lore about spiritual training.

*Tudor.* I agree that a lot of this is a re-invention of early doctrines.

*Q.* There is what you do when you have got to come up with a creative idea by ten o'clock, and what you do to develop into a more creative person over the next ten years. Many would think these two would cut across one another, but you have been saying they are linked. What is new in what you have been describing is that these discussions in groups can help people to be imaginative as well as providing criticism of ideas. If you have a mediocre group the tendency will be for them to concentrate on criticizing. In singing, the capacity to sing better depends largely on the capacity to listen to other people singing. One of the troubling things about democracy is that people's mediocrity is shown by the extent to which they immediately criticize and never listen.

*Tudor.* We seem to be moving into deeper waters. The discussion has helped me to re-examine the significance of the industrial techniques in stimulating ideas. I have no hesitation in suggesting that as a group we have also succeeded without the deliberate application of techniques in producing some good and new ideas—certainly the point about confronting, rather than evading, the deeper questions is important. I hope we can continue, and perhaps we would make some sort of impact on the deeper issues of creativity in industrial and educational contexts.

## References

1. MacKinnon, D. Invitation Lecture at The Manchester Business School, October 1976.
2. Osborn, A. F. (1967). *Applied Imagination* (3rd. Ed.) (Scribners, New York).
3. Parnes, S. J., Noller, R. B. and Biondi, A. M. (1977). *Guide to Creative Talent* (Revised Edition of *Creative Behaviour Guidebook*) (Scribners, New York).

4. Gordon, W. J. J. (1961). *Synectics* (Harper and Row, New York). Rickards, I (1974). *Problem Solving Through Creative Analysis* (Gower Press, Essex, U.K.).
5. de Bono, E. (1971). *Lateral Thinking for Management*. (McGraw-Hill, New York)
6. For a comprehensive series of papers on Construct theory see Slater, P. Ed. *The Measurement of Intrapersonal Space by Grid Technique* Vol. 1 and 2 (C. J. Wiley and Sons, London and New York, 1976).

## **Reiterative Semantic analysis of a simile**

### **Part IV**

#### **The fourth instalment of a philosophic serial**

**MARGARET MASTERMAN**

**The three distinctions which have to be made within syntax**

As was said at the beginning of Part II, the object of developing this technology (i.e. the use of an online reactive text-editor which can handle natural language text) was to enable contemplatives to learn to use the machine as a “conceptual telescope” to explore the foundations of language: since the machine can remember more, create more flexible mechanisms, persist longer and operate faster than a human being can. My overall object in undertaking this philosophic serial at all was (and, I insist, remains) not professional but spiritual; namely, to promote the deeper understanding, by contemplatives of all faiths, of the layered and resonant way in which they themselves, when praying, use liturgical language.

That is what I said. Unfortunately, I underestimated the keenness of computer-men, dreaming of new uses for micro-processors, to find out more about the nature of natural language by as much as I overestimated the willingness of my “fellow-meditators” to use an imaginary machine.<sup>1</sup> The result is that, partly because of writing this serial, my own life has changed and, in a sense, improved: not (alas) spiritually, but professionally. (Members of the counter-culture who,

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acting also from genuine spiritual motives, design alternative energy devices which are then unexpectedly developed by industry will recognize here a counterpart of their own situation.)

However, whatever keen-type computer-users do or say, the contemporary religious situation remains. This is that, if we are to maintain integrity in the religious quest at all—and, as well, gain credibility about it—we need to know much more, and in an adult way, about our own contemplative use of liturgical language. Moreover, it has turned out that (as in Tolkien) “allies have appeared where they were least expected”. Exactly the text-editor which I have created in imagination has actually been made, by Professor Ned Davison, at the University of Utah,<sup>2</sup> though his text-editor does not have the splendid names for its operations which I have used here; it uses acronyms. In the same geographical neighbourhood, namely at Salt Lake City, members of the Mormon Church have implemented and are operating the only multi-lingual Mechanical Translation system which is actually functioning anywhere: this has been set up to translate that Church’s sacred books into all languages. And, within the special world of Christian Biblical scholarship, if you look at *Technical Papers for the Bible Translator*, vol. 28, No. 3, July 1977, you will find there an article by Alice Laffey, where she uses italics, indentations, and other printing devices to recover the rhythms and rhetorical punctuation of the Biblical verse and prose.<sup>3</sup> Finally, on the matter of my suggestion, made in all seriousness, of using the text-editor, not just as a word-processor, but as a telescope, listen to this quotation from Richard Bailey’s 1973 edition of *Computer Poetry*:<sup>4</sup>

Computer poetry is warfare carried out by other means, a warfare against conventionality and language that has become automated. Strange as it may seem, our finite state automata have become the poet’s allies in this struggle, *the long historical battle by which mankind pries into the surface of language to reveal its latent mysteries.* (italics mine)

I suppose that, of all forms of language, most people would say that liturgical language is the form which has become most completely conventionalized, most fully automatic. And yet. . .

And now I must ask contemplative readers of this serial (if there be any such) really to flex their mental muscles; because this is the

point at which the enterprise of “probing into the surface of language” begins to be difficult. For we must now use the text-editor-turned-telescope to cause us to get a new and more general view of the nature of syntax.

### 1. A text-editor-based philosophy of the general nature of syntax

Since there has been pretty well continual discussion of the nature of syntax by keen minds, operating from within many cultures, and over at least three millennia, it is not possible here to summarize it. Instead, I will give an impression of what syntax looks like when you have to handle it mechanically with an imaginary text-editor.

#### 1.1. The polarity of syntax

*Syntax veers*, in differing languages, *between two polar points*. At one pole, you get syntactic information from the grammatical inflections which the root of a word can have (using the word “inflection” here philosophically and generally) no matter what the position of that word in a sentence. At the other pole, you get syntactic information from the position of a word in a sentence, no matter what the actual shape of the word is. Thus, in Latin, which is an inflected language, such a word as “portabant”, “they were carrying”, will be a plural verb in the past imperfect tense, and with this meaning, no matter where, in a Latin sentence, it occurs: whereas in old Chinese, which I mimic here in English, you might get such a sentence as “Ghurkha man chieftain tank cannon”, where (assuming that we could create, at will, an English verb “to Ghurkha”, or “to Ghurkha through”, meaning, “to display the kind of daring, resolution and resourcefulness in war which the Ghurkha are famed for displaying”), every word in the sentence could be noun, verb or adjective, and also either singular or plural. Of course no real natural language is either, syntactically speaking, totally inflectional or totally positional; word-order is used to convey emphasis, even in Latin: and there are particles (function words) as well as root words (content words) even in Chinese. But one can easily imagine some inventive small child creating two languages where, for short



sentences, *either* the word-order is arbitrary or everything else is; and it is roughly speaking true of the extraordinary world of language that any device of word combination which can be invented in it by a small child will probably be found, in the end, actually to exist somewhere.

So, looking at syntax generally, there is this inflection-position polarity.

### 1.2. The two aspects of syntax

Still looking at the matter generally, as well as the two poles, *there are also two aspects, or components, of syntax*. The first component is that part of syntax which always consists in procedures for creating one-dimensional groupings of words in order to create, from them, larger groupings, and also of devices for interconnecting the groupings; and which does not vary, in fact, from language to language. The particular devices and procedures used will, of course, vary, but the fact that there will be some procedures in every language which will have these overall objectives, this does not vary. The second component of syntax is therefore whatever in it is empirical and local; it consists of all the particular procedures which are used syntactically, either, grammatically, to label words, or functionally, to group them, and which differ very much indeed between language and language. It is a matter of argument where you draw the line; but what the use of the machine has shown (and this is a hard lesson for Europeans to learn) is that this local, empirical component includes what philosophers are accustomed to call “the universal subject-predicate principle”. The “subject-predicate principle” was a discovery; it is not part of the basic one-dimensional glue which holds words in all languages together. In the simile, analysis of which forms the theme-song of this serial, the poet, by inversion, has deliberately subordinated the subject-predicate grouping to the reiterative grouping; and in thesaurus-based Information Retrieval it is not used at all. In the mechanical translation system, moreover, which has been installed at the Chinese University of Hong Kong to translate Chinese papers on mathematics and physics into European languages, the Chinese pre-

editors insert subject-predicate structural indicators, as well as singular-plural number indicators, into the Chinese ideographic texts before these are input to the machine, “because Chinese is not a subject-predicate based language”.

It is cardinally important, for those philosophers who want to take account of the full facts about language, to realize that the subject-predicate structure, though it occurs, and with varying degrees and sorts of development, in many languages, still forms part of the local syntactic component of language, not of the universal component. Whereas (say) the habit of recapitulating backwards, against the general forward direction of the flow of speech, to recall some feature of some emphasized word or group of words which has occurred earlier, this syntactic habit can be found in all the languages which I know about. It is philosophically important to become aware of such distinctions as this, because if one does not, one shuts one’s eyes, in the end, to the variety and beauty of alternative syntactic patterns which language, and languages, can in fact display. For it is both true that there are exact, subtle and developable syntactic grouping-patterns which are free to establish themselves as soon as language ceases to be syntactically confined by its syntax being built upon the subject-predicate principle; and, alternatively, as Charles Fillmore, in his paper on *The Case for Case*,<sup>5</sup> has shown, there is a luxuriant brilliance of syntactic variety of structure which can be built up, starting from the subject-predicate principle. A true philosophy of language, then, will force us to take account of both of these fundamental forms of syntactic grouping—let alone of other fundamental forms which may turn up, not just of one; as also of the real place where, as is now becoming clear, the line has to be drawn between the local component of syntax, and the component of it which is universal.

So, as well as two poles, there are two components, or aspects, of syntax; the local and empirical, and the universal.

### 1.3. The two layers of syntax

As well as two poles, and two aspects, *syntax*, seen generally, *has also two basic layers: an abstract layer, and a concrete layer.* The abstract,

“upper” layer is that where abstract procedures are used: the concrete, “lower” layer is that where actual meanings are conveyed. A moment’s reflection should suffice to show that the distinction between the two layers is not the same as the distinction between the two components. For not only can it be shown quite easily that, of the special, local syntactic procedures of any language, some of these are abstract and some are concrete; but also, it may well turn out to be the case that some concrete procedure (such as, for instance, that of referring back to the speaker [in English, by saying “I”]) will be found to have their counterpart in all languages, and so, though concrete, will also be universal.

The place to look for the distinction between the two layers is in the action of features of language which belong to both layers. Thus, the universal and abstract habit, mentioned earlier, of recapitulating back, with pronouns or particles, against the general forward direction of the flow of speech, can be modelled by constructing bracketed character-strings, the relevant regions of which are marked with backward or forward or two-way-pointing arrows (see on this also below). But if the pronouns, or demonstratives, which are used thus abstractly for recapitulating are also concrete in that they convey actual meanings, they will belong also to syntax’s lower layer. Thus the English singular nominative pronoun “he”, as well as being used, normally, for recapitulation back (i.e. as an arrow) also, normally, informs you that some kind of single male entity has been mentioned earlier in the text; and some recapitulating particles are even more concrete; such as the famous ancient Chinese particle reserved for reference back (one would suppose, in a hushed voice) to recently judicially severed heads. And, of course, even gender-systems have these two layers within them: the abstract layer which says, “This word belongs to the such-and-such grammatical class”, as does the neuter gender of the German word for a girl, *das Mädchen*: and the concrete layer, which could indicate that, in some more accurately referential gender system, it is a single small girl running fast that we are talking about. And finally, of course, in any pure positional language, where inflectional devices would just not be there, it would be the meanings of the root words themselves, and the ways in which these can or cannot

combine, which allow or do not allow of their being placed in particular positions and which therefore constitute the concrete layer of syntax. For even if it is the case that, in such languages, syntactically speaking, it is position which alters syntax, it is just not, semantically speaking, true that any word can combine with any other. In the quasi-ancient Chinese sentence, for example, “Three acre farm plant such (i.e. in English ‘any-such-with’) mulberry”, which was an ancient Chinese edict to encourage the cultivation of silkworms, it is just not the case that, semantically speaking, any word can go anywhere: though it is the case that “farm” and “plant” can be, in English noun, verb or adjective, and “three”, “acre” and “mulberry” adjective or noun.

So syntax has two poles, two aspects and two layers. It is of course important, once you use a machine, to become aware that this is so: but it is important also, once you become a philosopher looking at yourself using a machine, to become aware also of the differing ways in which knowledge of the existence of these distinctions has to be obtained. Thus the conception of “layer” forces itself on one even if one is thinking only in terms of structures and meanings within one’s own native language; in a sense, therefore, it is the most immediate, most near at home, of the three. The distinction between universal and local aspects of syntax is by contrast a comparative distinction: it comes up, above all, when automatic translation between two widely differing languages (say, Latin and Chinese) is being planned for. The first distinction is queer: because though, at first sight, it looks as though it is also, like the second, a type-distinction between languages, in fact, as I said earlier, nearly all languages are hybrid. In particular, in handling English, which is changing with increasing speed, as the centuries pass, from being an inflected language to being a positional one, both types of device for handling syntax have to be catered for.

Once one is aware both of the existence of these three distinctions and where they come from, one is immediately in a strong position to make a text-editor handle syntax. Thus, firstly, to handle both inflection and position, within the syntax of a single language, namely English, the programmer must “split” the English inflection-based parts of speech in order to equip each word, in

English, with a position-based specification of its capacity to extend its syntactic range. Moreover, as well, programming devices must be used to detect the presence of “positional complexes”; since it is relative position within the text, not absolute position (such as we detected in using CUTINHALF), which is in question. Secondly, to determine the boundary between what is universal and what is local, the text-editor must at all costs get itself into a position to compute separately two quite different types of construction, one universal, one local: and then to map the second on to the first. The first of these will be a nested bracket-pattern, mirroring the stress-pattern produced by PROVISIONALLYPUNCTUATE, but, containing, as well, three varieties of arrow, and, where needed, additional syntactic boundary-determination dotted lines. The second of these will be (for English) a hierarchical subject-predicate-based sentence profile, made of smaller-scale breathgroup long syntactic contours; with the peculiarity that the units-of-language used to construct this sentence-profile will consist neither of words, nor of numbers, nor of any part-of-speech markers of the ordinary kind, but of uppercase alphabetic one-letter or two-letter combinations, each combination of which syntactically stands for a whole English word. And here there is an interesting point to be noted; which is that, whereas philosophers and grammarians who belonged to cultures of dominance have tended, for centuries, to identify the syntax of their own native language with all syntax, the arrival of the machine has produced a new grammatical “moment of truth” about all this, as well as inducing a new and long overdue humility. For now, if you want to make your text-editor multi-lingually process syntax, you must put as little as possible (i.e. only what you feel pretty sure really is universal) into the universal syntactic component; and assign everything which you feel even faintly doubtful about to the local one. For “up-grading” procedures which turn out to be universal after all, because they keep on recurring in all languages, this is easy; whereas “down-grading” misplaced, and therefore chaos-causing local procedures which have obtruded themselves into the universal component of the syntactic analysis of languages which have no features counterpart to them, this is difficult. So it is not always the case that technological devices dehumanize, or produce arrogance.

Finally, we come to what is mechanically the most extreme and complex, and generally most dreadful, case of exploratory text-processing, which is that of making the text-editor distinguish layers. For to do this, you need to have two quite different codings, one of which can indeed be the same alphabetic uppercase coding, as was used for the special component (for the abstract layer) but the other of which must be in terms of quite different units called "semantic primitives". Moreover, with these, you must not only create quite a different type of construction from any construction which you have created up to now; but, as well, as soon as you begin to "do semantics", you and your machine will both have to enter a whole new, dynamic, many-layered "universe of discourse". This is deep down below the perceptible "surface" of any language; though, according to me, the quasi-wave motions of these deep and non-perceptible layers do in fact leave traces "upon the top" of any stretch of language which they underlie.

Since we shall be spending the whole of the rest of this serial exploring this new layered and pulsating reiterative semantic "universe of discourse", I am going to forget completely all about it for now. I am going, therefore, to concern myself only with (1) making the text-editor cope with the polarity of syntax, and (2) with making it construct both universal and local syntactic patterns. I shall not try to discover any universal concrete features of language which would merit insertion into the universal component; nor shall I worry about the exact degree of concreteness or abstractness which may exist in the subject-predicate-based local one or try, at this stage, to distinguish between them.

That the shape-forming and tune-forming powers of man should be able to create and handle all this huge amount of multifarious complexity, by discerning and superimposing it all on the single one-dimensional flow of speech, this is matter for awe, but not a reason for disbelief; for (see virus genetics) this is just the kind of thing which nature does. And we are both part of nature, and also spiritual beings who can change nature, not least by making use of this same capacity for language.

This ends my text-editor-based theory of syntax: now for its application.

**Syntax Range Specifications and their use; subject-predicate sentence-profiles, and universal bracket patterns: using the text-editor to probe and process syntax**

Consideration of all these mechanisms must be left for next time. Nevertheless (as I did earlier about punctuating, at the end of Part II), I give here a preview, to enable the reader to make a guess as to the kind of thing that occurs.

(a) Here, after Rutherford,<sup>5</sup> are the Syntax Range Specifications of some particularly volatile words of English :

BACK	WILL	LESS	ROUND	WHICH	MANY	AS
H	J	B	G	DB	BP	DG
I	Q	C	SG	DC	CP	E
S	TP	S	T	DG	P	G
T	WS	Z	WS	FA	S	N
W			Z	FB	ZP	R
Z				FC		S
				QA		
				QB		
				QC		

where the interpretation of this coding is that given below.

#### Comment on the coding

The syntax code used here is a two-letter code where, for actual insertion into the machine, the code-letter of any coded item where one letter stands alone, is doubled. (Thus, for instance, the code letter for a preposition, which here is just G, is put into the machine as GG.) The first letter of the code is called its *key code letter*: the second letter, when it differs from the first, will be called its *adjunct code letter*; and the text-editor must be imagined as having the facilities to consult either or both.

Of the adjunct letters, *-S* stands for “singular”, *-P* for “plural”, and *-R* for “reflexive” (i.e. “first person”, “the speaker”). The rest are key codes for one part of speech used as adjunct to the key code for another. For instance, since *V* is the key code letter for “past

participle”, and Z the key letter code for “adjective”, VZ stands for “past participle used adjectivally” (i.e. in a particular position in a particular type of complex).

The full syntax-code table, which will be given in the next instalment, shows very clearly what happens to a set of inflection-derived parts of speech when the inflected language to which they refer “goes positional”. It has not been complicated unnecessarily: on the contrary, it has been kept as streamlined as possible. Nevertheless, English is already shown as now having 54 “parts of speech”; and, to deal with the occasional unforeseen rare construction which is bound to turn up, is almost sure to require more.

The particular codings used in the six Syntax Range Specifications given above, are the following:

- A Article or Determiner
- B Nominative Pronoun
- C Accusative Pronoun
- D Relative Pronoun
  - DB as subject of clause
  - DC as object of clause
  - DG used with Preposition
- E Conjunction governing Adverbial Clause (Adverbial subjunct)
- F Conjunction introducing indirect speech
  - FA used as Determiner
  - FB as subject of clause
  - FC as object of clause
- G Preposition
- H Post Verb
- I Post position (when not a post verb)
- J Auxiliary or Modal Verb
- ✓ Co-ordinating Conjunctions used in pairs
- ▷ Pre-initial
- ∩ Interrogative Pronoun
  - QA used as Determiner
  - QB used as subject of clause
  - QC as object of clause
- ⌘ Other co-ordinating conjunctions



- S Adverb  
     SG Preposition used adverbially  
 T Verb in unmarked form  
 W Noun  
 Z Adjective

(b) Here are the S.R.S. of the words in the phrase “for cooling streams”, taken from the simile, and here is the operation used to parse this phrase, as part of the operation of finding the sentence profile:

FOR	COOLING	STREAMS	<i>Additional Codes Used</i>
G	U	WP	U Present Participle
H	UV	YS	UV Gerund
R	UZ		UZ Used as Adjective
S			YS Present Singular Verb

*The procedure*

1. Search for the sequence G Z W (i.e. for a preposition, followed by an adjective, or other word used as an adjective, which governs a noun). [Other sequences, of course, which are not found, are also sought for]

*Result:* G UZ WP is such a sequence.

2. If the sequence is found, remove all other syntactic possibilities from the S.R.S. of the words of the phrase.

*Result:*

FOR	COOLING	STREAMS
G	UZ	WP

(c) Example of a syntactic testing procedure, used to correct a provisional punctuation-boundary.

*Test 1:* Can the stopword be a Gerundive or Participle? (i.e. does the S.R.S. of the stopword contain a *U* or a *V*?).

*Result:* If so, apply Test 2 (if not, continue with the program).

*Test 2:* Has the word before the stopword the stressvalue 2?

*Result:* If so:

(i) move the punctuation cut *forward* one word, so that it now comes before the old stopword;

(ii) insert a [0] after the new stopword, to form an artificial new dropword between new stopword and old stopword.

Example;

*provisional cut*

OF	THE	QUEEN'S	GUARDS	<i>stopword</i>	MARCHING /
0	0	2	2		6

*dropword*

IN	THE	MALL , /
0	0	2

*corrected cut*

OF	THE	QUEEN'S	<i>stopword</i>	GUARDS /
0	0	2		2

*dropword*

[0]	MARCHING	IN	THE	MALL , /
	2	0	0	2

(d) Here is the universal bracket-pattern of the first half of the simile, to show the kind of thing which a universal bracket-pattern is. It is not asserted, of course, that, of two stretches of text, one of which is a translation of the other, each would have an identical bracket-pattern. What is asserted is that, even if the two languages were of widely differing syntactic types, the bracket-pattern of the one could be mapped on to the bracket-pattern of the other; whereas their local and specific analysis (if, for example, they had differing sorts of parts of speech, and/or a quite different conception of what a word was) might not be directly comparable with each other at all.

AS PANTS THE HART FOR COOLING STREAMS  
WHEN HEATED IN THE CHASE,

→(X)(x(X)) / (x(X(X))) / ← (X)(x(x(X))) ][

(to be continued).

### References

*Note* Having eschewed references at the end of Part II, as unsuitable for a philosophic serial, I have now come back to the use of them, but from a new angle. It seems to me that references which are as it were “thrown up” by the serial, in that they arrive because people have read or heard of parts of it, are in a different category from references used to provide academic support or prestige for the serial.

1. I was over-pessimistic about my fellow contemplatives. Katharine Wilson has written a letter which I hope will be published in T. to T.
2. Ned J. Davison (University of Utah). *Modular Programs for Individual Researchers. Do-it-yourself programs for scholars unfamiliar with computers. Abstract*: “A presentation of a simulated keyboard terminal interact session in which various simple operations are performed on poetic texts to provide graphic displays for enhancing instruction in the internal structuring and management of conceptual, thematic, imagistic, and phonic materials by the poet. The emphasis is on the use of the computer by scholars relatively untrained in computer matters, and on the individual on-the-spot formulation of inquiries and the immediate response to them”. Paper presented at the Fifth International Symposium on Computers in Literary and Linguistic Research, the University of Aston in Birmingham, 3–7 April, 1978.
3. Alice Laffey, *Printing: a tool to recapture the spoken word, Technical Papers for the Bible Translator*, Vol. 28, No. 3, July 1977.
4. *Computer Poems*, gathered by Richard W. Bailey, Potagannissing Press, Pidgeon Cove Box, Drummond Island, Michigan 49726, 1978.
5. H. C. Rutherford, *Syntax Analysis, by Computer, based on word-order and segmentation*, C.L.R.U. workpaper, 1970. I use this coding because it was custom-built by Dobson and Rutherford for doing exactly this kind of operation. But there are many other differing kinds of computer codings for English syntax. The ones most closely comparable to Rutherford’s are those currently being used in U.S.A. for automatic content-analysis of texts.

## **Psychological theory and the religious mind I:**

### **Attitudes to "success" and "failure"**

FRASER N. WATTS

The divorce between devotional theology (the way in which Christians talk about the spiritual life) and contemporary academic psychology seems almost total. The phenomena and concepts that are dealt with in these two fields do not seem to have any points of contact. However, I believe this state of affairs is both unnecessary and regrettable. In this series of short articles I want to begin to draw some connections.

First, I need to say something about what I mean by contemporary psychology, as the record of the Church in psychology has generally been rather indiscriminating. In brief, the problem is that much of what passes as psychology is just opinionated speculation. To confound things further, there are many psychologists with considerable practical skills who, when they come to write about their work, throw intellectual caution to the winds and set down their arbitrary views as though they were well-established facts. Faced with this appalling situation, mainstream academic psychology has emphasized the importance of objective, impersonal methods of scientific verification. Unfortunately it has often tried to use the same methods to make scientific *discoveries*, not fully realizing that this part of scientific work demands a different approach from that appropriate to verification. Discovery necessarily depends on personal imagination and intuition, though this does not necessarily mean that it is subject to the distorting effects of personal biases—as the Goethean approach to science has shown (Lehrs, 1958). One

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regrettable consequence of the unnecessary restriction to impersonal methods of discovery is that psychology has tended to concentrate on relatively trivial phenomena. Though these weaknesses in mainstream, scientific psychology need to be remedied, I believe that it is nevertheless the best place to turn for an empirically correct psychology amid a morass of speculation and is the kind with which this series of articles will be concerned.

I want now to examine some aspects of the religious experience of living with God. What I shall describe is what I have found in Christian spirituality, though it is probably also found in other religions.

The Christian is inclined to see his words and actions, not as his own, but as those of God working and speaking within him. Christ has now no body on earth but ours. It is the task of the Christian to make himself a channel through which God's Grace can work, His deeds be performed, His word be spoken. This affects the way the Christian approaches his decisions. Rather than deciding for himself what it would be best to do, he considers what the will of God is trying to work in him and abandons himself to that holy will. When he approaches life in this way, the Christian experiences a certain liberation from his previous capacities, finds that in the strength of God he can do things that he could not have done otherwise. He may thus find himself led to great achievements. But he may also find himself led to do things which would normally be regarded as foolish. However, the Christian, acting in the strength of God's Grace, does not see his actions in this way. Rather, he always gives thanks to God, whatever he is called to do, whatever eventualities arise.

I hope this Christian stance will be recognizable from this description of it. Much of it can be found in St. Paul, also repeatedly in the mystical experience of the presence of God and in the evangelical experience of walking with Jesus. I want now to re-examine and re-cast this religious experience in the context of cognitive theories of motivation.

Recent years have seen a growing awareness of the power of such theories (Weiner, 1972). The best way into this work will be through the question of how people attribute their successes and failures.

Here, the distinction between attributions of events to internal and external factors has been especially prominent (Rotter *et al.*, 1972). In much of the experimental work in this field chance has been taken as a typical external attribution and personal ability as a typical internal attribution. As would be expected, when a person believes his successes and failures are due to chance they do not make much impact on him and he learns little from them.

Now, at first glance, the religious person seems to be attributing everything externally to God. Is he then in the same position as someone who attributes his achievements to chance? Does God function merely as a kind of *personification* of chance? I think it will be helpful in achieving a clear understanding of religious motivation to see why this would be mistaken.

One important confusion in the dichotomy between skill and chance has already been picked up by Bernard Weiner (Weiner, 1972). Chance, besides being more external than skill, is also more temporary and fluctuating. Consider how effort should be classified, when for example you write off a failure as due to a lack of effort. As regards internality or externality it should be classified with skill as an internal attribute. As regards stability or variability it should be classified with luck as a variable attribute. We thus need a category of variable, internal attributions. If we also establish a category of stable, external attributions we have what is perhaps the most satisfactory place in this simple conceptual framework to place attributions to God.

Weiner has been able to show that the internal/external dimension is the more important one as far as emotional reactions such as pride and shame are concerned (internal attributions leading to stronger reactions) while the stable/variable dimension is more important as far as estimates of the future probability of success are concerned (experiences attributed to stable factors having more effect). I think this takes us some way towards an understanding of how the religious position, with its tendency to attribute successes and failures to a stable external agent, God, avoids *both* the strong personal emotions of pride and shame associated with internal attributions *and* the hopeless fatalism associated with variable attributions.

However, we cannot make any further progress as long as we continue to use the dichotomy between successes and failures we have used till now. One of the distinctive features of the Christian position is that it puts you, for much of the time, in the position of not knowing whether your actions are good or bad. There is a strong conviction that actions have implications that go far beyond their immediate and obvious consequences, often beyond what can be discerned. What may appear as a failure to the person concerned, may play an important constructive purpose in the longer-term purpose of God. The reverse is also true, i.e. the Christian realizes that his apparent achievements may work against the purposes of God. We can get some psychological handhold on this outlook from work on the perceived relationship between immediate and distant future success (Raynor, 1969). Where a person sees little connection between immediate achievements and distant future or, presumably, God's eye results, reactions to both success and failure are more muted. He is neither very eager to succeed nor is he scared of failing. This stance, like the tendency to external attributions, makes it possible for the Christian to detach himself from the egocentric emotions frequently associated with success and failure. It is a step towards a position from which, like St. Paul, he can always give thanks to God, whatever the outcome.

Look now at the likely implications of this position for the Christian capacity to engage in what, in the current jargon, is called "pro-social" behaviour. Recently there has been a lot of research directed at the problem of why a person who finds himself a bystander at an emergency in a public situation (e.g. someone being beaten up in the street) is pretty unlikely to do anything to help (e.g. Latané and Darley, 1970).

In brief, it appears that the potential risks attached to getting involved in the situation (if only the risk of making a fool of oneself) are greater than those of remaining passive (provided the situation is not one that you can be expected to feel any explicitly personal responsibility for). Self-concern makes people less likely to help in such a situation (Berkowitz, 1970). Now it seems that the lack of concern with personal success and failure may free the Christian from the kind of self-concern that puts a break on helping other

people. In addition, the range of situations in which the Christian feels personally involved may be enormously extended by the sense that all humanity has the same Father God. There are many notable Christian "altruists" such as Mother Teresa who describe this convincingly.

Another factor that is very important in such situations is whether people judge that they have the personal resources to cope with the situation. It is a general principle that peoples' response to a potential threat is determined partly by their estimate of the demands being made on them and partly by their estimate of their ability to meet those demands (Lazarus, 1966). There is much evidence (e.g. Stotland and Canon, 1972) that increased self-confidence enables people to react to challenges in a more constructive and less defensive way. Now, in most people, there is a close connection between the kind of achievement motivation that attributes successes to personal ability, and the kind of self-confidence that enables people to react to challenges constructively. However, the Christian stance has a way of avoiding the horns of this dilemma. As Lazarus (p. 101) has emphasized, estimates of personal resources also take into account the support we can count on from other people. The Christian, taking into account the presence of the God working within him, has enough confidence to be able to act constructively without this being a narrow *self*-confidence. (There is an alternative version of this point that has quite a wide currency, that God teaches the Christian first to love himself so that he can then love other people. However, this seems to me to be lay psychology dressed up in religious language rather than authentic Christianity.)

The kind of religious motivation I have tried to describe is probably not very common. It is clear that religious people are, psychologically, a very varied group (Dittes, 1969). One would not expect to find much of this Christian motivation among merely consensual believers or church-goers. Even among the more devout, other kinds of religious motivation would be found, such as a belief in the need to do right and avoid sin in order to stay clear of God's judgement. However, this can be regarded as a primitive kind of religious motivation, primitive developmentally (Duska and



Whelan, 1977) and primitive historically (i.e. characteristic of pre-Christian rather than Christian religion).

I suspect that the heart of the kind of Christian motivation that I have described is the *experience* of doing the will of God. If you experience this, it will follow quite naturally that you will see your actions as those of God within you and attribute them accordingly. It is difficult to say much in psychological terms about doing the will of God, difficult to find any everyday psychological phenomena against which it can be set. However, it is probably an essential part of the experience that it involves the whole personality and brings thoughts, emotions and actions into harmony. This sets it apart from much everyday activity in which we embark on the wearying process of manipulating events for our own purposes. On the other hand, it must be distinguished from fanaticism that, in a similar way, can be invigorating and harmonizing. Perhaps the main distinction here is that fanaticism tends to impose arbitrary fantasies on reality. In contrast it is an essential feature of the Christian discernment of the will of God that the world should be perceived accurately.

Though the attributional processes I have been discussing here are secondary to a basic religious experience, it would be possible for those who wished to do so to work to overcome cognitive approaches to motivation that might stand in the way of such an experience. Though the attribution of success and failure proceeds largely at an instinctive, rather than at a deliberate level, there is considerable scope for the deliberate modification of such processes (Meichenbaum, 1977; Brehm, 1966). Exercises for doing this have been developed within the clinical field where they have met with considerable success. There is no reason why they should not be put to pastoral and devotional purposes by those who wish to use them. Typically, the following steps would be involved. (1) To list recurrent assumptions that on reflection one would regard as playing an unconstructive role in one's life (e.g. "I am likely to make a fool of myself in trying to do something out of the ordinary", or "there are no consequences of my actions other than those that I am aware of" or "my achievements are entirely attributable to my own abilities"). (2) To learn to identify consciously whenever these

assumptions are being made in the ordinary course of our lives. (3) Each time to make ourselves aware of some alternative assumptions, and to guide our actions by explicitly formulating these assumptions in words. Like many exercises this is simple in conception but surprisingly effective when pursued seriously. It is demanding at first, but becomes easier with practice. In its style it is not very different from some of the exercises that appear in classic manuals of devotional theology. There could be some useful cross-fertilization between these traditional spiritual exercises and the methods currently being developed in clinical psychology.

### References

- Berkowitz, L. (1970). "The self, selfishness and altruism" in: *Altruism and Helping Behaviour* (eds. J. Macauley and Berkowitz) (Academic Press, New York).
- Brehm, S. S. (1976). *The Application of Social Psychology to Clinical Practice* (Hemisphere, Washington).
- Dittes, J. E. (1969). "Psychology of religion", in: *Handbook of Social Psychology* (eds. G. Lindsay and E. Aronson).
- Duska, R. and Whelan, M. (1977). *Moral Development* (Gill and MacMillan, Dublin).
- Latane, B. and Darley, J. M. *The Unresponsive Bystander. Why doesn't he Help?* (Appleton-Century-Crofts, New York).
- Lazarus, R. S. (1966). *Psychological Stress and the Coping Process* (McGraw-Hill, New York).
- Lehrs, E. (1958). *Man or Matter*, revised edition (Harper, New York).
- Meichenbaum, D. (1977). *Cognitive-Behaviour Modification: an Integrative Approach* (Plenum, New York).
- Raynor, J. O. (1969). "Future orientation and motivation of immediate activity", *Psychol. Rev.* 76, 606–610.
- Rotter, J. B., Chance, J. E. and Phares, E. J. (1972). *Applications of a Social Learning Theory of Personality* (Holt, Rinehart and Winston, New York).
- Stotland, E. and Canon, L. K. *Social Psychology: A Cognitive Approach* (W. B. Saunders, Philadelphia).
- Weiner, B. (1972). *Theories of Motivation: From Mechanism to Cognitive*. (Rand McNally, Chicago).

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Further articles in this series on "Psychological Theory and the Religious Mind" will explore other points of interaction between empirical psychology and contemplative religion, such as (a) how we can find our *own* identity in the experience of God working in us; (b) the effects of meditation on the perceptual process, its accuracy and

the level of consciousness associated with it; (c) the approaches of contemporary clinical psychology and of psychologically minded contemplatives such as Augustine Baker to the stream of consciousness and especially to practical problems such as unwelcome, intrusive thoughts; and (d) the meaningfulness of religious ideas, and the circumstances under which they can arouse feeling and commitment.

## **Altered states of consciousness in E.S.P., creativity and healing**

C. MAXWELL CADE

(The following are extracts from an article by C. Maxwell Cade in *Light*, Autumn 1977, which reports some of the thesis "The Fifth State of Consciousness" written on the Oliver Lodge Research Grant of the College of Psychic Studies. Maxwell Cade had been experimenting on seeing whether certain physiological conditions were conducive to states of consciousness in which performance in tests such as Zener card guessing and telepathic awareness of a picture or object or theme transmitted by an agent in the next room, were significantly improved. Also these methods of studying concomitant physiological conditions were used in measuring the performance of subjects who are psychic healers.

These parts of the thesis are published here with the kind permission of the Editor of *Light*, the Journal of the College of Psychic Studies, and C. Maxwell Cade.)

From the outset, use was made of a fact which was discovered in the original Cade-Woolley-Hart experiments on physiological correlates of altered states of consciousness: that in training for facility in alpha/theta brain states, much time can be saved by using traditional methods. That is to say, instead of wiring the subject up to the EEG and saying, "Wait until the tone begins, then find the mental attitude that helps to keep it on," we began by using a guided meditation which quickly produced the required state, then said "You are now in an alpha (theta) state; keep the note going."

A more direct training in the production of a state of "creative reverie" was by the use of a device (termed a "reverie-stat") where the subject *prevented* a buzzer from sounding by pressing a spring-loaded button. When relaxation exceeds a certain level, the button is released, and the noise arouses the subject to press the button and restore silence. With practice, the button can be held off for prolonged

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periods, and the subject finds himself in an “hypnagogic” state, where he can be aware of vivid dream images and of his environment at the same time.

Another training method was by means of Haiku poems—originally developed in Japan by the seventeenth century Zen monks, they are poems of 17 syllables which set a simple but vivid scene, for example:

On a withered branch  
a crow has settled—  
autumn nightfall.

Subjects were required to meditate upon the theme, and later to express their reaction in the form of a painting, drawing, or a further poem.

Experiments to determine the nature of “psi-conductive” states were carried out on students under various conditions:—

1. Just arrived in class and sat down.
2. After 10 minutes autogenic relaxation.
3. After 10–15 minutes led meditation.
4. After induction of hypnotic rapport.
5. After induction of “group-mutual” hypnosis.
6. After 10 minutes listening to gentle music.
7. After empathy exercises.
8. After various combinations of the above.

\* \* \* \* \*

During the progress of this work a number of observations were made which suggested that whenever an individual showed what seemed to be ESP, exhibited an unusual degree of voluntary control (e.g., simultaneously making one hand hotter and the other cooler), or made an exceptionally creative response, they always showed a peculiar brain rhythm—a bilaterally symmetrical pattern of high amplitude alpha accompanied by beta and theta waves. At about the same time it was found that subjects undergoing alpha/theta feedback training occasionally complained that their machines had gone wrong: “I’m getting all three frequencies in both hemispheres, why is that?” The machines were found to be in good working order, but the subjects were able to maintain their high alpha output with eyes open, and even while talking to the operator.

One of the major difficulties in discussing the effects of brain-rhythm training is that some experiments have been less thorough than they might in defining their working conditions and listing their observations. In particular, it seems that most researchers, when they were primarily interested in alpha-feedback training, measured the presence, continuity, amplitude and frequency of the alpha waves—but failed to note the presence or absence of other relevant frequencies in the spectrum of normal brainwaves (e.g., theta, beta, or even delta waves).

In the course of the past 3 years more than 500 seminars have been held during which EEG training of 2 or 3 subjects at a time has been given. About 230 subjects have had an average of 3½ hours training each during which the persistence, amplitude and frequency of their brain rhythms was checked over the spectrum from 1 hertz (delta) to 20 hertz (beta). This has led to several new findings, three of which may be of considerable importance:—

1. All subjects, without exception, and often at the first EEG training session, show a post-meditational phase in which continuous or almost-continuous alpha persists for ten minutes or more with eyes open.
2. What at first sight appear to be two different kinds of alpha-state, on closer examination are found to be entirely different state. One of these (the "alpha-state" of the literature) is high-amplitude alpha unaccompanied by more than a few per cent of other frequencies. The characteristics of this state are as described by Kamiya and others—mindless, relaxed, neither thinking nor imaging, and disappearing upon opening the eyes or attempting logical thought or clear imagery. The other state shows high-amplitude alpha accompanied by two side-bands of about 30 to 60 per cent of the alpha amplitude, continuous and of steady frequency. Characteristically, these secondary rhythms are beta at 16 to 18 Hertz, and theta at 4 to 6 Hertz, but the beta may be considerably higher—22 to 26 Hertz. This "triad state" is almost invariably bilaterally symmetrical, showing the same amplitudes and frequencies in both hemispheres. Subjects in this state are very alert, can open their eyes, hold conversations with others, and even walk around carrying their EEG machine and maintaining the state. They are able to solve simple arithmetical problems in their heads, read and understand literature, experience self-induced emotional states, all without disturbance of the state. Usually, stressful "testing" of the state will result in its cessation after 5 or 10 minutes, but it can almost invariably be restored by the subject adopting a passive attitude for a few minutes. This state appears to be very similar to, and probably the same as, Goleman's "Fifth State of Consciousness."
3. This state appears to exist over a rather limited range of neurological arousal. It is difficult to produce hyperarousal in some subjects, but if successful, they pass into an ordinary beta state. Again, if left listening to music, or contemplating some meditational theme, subjects gradually pass into a more asymmetrical state of theta- or even delta-wave accompaniment. The skin resistance meter will then indicate a marked decrease in the arousal level.

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#### Experimental Findings in Healing

It was the recognition of the frequency triad pattern in the classroom experiments that first suggested that a thorough examination of the brainwave patterns in healers and their patients might prove to be fruitful. After all, the literature suggested that "continuous alpha" was the accompaniment of many unusual phenomena, and it now seemed probable that whenever persistent alpha was found in the waking (or near-waking) state, it might well be accompanied by other strong and persistent frequencies. At that time (June, 1975) we had already spent some 15 hours on the study of Mrs. W. D. M. Raeburn and her patients, the examination being confined to measurements of correlates of altered states of consciousness—electrical skin resistance and EEG brain rhythms.

In a (privately circulated) report on Mrs. Raeburn's healing a few months earlier we had noted: "Within a minute of attending to the subject, Mrs. Raeburn begins to produce both alpha and theta brain waves; the alpha being continuous and the

theta initially intermittent but becoming continuous within five or six minutes. These brain rhythms become disturbed, but do not cease, even when she talks to the subject or to observers. Simultaneous ESR (skin resistance) measurements show a reduction in skin current of about 60 per cent (60% electrometric trance) within two or three minutes of commencement. This depth remains sensibly constant until she arouses at the end of the session. At the end of a session, skin resistance rapidly returns to normal, theta may persist for half a minute or so, and alpha persists for several minutes (even with eyes open and talking).

“Subjects almost invariably go into a trance the maximum depth of which is related to (a) their trance experience; (b) the severity of their illness. Whereas Mrs. Raeburn’s trance is typical of autohypnosis or meditation, subjects show varied states, such as ‘somnambulism’ in which theta brain rhythm is accompanied by an ESR showing hyperarousal. Frequently, the depth of a subject’s trance varies in inverse ratio to the distance from the subject of Mrs. Raeburn’s hands. At other times, the subject’s ESR is seen to vary synchronously with that of the healer and in the same sense.”

When we re-examined Mrs. Raeburn with a pair of matched EEG’s, and noting every frequency which the instruments would register, we found that both the healer and her patients almost invariably showed the frequency triad during the healing process. Later, we found that various different healers begin to show the triad shortly after the commencement of a healing session, and the patients then begin, more slowly, to develop the same pattern. Almost invariably, the pattern is bilaterally symmetrical, even though the normal pattern of patient or healer is predominantly unilateral, as is often the case. Usually, during the healing process, the patient’s EEG pattern shows a slow but fairly marked increase in amplitude, while the healer’s pattern shows a corresponding amplitude decrease. Both patterns return to normal within five or ten minutes at the end of the session.

These patterns are quite difficult to determine from the dial readings or graphical output of ordinary electroencephalographs. What was needed was a visual presentation which would show at a glance, in real time, the beta, alpha, theta and delta spectrum of both brain hemispheres of both healer and patient. By May, 1976, we had such an apparatus, thanks to the award to the Author of the Oliver Lodge Research Grant, and the generosity of Mr. Geoffrey Blundell, of Audio Ltd., who gave financial assistance as well as developing the Mind Mirror, as the apparatus is now called. The Mind Mirror displays the spectrum of electrical waves from both brain hemispheres, from 1.5 to 33 Hertz, as thirteen columns of solid-state lights for each hemisphere.

The original intention in applying the Mind Mirror to the healing situation was to look for objective evidence of any peculiar “healing rhythms” in either healer or patient, or any interaction between the brain states of healer and patient. All this evidence was rapidly forthcoming, but the unexpected bonus came when we were monitoring Mrs. Raeburn and a patient who had received very extensive leg injuries in a bomb incident. The work of the surgeons had been remarkable, and with two years of regular weekly healing from Mrs. Raeburn the leg was almost completely restored—although there was some residual loss of function. The man could not balance on one leg, nor ride a bicycle. During the healing session it was observed that although the healer was showing Fifth State brain rhythms, the patient was showing a very ordinary unilateral pattern. Since healing was being

carried out with the healer's hands at the legs, we suggested that the hands might be moved to the patient's head instead. Within 25 minutes of the change, the patient was showing the bilateral State Five pattern. Of greater importance, within three days the residual disability had cleared up—the patient could balance on one leg and could also ride a bicycle.

This was the stroke of serendipity by which we stumbled upon the principle of “biofeedback healing”—using the instrumentation of biofeedback to help a healer to deploy his skill to the maximum advantage. Further experiments have shown that varying the position of the healer's hands in relation to the patient's body (even without the patient being aware of the change) can not only alter the patient's brain rhythms, but also his arousal level, as shown on the skin resistance instrument. Again, some healers like to form human “batteries”—using several assistants to increase the “healing energy.” We know of no way of measuring this energy, but we have found that as another healer joins the situation, and another—up to six—the patient's brain rhythms show a step-by-step increase in amplitude.

As a result of the foregoing study, we now believe that paranormal healing, whether it is the self-healing of a Yogi or the hetero-healing induced by a healer, embodies at least two distinct physiological mechanisms. One of these is the deep parasympathetic response (“Relaxation Response” or “Trophotropic Response”) such as appears to occur in sensory deprivation and in the meditation of Yoga and Zen. Another is associated with Fifth State consciousness, a state of mind which is most often associated with what Maharishi Mahesh Yogi calls “afterglow”—a mildly euphoric state often experienced at the end of meditation. We have so far studied one well-known healer in depth, and made preliminary studies of six others. All of these appear to induce both the deep relaxation response and Fifth State consciousness in most of their patients. The study is now being extended to cover as wide a range of healers—and modes of paranormal healing—as possible.

### Conclusions

A study of altered states of consciousness in ESP, Creativity and Healing, has shown that all these faculties appear to be associated with a particular, bilaterally symmetrical, pattern of brain rhythms.

The state of consciousness characterized by this pattern of brain rhythms is similar to, and possibly identical with, that referred to in the literature as “Afterglow” (Maharishi Mahesh Yogi), “Fifth State Consciousness” (Goleman), or “Nirbikalpa Samadhi” (Yogananda), or “Creative Reverie” (Green, Green and Walters).

Many people appear to experience the state spontaneously, while others can be assisted to do so by a relatively simple training programme.

People who have “healing ability” show the characteristic pattern when healing, and temporarily induce the pattern in their subjects.

It is impossible to demonstrate these phenomena without the application of very specialized instrumentation, which is probably why they have not previously been reported.





## Zootopia

SUSAN LAKE

Publicity is usually gratefully accepted by most zoos since it boosts their gate numbers and consequently helps keep them financially viable. Wildlife collections in the U.K. have always had a lot of attention from the media, either in the form of television programmes like "Zoo Time" and "Animal Magic" or practical campaigns such as that recently conducted by "Nationwide" which encouraged viewers to financially "adopt" an animal. Similarly it seems that zoo news is national news, witness the immense coverage given, by T.V., radio and the press to the accident and subsequent demise of Victor the giraffe at Marwell Zoo. However, in the last few months zoos have been receiving the sort of publicity which rather than attracting custom is likely to discourage many would be zoogoers.

This attention has been triggered by the release of a book (*The Last Great Wild Beast Show*, Jordon and Ormrod) which condemns all but a handful of British wildlife collections on the grounds that (a) it is often the case that many animals are kept under unsuitable, even cruel conditions and (b) that the scientific objectives necessary to justify the keeping of wild animals in captivity are frequently completely lacking.

As an ex-zookeeper, now a student of Physical Anthropology, I find that in general I have to agree with the authors' rather pessimistic conclusions and this leads me to speculate as to what would make the Ideal Zoo.

Probably the first point to raise in such a consideration is not why should we have zoos (there are several good reasons to which I will

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come later) but rather why do we have the zoos which currently exist.

Historically, many of the traditional zoological gardens stemmed from private collections, and their initial objective was simply to exhibit as many exotic creatures as they could. Zoo buildings were designed primarily to please the eye of the beholder, not adequately and comfortably to house their inhabitants. Since the advent of zoo biology, where proper studies have increased our understanding of the needs of captive animals, these establishments have improved considerably in most cases; nevertheless either through lack of funds or lack of imagination (or both) these modifications leave much to be desired.

A second type of zoo appeared in the 1960s when an army of enterprising entrepreneurs created what could be called a zoo boom. Dozens of small menageries sprang up all over the country. Frequently the sole purpose of these was profit-making and embellishments such as fair grounds, boating pools and amusement arcades were added in attempts to attract more custom. This sort of place is unsatisfactory for a number of reasons. Firstly it attracts the wrong sort of visitor to the zoo, while at the same time discouraging those whose main interest is animals. It places the animals in the role of entertainers, like circus clowns or dancing bears. And it creates a noisy and disturbing environment for both animals and keepers.

Still in the 1960s a new concept of captivity was brought over from America and a number of safari parks came into existence. Although the idea of caging visitors in their cars and allowing the animals to roam free is splendid and seems to have been successful in the States, in this country the venture has failed to realize its potential. This is possibly due in part to our awful climate which not only makes many exotic animals very uncomfortable but ensures that they look so to the public.

There is, fortunately a fourth type of zoo. It is the place where the welfare of the animals is the major consideration. It runs a research programme. It utilizes its resources to help in education. And it contributes greatly to conservation. It is this sort of institution which represents the foundations of zootopia.

Having briefly reviewed the types of zoo which already exist it is possible to move onto the question of why we would want to keep wild animals in captivity anyway. The more noble reasons have been mentioned already, conservation, research and education.

There is some argument as to the value of saving a species from extinction if to do so results in keeping and breeding it under unnatural conditions and so running the risk of changing its nature. Nevertheless there is general agreement that, until such time as an alternative arrangement can be found, it is a lesser evil than allowing it to disappear from the face of the earth, as man has done so often in the past. In the U.S.A. and to some extent here, gene mapping is under way and it may prove possible to keep track of the genes which are normally lost in captive populations. Similarly the increase in the knowledge of the best conditions in which to keep wild animals ensures that a decline in the amount of abnormal behaviour commonly observed in zoo animals will continue. Some of the better zoos in this country have already had great success in breeding endangered species and in doing so have, at the very least, given us a breathing space in which to decide on the future of animals which have been ousted from their native habitat by man, who feels that he has a bigger claim to the land than they.

Many of the successes in conservation owe themselves to research and study carried out in zoos as well as in the field. While the sort of observational study which goes on in zoos is somewhat limited by the unnatural surroundings of most animals, there are many biological and developmental lessons of great value to be learned. An example of this might be enlightenment into the living habits of nocturnal animals which are notoriously difficult to observe in the wild. In the zoo, with suitable techniques, much can be discovered.

Apart from conducting their own research and making their facilities available for outside workers, the ideal zoos could take over from breeding farms and animal dealers in producing laboratory animals. It is hoped that healthy and contented animals would breed well and surplus zoo animals could be used for experimental purposes. This would curb depletion of wild stock and, properly administered, would ensure the best conditions for experimental animals when not in use. Possibly, healthy animals could be

returned to the zoo after their experimental periods and so be assured of some reward for their contribution to mankind's welfare. Ideally, wherever possible research would be carried out within the zoo and husbandry of the animals would be by their usual keepers.

An important and much neglected aspect of zoo research is the keeping of accurate zoo records and the flow of information between zoos. At present there is a definite lack of communication along these lines resulting in a lot of redundant work and general confusion. There are some publications, such as the *International Zoo Yearbook*, which do admirable jobs in attempting to bridge the gaps but frequently zoos have little knowledge of what goes on within their own gates, let alone within others.

Education in zoos at present, if it exists at all in formal terms, tends to consist of wildlife films, lectures and guided tours. These are of course obvious uses of the zoo, but I feel that it is also necessary to teach people about the zoo itself. It has often been pointed out by zoo experts that the zoo-going public labours under a number of serious misconceptions. If these were put right, bad zoos would probably go out of business because their customers would recognize their faults.

Often the things which offend zoogoers most are those which are least offensive to the animals themselves. A good example of this was given by Gerald Durrell in a recent T.V. interview. As he rightly pointed out, the bars of cages have many other uses than that for which they were devised. They can be climbed up, and slid down. They can be chewed and rattled. When bars rather than glass are used to separate different groups of animals, they allow for a certain amount of intercage communication, and they enable keepers to hear that all is well within.

Many misguided animal lovers feel that they are brightening up the otherwise dull lives of captive animals if they feed them titbits. They do not realize that it is likely that several hundred other visitors have had exactly the same thought and followed the same course of action. They think one crisp/chocolate/applecore etc. will not make any difference. Feeding of zoo animals by the public has many repercussions; it may make the animals sick, it may even poison them, and it can transmit disease, it also elicits begging behaviour.

Although this may be very entertaining to the public, it means that animals spend more time gazing hopefully at potential feeders than in more natural pursuits, like play, acrobatics or plain socializing.

During my five years as a zookeeper I received a number of offensive letters from indignant visitors who objected to the Tea-Party which the chimps insisted that I held every day at four o'clock. This exercise, although perhaps originating as a sideshow for the public, was by this time part of an enriched environment scheme designed to give the infant and juvenile apes as interesting and stimulating a childhood as possible. The best situation for young primates is undoubtedly in a mixed colony, but this usually proves difficult to implement because most captive primates reject their young or are maladroit at rearing them. Until such time as we know why and how to prevent this, it seems that a policy of "substitution rather than replication" is the only alternative to allowing these unfortunates to perish. In this case substitution obviously means hand-rearing. The Tea-Party was in itself a substitution of a kind for aspects of normal group behaviour, as were other distractions such as toys, nest-building materials and my own presence. To suggest that the Tea-Party was in any way humiliating to the animals is ludicrous but there were many occasions when I sat alone at the tea table because they had decided to see if it was possible to drink from a kettle (containing rose-hip syrup) while hanging by one leg from the roof of the cage. It is difficult to prove that the chimps were happy, and any attempt to do so would involve the projection of human values. However they were certainly healthy and appeared to me to be contented. If zoo education concentrated some of its energy on teaching the public to recognize the real faults in the zoo system, a great many misunderstandings would be cleared up and steps towards the ideal zoo would be easier.

While acknowledging that these three major principles, conservation, research and education, are admirable justifications for the existence of zoos, I personally do not feel that they are absolutely necessary. If animals are kept in good conditions I see no reason for not keeping them in captivity. However, once caught, it seems stupid to not use them for these purposes too. My love of zoos stems not from an intense desire to learn about animals, nor from an urge

to conduct research. While I know it's sad to realize that many species will die out if we don't rescue them, I find individual cruelties infinitely more distressing. My main reason for defending zoos and envisioning zootopia is simply that I like animals, to look at, to be near and to get to know. These are purely selfish aims but I fail to see what harm they can do, providing they are qualified by determination not to make my captive animals suffer and, wherever possible, to improve their lot.

Having established these principles behind the acceptable zoo it is now possible to look at the more down to earth aspects such as finance and staffing. A zoo should never be a profit-making concern; as soon as it becomes one it is exploiting its animals. Feeding, labour and housing costs tend to be so high these days that most zoos run at a loss; but in the event that they should earn enough to cover their basic expenses and have a little over, this should be ploughed straight back in.

The ideal zoo as visualized by most experts is a small specialist one, and therefore is unlikely to house many different varieties of animal. If each zoo concentrated on one or two species it would have more chance of successful breeding and rearing and of creating the suitable environments needed. Several species are very expensive to keep both in feeding and special housing, and it would seem sensible if zoos agreed to divide these types of animal between them, thus dividing the cost, rather than every zoo in the country trying to keep samples of all. Other species which are cheap to feed and easy to house could be represented to pad out the exhibition. Zoo buildings which have in the past tended to be built to last are not suitable in the light of our ever increasing knowledge of the needs of captive animals. It would seem wiser to devise cheaper structures with shorter life spans which can be torn down and replaced if necessary. Some very expensive mistakes have been made, even in recent years, where animal houses costing hundreds of thousands of pounds have proved deficient in the features required for the welfare of their inhabitants and for their utilization by keepers. One hears hair-raising stories of elaborate giraffe "palaces" with doorways too short to allow the residents access and of concrete and steel jungles where no vestige of natural material

can be seen. It is essential that keepers be consulted on the building and design of new quarters for their charges. They are the ones who must clean the cages and ensure that they are warm or cool enough. Real zoo architects are few and far between and standard architecture is obviously geared towards building for people not animals.

Feeding costs in zoos are inevitably high even when only a few species are kept, but there are a variety of ways in which this outlay could be reduced albeit slightly. For one thing zoos could utilize a lot of the space given over to flower gardens to grow some of their own vegetables and fruit. Perhaps they could even “grow” their own meat, to some extent, for their carnivorous inhabitants. I have always coveted the, as yet non-existent job of zoo-coordinator whose duties would include appealing for and collecting stale foodstuffs from wholesalers and retailers. While the feeding of animals by the public should be forbidden it could be made possible for those who wish to do so to donate the correct sorts of food to the zoo. This would not reduce food costs by any noticeable extent but might serve to discourage the public from illicit feeding. Again a job for the zoo coordinator? Most big institutions probably consider these ideas as too trivial to merit the time and trouble they would take to implement. However, once established, they would be relatively easy to run.

Labour costs are the third of the major financial items the zoo must be able to cover, and a good keeper is worth his weight in gold. The majority of keepers have no formal training and gain their expertise from working with more experienced senior keepers. Nowadays quite a few zoos send their younger keepers on day-release courses to learn animal husbandry and related topics, but they can only learn about their specific animals by observation and familiarization. I think that ideally the keeper would have total responsibility for his animals, and this could include the carrying out of research projects as well as the usual cleaning and feeding chores. This would obviously mean that a certain amount of formal training would be necessary, in husbandry, scientific technique, supplemented with some sort of apprenticeship to experienced keepers. The resultant status of keepers would then be similar to that of research technicians.



A few zoos, at present, employ graduates as keepers-cum-researchers and this arrangement works beautifully for a limited period of time. But the majority of research students want to move on after a few years and I feel that it is better for the animals to have the same keepers year in year out than to have to get used to new faces and methods at regular intervals.

Zoo keeping is a peculiar profession; it has a glamorous show-biz side and a tedious, repetitive maintenance side. Keepers are expected to work long hours and often at week-ends. They are supposed to be pleasant and helpful to the public at all times, even when for the umpteenth time that day they are explaining why the elephant should not be poked with an umbrella or asking yet another animal lover not to feed the gorilla with half-chewed bacon sandwiches. They need to be able to tell at a glance if something is wrong with their charges and to be able to distinguish between the myriad animal noises in order to ascertain that nothing is amiss. In zootopia, a well-educated public would be better behaved and a lot of frustration would evaporate from the keeper's job. The more boring aspects of his work would be punctuated with interesting research projects, and his greater responsibilities would allow him more freedom of choice as to how and when to carry out his varied duties.

These three major expenses (I include maintenance under "housing") are only slightly mitigated by the income from the zoo gate and there is some disagreement as to whether an admission fee should be charged at all. In his book, *Man and Animal in the Zoo*, Heini Hediger wrote of a special zoo tax in some states of the U.S. which is paid by the public and used to cover running costs. Hediger sees the zoo as a cultural institution, almost a necessity in our concrete jungle world and maintains that as such it should be financed by the State. I think it is wrong that a zoo has to charge so high an admission fee that only the wealthy amongst us can afford to visit. A couple with a family of four will find that a day at the zoo can cost the best part of five pounds these days. Once through the gates they may find that extra spending is necessary to gain admission to aquaria or tropical houses. On top of this comes the cost of food for the family, often extortionate in zoo cafeterias. So,

by whatever means, zoos must ensure that their charges are low enough to allow everyone access. I am not a financier and do not know enough about economics to press for any particular course of action, but it is obvious that if we have wildlife collections they should be open to the public.

In conclusion then, it seems that the ideal zoo places first and foremost the welfare of its inhabitants. Secondly it ensures that while in captivity the animals are utilized to their fullest extent, for exhibition, conservation and study. Its keepers are paragons of kindness and intelligence. The bright, interested public are aware of the way the zoo is run and always behave responsibly, and so the zoo is devoid of curt signs saying "please do not feed the animals" or "please do not climb over barriers". Happy scientists wander to and fro making great steps in the advancement of biology, psychology or physiology. Retired experimental animals recover from their ordeals in kinder surroundings, while unsuspecting joints of meat gambol in the pens. It is hoped that the cost of admission to this Garden of Eden is free or at least minimal and that subsidies (from the State?) and endowments (from animal lovers?) ensure that its gates are forever open.

That is zootopia and, unfortunately, a figment of the imagination. However, it is possible and desirable that zoos work towards that state. If any readers have money to spend and would like me to put my words into action, I would be most grateful to hear from them. My main love is zoos and those who live in them and my principal ambition is to see zootopia.



## A Sufi approach

JULIA BRADLEY

A visitor to the oracle of Delphi was exhorted: "Know thyself"; and a core of esoteric teaching has always held that man is a microcosm and that within him is the knowledge of all things. Spiritual discipline is necessary before man can become aware of this knowledge. As R. A. Nicholson says in *The Mystics of Islam*:

The whole purpose of Sufism is to enable man to recover his original unity with the One, while still in the body, which must be refined and made spiritual. It is like a metal to be refined by fire and transmuted.

Another way of putting this is found in the injunction in the Gospel to "be ye therefore perfect, even as your Father in heaven is perfect".

Man does not find it easy to see how to do this, Even if, as a Christian, he repents and believes that his sins are forgiven, he cannot facilely escape from remorse for his past or free himself from deep-seated emotional disturbances without help.

In the hope of finding guidance to achieve the latter, I recently went to live for two years at a Sufi community called the khankah ("gathering place") in Surrey.† There techniques for breaking the emotional bonds with one's past were used with great effectiveness. Living there was intended to be a deconditioning process, and if one resisted the necessity of changing (often) one's whole attitude to life, it could become painful. We had to learn that things in themselves

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† "Four Winds", Dockenfield, near Farnham, Surrey.

have no value; “their value is as man makes it; and at every step in his evolution he changes their value.”<sup>1</sup>

The central function of the khankah was to enable people to evolve and change. Unfortunately, most of us are not able to renounce our long-cherished beliefs and established patterns of behaviour voluntarily, so a living situation had to be set up that was deliberately disturbing. Gurdjieff’s remarks about his Institute at Fontainebleau bear some relevance to the khankah:

This Institute exists to help people to work on themselves. You can work as much or as little as you wish. People come here for various reasons, and they get what they come for. If it is only curiosity, then we arrange things to astonish them . . . . But if they come to get Being, then they must do the work themselves. No one can do the work for them, but it is also true that they cannot create the conditions for themselves. Therefore, we create conditions.<sup>2</sup>

Gurdjieff’s concept of Being was described by his friend J. G. Bennett in his introduction to *The Dramatic Universe* (Vol. 1):

To know more is not enough: it is necessary to *be* more if we would penetrate beyond the veil of space and time.

When I first met the community living at the khankah I was told that their aim was to enable people “to become human beings”. Layers of mechanical, stereotyped responses to life had to be peeled off before the natural self could emerge. It is interesting to note that this natural self was seen as whole and essentially good (as Rousseau believed). In other words, what is required of us is not so much a striving upwards to unimaginable heights of divine realization as a stripping away of accumulated bad habits and negative thoughts. Salvation is not seen as something to be achieved in the distant future, but as existing here and now if only we were free to realize it (salvation being conceived not as a ticket to heaven, but as self-fulfilment and the earthly expression of our inner divinity).

Man’s unwillingness to change, his possessiveness, his lack of vision are his stumbling-blocks. In renouncing these, he becomes free to realize other undeveloped areas of his being. It is a sacrifice of the lower to the higher: “in order to gain silver coins, one has to renounce copper coins”; so renunciation is seen as a positive value. The willing spirit is true renunciation, but then it is no longer renunciation.

This ideal was not always easy to keep in mind as we struggled to perform “tasks” chosen by Murshid (“teacher” or “guide”) to enable each of us to break through our limitations into a larger wholeness. For example, finding it difficult to get up in the morning, my first task was to shout aloud an Arabic prayer before breakfast every day. It finally became something I enjoyed doing, especially as other people told me how much they appreciated my daily alarum.

Among attempts to describe Sufism are the following: Sufism is to possess nothing and to be possessed by nothing; Sufism is freedom and generosity and absence of self-constraint; “it is Sufism to put away what thou hast in thy head, to give what thou hast in thy hand, and not to recoil from whatever befalls thee”.

The performance of sometimes extraordinary tasks did much to eliminate a judging attitude in the community. To quote Hazrat Inayat-Khan:

Often a man attaches great importance to an action done by another which is only wrong by the standard of his own understanding; whereas the right and wrong of every person is according to his stage of evolution and according to his understanding.<sup>3</sup>

So a very meek and mild person, intent on gaining spiritual development, might be required to express aggression, and if he found this impossible, a situation would be set up in which he would not be able to prevent himself from being aggressive. This would be received by the group with a feeling of relief and total acceptance. “Thank goodness Charlie is getting things out of his system at last.” What might appear to be a dangerous manipulation was always somehow under control, although some situations appeared on the face of it exceedingly hit-or-miss.

The life-style at the khankah was constantly changing, according to the needs of those living there. For a few months an experiment was tried, dividing the community of about thirty people into teams with about six people in each. There was the Home Team, concerned with the running of the household (cooking rota, buying of food, cleaning, duties at the convent nearby, organizing the garden and general maintenance), the Mechanics Team in charge of

repairing a number of cars on the premises, the Education Team including a Montessori teacher which was involved with teaching the young children of the community in the morning and organizing a crèche in the afternoon. There was a team for “beautifying” the premises, and a team which organized jobs in the district (picking potatoes or apples, decorating a house, painting a barn or felling trees). Occasionally the whole group would unite to do a specific task, for example painting a room of the house, and the activity would often continue until dawn, breaking the monotony of routine jobs and providing a memorable experience for everyone.

There was an atmosphere of very strong supportive love and bearing of each other’s burdens at the khankah, which softened the inevitable personal conflicts that arose. Even if one were undergoing severe mental stress at being forced to make a leap into the unknown, there was tremendous healing power at hand, and a feeling that the loving concern and appreciation of Murshid constantly supported one’s efforts. The joy of being able to do something that had been impossible before increased one’s energy in a remarkable way.

This too was a strong feature of the khankah—an atmosphere of unbounded energy which unleashed the power to get things done in a way that was often disconcerting to the timid visitor. Yet at times there was a total withdrawal into an interior stillness, during a fast, for example, when work would stop and the pace would slow down dramatically. Sometimes an enormous amount of experience seemed to be concentrated in a short time, and one had the impression that months had passed when it was only weeks or even days.

Total trust in and obedience to the spiritual director was the rule. The following story illustrates how the mureed (pupil) might be taught. A Sufi was presented with a woollen robe and coveted the matching cap owned by his murshid. The latter asked him to follow him home one day, made him take off his robe, took off his own cap and threw both garments into the fire. No one (according to Sufi belief) can make himself perfectly moral—this must be done for him by “a flash of divine beauty” in his heart, for which space must be made by an act of self-sacrifice.

The ecstasy of this beauty is to be found also in the hearing and playing of music, and many of the inhabitants of the khankah could play a musical instrument. Besides the piano, harmonium, flute and guitar, the sarod, sitar and tampura were frequently heard. Hujwiri says:

Music is a divine influence which stirs the heart to seek God: those who listen to it spiritually attain to God, and those who listen to it sensually fall into unbelief.

Sufis believe that the heart is a mirror in which every divine quality is reflected. But the heart is usually veiled with sensual contamination. Purification must be done by God, and man co-operates. God is seen as delighting in finding Himself in man

I was a hidden treasure and I desired to be known, therefore I created the creation in order that I might be known.

A striking result of the spiritual training one underwent at the khankah was the shedding of a great deal of psychological and emotional baggage. One became much more natural and more essentially oneself. The training was intended as a temporary period of reorientation, after which one was expected to return to the world and earn a living in the ordinary way. As a further preparation for this return, several business concerns developed which provided experience of the "outside world" and at the same time nurtured the training and learning environment which existed at the khankah. People would become deeply involved and identified with a particular project, and would suddenly be switched to a completely different enterprise, and would have to "make a go" of that, learning responsibility and commitment and at the same time flexibility and the ability to absorb new experience. Originality and creative ideas were encouraged, and funds might be allocated to a person or a small group within "the family" to start a new business which, even though it might prove a financial failure, would provide valuable experience for those involved.

Change was an essential feature of life at the khankah, and every few months there was a major change of lifestyle in, for example, diet, mealtimes, duties, tasks and sleeping quarters. A memorable change while I was there was the conversion of the sacrosanct



meditation room into an office, where busy typewriters were sometimes heard far into the night. A new meditation room has since been created in the barn which was designed and built by the group.

There have obviously been many changes since I left a few years ago, but at every return I sense the same spirit of growth through change and dedication to self-transformation that I experienced when I was there myself. This spirit is well expressed by Hazrat Inayat-Khan's statement that

the final victory in the battle of life for every soul is when he has abandoned, when he has risen above, what once he valued most. For the value of everything exists for man only so long as he does not understand it. When he has fully understood, the value is lost.

The value he refers to is, of course, attachment, which man grows out of as he moves into a wider understanding.

There is a Sufi axiom that was is not *in* a man he cannot know. Gnosis is identification with God, and anything beside Oneness is a delusion. Gnosis proclaims that "I" is a figure of speech, and one cannot truly refer any will, feeling, thought or action to one's self. These doctrines logically annul every moral and religious law, for there are no human standards of right and wrong.

I do not say that Paradise and Hell are non-existent, but I say they are nothing to me, because God created them both, and there is no room for any created object where I am,

exclaimed Abu 'l-Hasan Kurqānī. The water takes its colour from the vessel containing it—God is not limited by any one creed. Ritual has relative value (the inward feeling inspiring rituals is the same) but it is a veil before Truth. Sufis may be theosophists, pantheists or monists.

The wise man, but studying nature, enters into unity through its variety, and realises the Personality of God by sacrificing his own. (Hazrat Inayat-Khan).

Although many aspects of Sufism may appear very foreign to the Christian believer, the concept of the necessity of sacrifice is common to both. It is not regarded as an end in itself, but as the means to realizing a greater wholeness, to releasing the spirit within,



seems, life itself) are secondary to spiritual unfoldment which is a constant progression towards perfection.

Every loss in life I consider as the throwing off of an old garment in order to put on a new one; and the new garment has always been better than the old.

Rūmī sums up the Sufi's ideal and eternal goal:

I died as mineral and became a plant,  
 I died as plant and rose to animal.  
 I died as animal and I was man.  
 Why should I fear? When was I less by dying?  
 Yet once more I shall die as man, to soar  
 With angels blest; but even from angelhood  
 I must pass on; all except God doth perish.  
 When I have sacrificed my angel soul,  
 I shall become what no mind e'er conceived.  
 Oh! Let me not exist! for non-existence  
 Proclaims in organ tones, "To Him we shall return".

This ideal of self-annihilation in the Godhead "inspires an enthusiasm as triumphant as that of the most ardent believer in a personal life continuing beyond the grave".<sup>5</sup>

#### References

1. *The Sufi Message of Hazrat Inayat-Khan* (Vol. III), p. 254.
2. Bennett, J. G. *Witness*, p. 106–7.
3. *The Sufi Message of Hazrat Inayat-Khan* (Vol. III), p. 250
4. *The Sufi Message of Hazrat Inayat-Khan* (Vol. III), p. 262.
5. Nicholson, R. A. *The Mystics of Islam*.

## Comment

### “Creativity, religion and science”

I read the first “Creativity, Religion and Science” article in *Theoria to Theory*, Vol. 11, 4, with interest and disappointment. It’s a good collection of examples to show how creative discovery in science has much in common with creativity in other fields, such as its surprising, unaccountable quality, the irrational element and the flash of illumination, and the emotion involved. These aspects of discovery are too well attested to be in dispute. What is not so well established is how to treat this creativity in theories of science. That’s why it is disappointing that Michael Polanyi is left out, he carried all this so much further, and this article just seems to be starting again as if he had not written. Yes, I see there is one quotation from him, but it’s a curious one because, though he wrote so much about discovery, this particular remark is not about discovery. When he wrote the sentence quoted—“But the ultimate justification of my scientific convictions lies always in myself . . .”—it was about the ultimate justification of his scientific convictions, not about discovery. Yet he wrote a great deal of very pertinent thought about discovery which is not mentioned.

He found that philosophers of science tended to neglect discovery because of its unaccountable nature. “Actually”, he wrote, “philosophers deal extensively with induction as a method of scientific discovery, but when they occasionally realize that this is not how discoveries are made, they dispose of the facts by relegating it to psychology.” Polanyi himself put such creative discovery at the centre of science, as the most significant and illuminating aspect of scientific work. From this developed his theory of tacit knowledge, which links discovery with all kinds of knowledge, and validates all knowing as personal *and* objective.

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He also showed—this is relevant to the second article, on experimentation—that verification and falsification of theories need the same tacit powers of judgement as discovery, though in lesser degree. There is no rule that tells the scientist whether a certain fact falsifies his theory; he has to judge, and often evidence that formally falsifies a theory is simply ignored.

You may agree or disagree with Polanyi, but he did do all this about discovery and went so much further *on* about it all; it seems odd just to ignore him.

DRU SCOTT

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## Review

### *Parapsychology & the Nature of Life*

by John L. Randall

Published by the Souvenir Press  
Price £4.00

Dorothy L. Sayers had the knack of concealing in the words of her title—"Murder Must Advertise" or "The Devil to Pay"—the whole point of her novel or stage-play. John Randall gives us in an early page of his book, a quotation from H. H. Price, then Wykeham Professor of Logic, that covers his whole intention.

We must conclude, I think, that there is no room for telepathy in a materialistic universe. Telepathy is something that ought not to happen at all, if the materialistic theory were true. But it does happen. So there must be something seriously wrong with the materialist theory, however numerous and imposing the *normal* facts which support it may be. (*Hibbert Journal*, 1949.)

In the first part of the book "Mechanism Triumphant", the author shows, clearly and soberly, the normal facts which support a mechanist view of the universe. To the mechanist, organisms are nothing more than highly complex machines. John Randall follows out these concepts in the field of biochemistry, and describes clearly the conflict between vitalism and mechanism—and goes on to trace the rise to power of the molecular biologists. The key to heredity was of course found to lie in DNA and its partner RNA. This approach to the problem of parapsychology is interesting: even if much of his presentation is not new, those who are not familiar with the findings of modern evolutionary theories will be grateful for his lucid and honest explication which leads to the main subject.

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For example, I had long believed that the strongest argument for Darwinism was the existence of homologous organs. The older textbooks, with their careful sketches, on evolution, on which I was brought up, made much of the “five-finger” pattern to be found in the arm of a man, the flapper of the whale, the wing of a bird, as an indication of their common origin. The resemblance was too obvious to be chance effect. Of course, if these various structures were produced by the same gene-complex, acted upon by environment and selection, the theory would be convincing. But now it appears this is not the case. Homologous organs are now known to be produced by totally different gene-complexes in the different species. Sir Alister Hardy roundly states

The concept of homology, in terms of similar genes handed down from a common ancestor, has broken down.

For example, if a pure line of drosophila flies bearing the “eyeless” form of the gene is inbred, within a short time perfectly formed eyes appear, produced apparently by a kind of cooperative effort on the part of the other genes.

We ask the mechanist, “how do you explain the mind of man? do you apply your mechanist approach in the fields of psychology and philosophy?” There follows an examination of Behaviourism and the findings of Freudian psychology—with a sniff of Desmond Morris’s *The Naked Ape* we are quickly shown the existential vacuum to which we have been led.

A psychologist today is confronted more and more with a new type of patient, and class of neurosis, a new sort of suffering . . . the experience of a total lack, or loss, of an ultimate meaning to one’s existence, is at present one of the major challenges to psychiatry. (Viktor Frankl—*Psychotherapy and Existentialism*.)

It was this very break-down which opened the door to a new approach. It was in despair at the state into which Victorian materialism had got itself, that a small group of scholars and scientists sought to “put the final question to the Universe”. These were the founding fathers of the Society for Psychical Research (SPR) and included Henry Sidgwick, later Knightbridge Professor of Moral Philosophy at Cambridge, F. W. Myers, classical scholar and

poet, and William Barrett, a physicist who later received an FRS. These early psychical researchers carried out their task according to the highest standards of scientific integrity and claimed that psychical research, as a branch of science, must preserve the freedom to follow wherever the facts may lead.

In the years that followed the foundation of SPR, there have been many times when believers in ESP have been accused of fraud or unscientific methods. We should remember the words of Henry Sidgwick in his first Presidential Address in 1882

We must drive the objector into the position of being forced either to admit the phenomena as inexplicable, at least by him, or to accuse the investigators either of lying or cheating or of a blindness or forgetfulness incompatible with any intellectual condition except absolute idiocy.

Randall then describes the influence of Dr. William McDougall on his pupil J. B. Rhine, who sifted out, from among a large collection of psychical research alleged phenomena, the belief that some people can acquire information from the outside world or from other people's minds without the use of the bodily senses; he coined the term extrasensory perception or ESP, and renamed his subject Parapsychology. One of his first steps was to distinguish clearly three basic types of ESP (1) *clairvoyance*, the extrasensory perception of a physical object or event' (2) *telepathy*, the extrasensory perception of another person's thoughts; and (3) *precognition*, the non-inferential awareness of a future event. To test for the existence of these faculties, Rhine developed the now familiar card-guessing techniques, and applied the mathematics of probability to the results (4) *psychokinesis*, PK was the evidence that human thought can directly affect a physical object. Dr. Robert Thouless coined the term psi effect to cover all these phenomena.

Rhine's purpose was to obtain indisputable evidence for the reality of ESP. The vast collection of "anecdotes" built up by psychical research societies were bound to fail to impress the scientific world. Rhine therefore assembled a number of investigators who showed the ability to replicate experiments in e.g., card-guessing with the famous pack of 25 Zener cards—star, circle, square, cross and wavy line. I found it perfectly possible to attain a



“success rate” of 11 out of 25. It soon became clear that the interposition of physical objects—screens, walls, even buildings—between subject and agent did not affect the results. Some experiments have shown that a distance of, e.g., 250 miles made no difference. The book includes good photographs of such experiments. Our author gives evidence that ESP is independent of space and time.

The movement (if we can call it by this name) went through a barrage of criticism—which is recorded here. But by 1957, D. Hans Eysenck wrote a passage which has been many times quoted by both believers and sceptics:

Unless there is a gigantic conspiracy involving some thirty University departments all over the world and several hundred highly respected scientists in various fields, many of them originally hostile to the claims of the researchers, the only conclusion the unbiased observer can come to must be that there does exist a small number of people who obtain knowledge existing either in other people’s minds or in the outer world by means yet unknown to science. (*Sense and Nonsense in Psychology*, Penguin Books 1957.)

Just when the fortunes of ESP enthusiasts were low, Dr. Helmut Schmidt, a Senior Research scientist at the Boeing Research Laboratory in Seattle, made use of a new technology. He used a radioactive source, a piece of strontium-90, to provide randomness. The Schmidt machine (and there have been several improvements since the book was written or published) is a small sealed box, which disposes of the problem of fraud. The radioactive decay of atomic nucleus is entirely random and therefore unpredictable—automatic recording of both targets and guesses effectively eliminate human error. A visual display panel has 10 lamps arranged in a circle. Only one lamp is lit at any particular time. When the random number generator produces a number +1, the light produced by radioactive decay jumps one stop in the clockwise direction; when it produces the number -1, the light jumps one stop in the anti-clockwise direction. The subject sits in front of the panel and announces he will try to will the light to move in a clockwise direction, i.e. he wills the machine to produce more +1’s than -1’s. I have not seen in any of the books a statement that this is a very tiring work for the subject. Even under bright TV lights, it was possible to score figures

enormously beyond chance. The latest machine, attached to a tape-recorder, enables the university research worker to evaluate the score of a number of experimenters. There are still many critics who like to emphasize the unpredictability and unreliability of *psi* phenomena: here we are confronted with definite evidence of lawfulness. ESP may be difficult to control, but it is by no means chaotic or purposeless in its operation. *Psi* experiments are repeatable but not “on demand”—any more than earthquakes, meteorites, mutations can be expected to appear “on demand”.

One of the most difficult areas of ESP to assess is that of spiritual healing. Here Randall examines the records of Lourdes, the story of Dorothy Kerin and her home of healing at Burrswood, and other healers. He also looks at the theories of Lawrence Le Shan and his “Clairvoyant Reality”, who thinks that the normal processes of cellular repair are accelerated many times by involvement in a special kind of meditation. I would prefer to say that it is certainly true that the combination of an eager pursuit of wholeness of being together with a complete and undemanding acceptance of the universe’s healing powers, can explain many of these cures. The number of homes of healing and local groups of people concerned with this kind of healing has increased lately to a remarkable extent.

Randall’s style is one of a deceptively quiet following of the argument “wherever it leads”, till you discover what difficulties he has led you to face.

His findings at the end of the book are disappointing. He favours a dualist philosophy or a dualist-interactionist theory, but makes a brave demand for a science which in its pursuit of truth is not afraid of dirtying its laboratory overalls. The publishers of this book are no doubt pressing him to produce another—perhaps an elucidation of his last two chapters.

GEOFFREY KEABLE

## Sentences

### From Hazrat Inayat-Khan

#### *The Attitude of a Disciple†*

*The attitude of a mureed‡ towards life must be hopeful; towards his motives courageous; towards his murshid§ faithful; towards the cause sincere; towards that object which he has to accomplish earnest without the slightest doubt. In every aspect of our life it is our attitude which counts and which in the end proves to be creative of all kinds of phenomena.*

*There is a natural tendency in the seeker on the spiritual path to wonder if he is really progressing. And very often he begins to wonder from the day he sets foot on the path. It is like asking, "Shall I be able to digest?" while one is still eating. The spiritual path leads to selflessness. The more we worry about ourselves, the less progress we make, because our whole striving should be to forget the self; it is mostly the self which obstructs the path. The path is made for the soul, and it is natural and easy for the soul to find it. Therefore when a person is wondering about his progress he is wasting his time; it is like standing still on the path on which one must go forward.*

*Can anyone distinguish how his face and body change day by day? No, for one cannot point out distinct signs of change from one day to another; and if one cannot properly distinguish any change in the external self, how then can one expect to distinguish change in the inner process? It is not something that can be weighed on the scales as one weighs oneself on coming back from a holiday and sees that one has gained or lost several pounds. There is no such gain in spiritual progress.*

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† Reproduced by permission of the International Headquarters of the Sufi Movement, Geneva.

‡ *Mureed*: disciple, pupil.

§ *Murshid*: teacher, guide.

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*There are some who imagine that they have progressed for a certain time but are then going backward. They are discouraged and say, "I thought I had arrived somewhere, but it must have been an illusion." But life is like the sea, and the sea is not always calm. When the sea is rough a boat naturally moves up and down, and to think while the boat is moving downward that it will sink is a mistake. It is going down in order to go up; that is its natural movement. A mureed is subject to such experiences on the path of life. The one who sails will have many times to meet a rough sea; he has to be prepared for this and not be frightened or discouraged. If life's journey were plain sailing there would be no need for spiritual development. He has to have control of the rudder to be able to go through both calm seas and storms.*

*Sometimes the mureed wonders what others are saying and if they are pleased or displeased; if they are displeased he thinks he is not progressing. But this has nothing to do with progress. Those who are displeased would be displeased even with Jesus Christ, and at the same time they might be pleased with the most unworthy person. The displeasure of others does not mean that one is not progressing.*

*Then if conditions are adverse the mureed thinks that he is not on the right path. Neither the murshid nor God is responsible if the conditions are adverse, and the best thing is to be more courageous in making one's way through them. Ghazali, the great Sufi writer of Persia, says that spiritual progress is like shooting at a target in the dark. We do not know where the target is, we do not see it, but we shoot just the same.*

*The true ideal of the spiritual person is not great power nor a great amount of knowledge. His true ideal stands beyond power and knowledge; it is that which is limitless, incomprehensible, nameless and formless. There are no milestones to count; one cannot say, "I have gone so many miles and there are so many still before me". The pursuit of the limitless is limitless, of the formless, formless; one cannot make it tangible. But what is it then that assures progress, what evidence have we to go on? There is only one evidence and that is our belief; there is one assurance and that is our faith. We must believe that we can, we will reach the goal.*

*There are several outer signs of one's progress, but one need not think in the absence of these signs that one is not progressing. The first is that one feels inspiration, and that things which one could not understand yesterday are easy today. Yet if there are things which one is not ready to understand one must have patience till tomorrow. Agitating against lack of inspiration disturbs our*

*rhythm and paralyses us, and we prove in the end to be our own enemy. But people generally will not admit this and blame others instead; or they blame the circumstances, although very often it is their own lack of patience rather than other people or conditions.*

*The next sign of progress is that one begins to feel power. To some extent it may manifest physically and also mentally; and later the power may manifest in one's affairs in life. As spiritual pursuit is endless, so power has no end.*

*The third sign of progress is that one begins to feel a joy, a happiness. But in spite of that it is possible that clouds of depression and despair may come from without, and one might think at that moment that all the happiness and joy that one had gained spiritually was snatched away. But that is not so. If spiritual joy could be snatched away it would not be spiritual joy. It is not like material comforts; when these have been taken away from us we have lost them; but spiritual joy is ours, no death nor decay can take it away from us. Changing clouds like those which surround the sun might surround our joy but when they are scattered we will still find it in our own heart. It is something we can depend on, something nobody can take away from us.*

*There is another sign of progress, and that is that one becomes fearless. Whatever the situation in life, nothing seems to frighten one any more, not even death. One becomes fearless in all that might seem frightening, and a brave spirit develops, a spirit which gives one patience and strength to struggle against all adverse conditions however terrible they seem to be.*

*Still another sign of progress is that one begins to feel peaceful. Even if one is in a crowd one still feels restful. Once peace has developed in a soul, that soul has such a great power and such a great influence upon those who approach it and upon all upsetting conditions, that just as water makes the dust settle, so all jarring influences settle down under the feet of the peaceful. What do we learn from the Bible story of Daniel who was thrown into the lions' den? Was it Daniel's hypnotism which calmed the lions? No, it was his inner peace. The influence of that peace acts so powerfully upon all passions, that it even calms lions and makes them peaceful.*

*But if this power does not come immediately to a mureed, let him not be disappointed. Can one expect this whole journey to be made in a week? It is a lifelong journey and those who have really accomplished it are the ones who have never doubted that they would progress. They have never allowed this thought to enter their minds to hinder them. They do not even concern themselves with this question. They only know that they must reach the goal,*

*that they will reach it, and that if they do not reach it today they will reach it tomorrow. The right attitude is never to let one's mind feel, after one has taken some steps, that one must go to the right or the left. If a man has that one strength that is faith, that is all the power he needs on the path. He can go forward and nothing can hinder him, and in the end he will accomplish his purpose.*

*The Sufi Message of Hazrat Inayat-Khan, Vol. X.*

## Notes on contributors

JULIA BRADLEY studied English and French in South Africa, then taught in South Africa and London. She spent two years at the Sufi community she describes, and is interested in alternative life styles.

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TIM EILOART took a degree in Chemical Engineering at Cambridge, founded "Cambridge Consultants", and is now a free-lance journalist on the *New Scientist*, an entrepreneur, and a teacher of General Studies at the Cambridge College of Arts and Technology.

BERYL GREEN is completing a Ph.D. on "Preference in Housing and the Effect of Financial Subsidy". She is Development Officer at Lucy Cavendish College, Cambridge, and took a degree in architecture after having been Deputy Headmistress in three schools of different kinds.

GEOFFREY KEABLE was a scholar of St. John's College, Oxford, after the First World War. He was then Lecturer in Bishop's College, Calcutta, and after that a parish priest in town and country, including Welwyn Garden City and Canterbury, where he took part in healing services. He took part in the ESP programme "The Mysteries" on Granada Television. He now lives in Cambridge.

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TUDOR RICKARDS took a Ph.D. in Radiation Chemistry in the University of Wales, and then went to the Department of Biochemistry of the New York Medical College. He subsequently did industrial research with Unilever, and is now Lecturer in Creativity in the Business School of the University of Manchester.

FRASER WATTS read P.P.P. (Psychology and Philosophy) at Oxford, and then went to the Institute of Psychiatry, Maudsley Hospital, London, where he trained in Clinical Psychology. Subsequently he held a lectureship at the Institute while completing a Ph.D. on behaviour therapy, and doing clinical work in the Hospital. Since 1975 he has been head of the Psychology Department of King's College Hospital, London, and also jointly responsible for the training of clinical psychologists in the South East Thames Region.

Our cover design by Bob Smith supports one of the themes of this issue—creative thinking. A. J. W. Duijvestijn, of Twente University in the Netherlands, has been working, using computers, on the “perfect square” problem: is it possible to fit together a number of squares, all of different sizes, to form a larger square? Improving on previous results, Duijvestijn has shown that a square, and only one such, of 21 squares is possible and that a solution with 20 squares or less is not possible.

The cover shows this unique 21-square, designed from 24 lines. The sizes are, clockwise round the edge: 50, 35, 27, 19, 24, 42, 37, 33, 29; in the middle, 2, surrounded by 7, 9, 15, 17; on the left, 4, 25, 16; and finally, 18, 6, 11, 8.



The symmetry and quasi-regularities of the pattern might lead to further creative thinking by our readers. Is it a coincidence that the square numbers 4, 9, 16, 25 are neighbours? Should we find it odd that 7, 17, 27, 37 are more or less in line, and likewise (and parallel, more or less) 15, 25, 35? There are many interesting patterns, all contrasting in their "more or less" with the precision of the figure itself.

(With acknowledgements to *Scientific American*, June, 1978.)

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# THEORIA to theory

VOLUME 12, NUMBER 3

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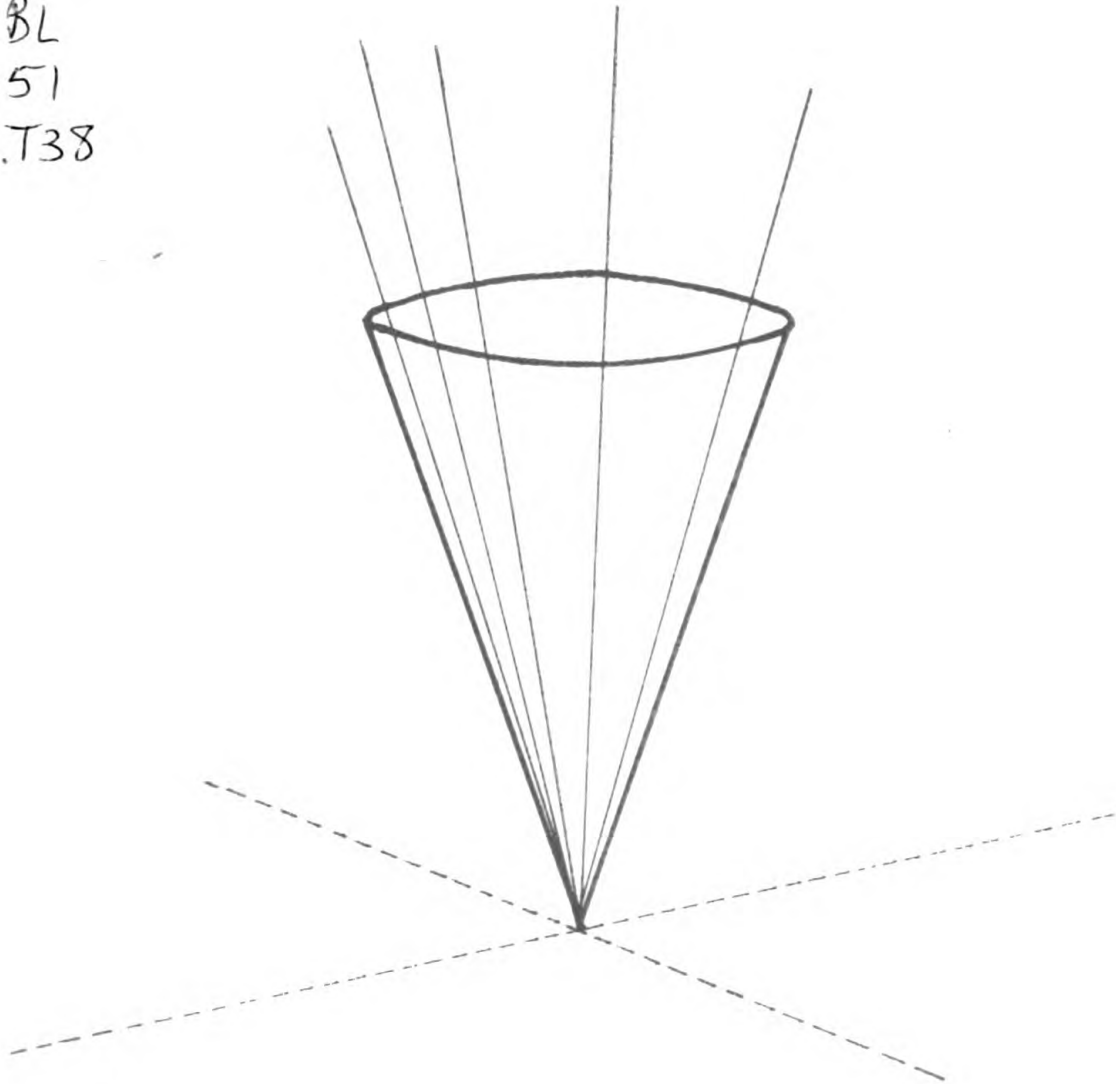
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# THEORIA

## to theory

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# THEORIA to theory

## An International Journal of Science, Philosophy and Contemplative Religion

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### **FEBRUARY 1979 issue**

1979 The Epiphany Philosophers, Gordon and Breach Science Publishers Ltd., 42 William IV Street, London WC2.

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## Editorial

In this number we carry a discussion with Theodore Roszak, who is well known in America, perhaps less well known in England, for the books in which he has described “a transformation of human personality in progress which is of *evolutionary* proportions, a shift of consciousness fully as epoch-making as the appearance of speech or of the tool-making talents in our cultural repertory”. (*Unfinished Animal*, p. 3.) Our concern in the discussion is not so much with whatever is meant here by an evolutionary transformation of consciousness, but rather with the kind of society Roszak envisages. In an earlier book called *Where the Wasteland Ends* which we reviewed in an Editorial (*T. to T. vii, iii*) Roszak conducted a vigorous polemic against the evils of urban industrial civilization, in the name of the unique individual and its personal experiences. He wanted then, and he still wants, a politics which will not be impersonal and faceless, a politics in which ultimate human meetings can take place (not in smoke filled back rooms) which will match the evolutionary change he anticipates. But he does not take up the question how the face-to-face “politics of eternity” which he hopes for can be conducted at a national or international level. Indeed, he rather tends to dismiss the problems which arise at this level, actually at any level where more than informal administration is required, as being caused by the very technocratic consciousness which is his principal target.

His search for ultimate meaningfulness in politics means that Roszak has little sympathy for the supposedly inauthentic and shabby virtues of bourgeois politics and morality. He is with the Marxists in believing that “every right is an application of the *same* measure to

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*different* people who, in fact, are not the same and are not equal to one another; that is why 'equal right' is really a violation of equality, and an injustice". (Lenin. *The State and Revolution*, V, 3.) Roszak wants a politics which is sensitive to each nuance of the ultimate individual consciousness, and this causes him, like the Marxists, to adopt a somewhat contemptuous attitude towards those who are trying to tackle the difficult problems of the present.

What is it like to have serious public responsibilities, and yet to carry the contemplative or near-religious sense which Roszak rightly wants to substitute for the egotism which he sees at the heart of our society? Dag Hammarskjöld, Secretary-General of the United Nations from 1953 until his death in 1961, was such a man, and our *Sentences* in this number are partly drawn from his posthumously published *Markings*. He was one who believed that "In our era the road to holiness necessarily passes through the world of action". It remains to be seen whether Roszak's "personalist" philosophy can catch fire amidst the very real and critical tasks of national planning (e.g. housing and transportation policies) and world politics. Roszak does not make these his concern because seeing these problems in this context is in his view an illusory product of the urban industrial outlook which he wants to eliminate. But is it possible for these problems to disappear in a "personalist" society of small communities?

In the discussion Roszak says that "countercultural" energies now seem to be flowing into a variety of movements of a more political kind. And this contact with orthodox politics raises all the old questions of idealism, conscience and betrayal, which can only ultimately be settled, as Hammarskjöld puts it, in a discussion "concerning my negotiations with myself—and with God". In *Markings* we can see the inner struggles of conscience of a man who is in a position of great public responsibility, and the loneliness he must face in his decisions. Hammarskjöld did not retreat into a cosy world of his own choosing, rather he undertook to live in the real world of compromise and hard decisions "To separate himself from the society of which he was born a member will lead the revolutionary, not to life but to death, unless, in his very revolt, he is driven by a love of what, seemingly, must be rejected, and therefore, at the

profoundest level, remains faithful to that society.” (*Markings.*) There is surely a difference between a public servant who is merely an administrator, and one like Hammarskjöld whose work is infused with a lucid appreciation of the individually human and the irrevocably personal.

This means that there may be greater resources in our mundane society and in the ordinary people in it than Roszak’s sharp separation of eternal or “heavenly” and technocratic or “earthly” cities will allow. The portrait of technological society which he criticizes may be thought to have in it an element of caricature, particularly when the unquestionable benefits of modern technology and liberal democratic politics are left out of the picture.

An opposition is also made between the “personalist” society and the “impersonal rationality” of large scale administration, e.g. in law and justice. It is a familiar maxim that the abstract rule of law is no respecter of persons, and this does not sit well with free-wheeling personalism. But there must be something more to law than measured impartiality and strict universality, and this something more is made manifest by the administrator who knows how to use discretion with compassion, and the judge in whom the quality of mercy is truly alive.

When William Godwin produced what are still to our mind the best arguments in favour of anarchism (embodied in Shelley’s poem *Queen Mab*) he proposed to substitute private judgement for law, and individuality for authority. In claiming that such individuality would not be anti-social he relied upon the supposed fact that there is only one good life for man, that to each human problem there is a unique solution. He wanted to lose such problems in the solvent of universal “sincerity”. He believed that anything which moves men to action apart from their own private judgement is necessarily coercive, and that abstract law cannot catch the rich variety of human experience.

But there are (in a liberal society) *many* good lives, and the problems which arise as a result of this plurality call for more than sincerity. Abstract law may not embody the fullness of human experience—but nor is it intended to. It does allow very different sorts of people to live relatively peacefully together. For Godwin,



**“government is nothing but regulated force; force is its appropriate claim upon your attention”. (William Godwin, *Enquiry Concerning Political Justice*, Penguin edition, p. 242.) This is indeed one claim, but there are also the claims of the genuine merits of the policies which government pursues, and the security which a settled legal system provides.**

**Roszak is right to remind us that impersonal social forces, such as the law, can be heartless, bureaucracy sometimes a downright evil, and competitive industrial society a crusher of persons. That there is now a much wider public awareness of these things than there was twenty years ago is in no small part to the credit of the makers of the counterculture.**

## **Discussion with Theodore Roszak: Is the Counter-culture landscaping the Wasteland?**

THEODORE (TED) ROSZAK, TIM EILOART, GLYN  
DAVIES, CHRIS GILCHRIST, DOROTHY EMMET,  
and other members of the editorial group (Q)

**Q.** When your book *Where the Wasteland Ends* was published in 1974 we had a review of it in *T. to T.* Your first book was called *The Making of a Counterculture*, and since then, in addition to *Wasteland*, you have written another book, *The Unfinished Animal: The Aquarian Frontier and the Evolution of Consciousness*, and are also writing another again. We should be interested to know how your thoughts have been developing, and in particular what you think has been happening to the counterculture.

**T.R.** Well, let's start with I suppose the inevitable question "Whatever became of the counterculture?" The reason it's difficult to answer that question whenever it comes up is that I never quite know what it is that people mean by the phrase, because although it's a term that I believe I coined it's used in all sorts of strange and it seems to me very journalistic ways. My experience was that within a few months of my first book being published in the United States journalists were using the term in many different and incompatible ways. The way it is used journalistically had to do with campus rebellions, certain styles of dress, certain styles of music, certain styles of living, certain styles of music, popular music, and a number of other things of that kind. The fact is that I don't think I really used the term in that sense. What I think I was writing about in *The Making of a Counterculture* and in subsequent books was the growing resistance within our society to the entire world view of the

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*Theoria to Theory*

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urban industrial culture. And therefore there was a kind of rebellion going on that reached much deeper than political rebellions or resistance movements usually reach. That is, in addition to a protest against the Vietnam War, racial injustice, social injustices of many kinds, there was mixed in the politics of the sixties and seventies a deeper level which included a number of political issues, and was raising questions of the whole validity and viability of the urban industrial social order. So deep questions were being asked about the myth of science, about the whole myth of progress. It was questions of that kind which really interested me, and which I think I paid much more attention to in my books than to current political issues and problems. I believe that the best and most concise summary I can give of what the counterculture meant to me is that it comes in two phases. It was first of all a gesture of rejection which included a number of social injustices, political deceptions and so on, and then at a deeper level a search for some reality principle — again for lack of a better term — that might replace the assumptions and sensibilities that were necessary to create an urban industrial social order in the first place. And it seems to me that that level of protest, at that depth, is not something one would expect to be resolved in a period of years or decades — a long term cultural project which needs to be going on for a very long time. I've developed a kind of genealogy for the counterculture which reaches back at least to the early Romantic poets with their suspicion of science and technology and their suspicion of the state, which also came up in the 1960s. But it seems to me that what happened within the last generation was that the set of sensibilities which had been restricted to poets and philosophers and were a rather rarified and marginal aspect of the culture had gotten very widespread in the society, and had taken on the dimension of a politically significant force, mainly in a kind of generation of dissent. So what you have is a kind of popularization, maybe in some cases a vulgarization, of sensibilities which had been born many generations before among poets and philosophers.

Well, whatever became of all that? That's what I've addressed myself to in the book I'm writing now. It has an odd title. The title is *Person-Planet*. This summarizes in a succinct way that the book is

about the connection between personal awareness and personal growth, a shifting sense of personal identity, and on the other hand the planetary ecology, which I accept is in a state of emergency. What I think is the most enduring contribution of all the forms of countercultural dissent was the way in which it deepened the sense of personal identity which comes more and more to see the reality of the human personality and the value of the personal, and in the name of these resists all attempts to manipulate or standardize or stereotype the actions and lives of human beings. It seems to me that one of the things many people protest about with respect to countercultural politics is that it doesn't become a mass movement, it doesn't take on the form of a political party, it doesn't become what politics has been in the past. Instead it seems almost apolitical. It's worried about politics, it's worried about power, but it takes off in so many different directions, many of which seem self-regarding or self-indulgent. For example, in the United States it's quite impossible for us to have a political party in the classic sense of that term, something unified with a distinct programme and an objective, and which moves steadily towards a position of power in society.

Instead what is happening is that you have a kind of mosaic of discontent and dissent in which you've seen various people in different situations of life becoming more and more deeply involved in finding a personal identity which leaves behind the stereotypes and standards of society. So for example you have movements like women's liberation, gay liberation, movements of senior citizens, movements of the handicapped. Then all these get more defined, for instance, the women's movement has become a congeries of different movements to deal with specific life situations. I see an intense desire to make politics as personal as possible, to throw off the abstract identities which mass politics has always worked with, and to find a politics of the life situations in which people find themselves. I think this could be a new style of politics, but it is difficult to see how it could be successfully organised. I can see one respect in which this development speaks to one of the crying needs of our time. What people are rejecting is the mass society and bigness in any form. There is a desire to make things small and get close to the needs of the human personality. This makes a lot of

ecological sense. I see a relationship of this kind of politics with ecological problems. In the book I am writing I am trying to imagine if the earth itself had a consciousness, how it might respond to all the life forms it has produced. It seems to me it would sympathise with its troubled human children over their sense of identity and discontent, and their wanting the small-scale against the centralised large-scale. So the two great forces could make common cause, the needs of the human personality and the needs of the planet. We live in a time when the needs of the planet have become the needs of the person.

*Q.* We knew Schumacher and had a discussion with him, and Anthony Appiah, who is half Ghanaian, had no use at all for "small is beautiful". He said that what Ghana needs is a really big dam. We also had John Walker, chief engineer of Rugby Cement, who said he could run a mine anywhere in the world with 26 people and have no accidents, but you would need really advanced technology to do it. So "small is beautiful" is a fine image, but the people you would expect to back it up most say you need exceedingly advanced technology to do so.

*T.R.* "Small is beautiful" is the title of a book, and you mustn't make too much of a slogan-like title. Smallness doesn't necessarily save the person. Unless 'small' adds "personal" it won't speak to our needs.

*G.D.* It seems to me there are two movements—one is back to the personal and inner life, the other is out into space.

*D.E.* You were talking about the growth of urban industrial society and Glyn is now speaking about the interest in exploring the outer world. The difficulties over urban industrial societies do not necessarily mean we want to give up scientific exploration of nature and concentrate on the inner life.

*T.R.* The counterculture isn't necessarily anti-scientific, but the focus is against *large* technology. It takes technological skill to do the small things. If you look at the Whole Earth Catalogue you will see that.

*D.E.* My point was whether the alternative to what you call urban industrial civilisation is to concentrate on "inner space". There can be a lot of scientific interest which isn't necessarily pinned

to living in urban centres, and which might be even better followed in smaller centres of a more dispersed kind.

**Q.** I would have thought people had already tried to have smaller organisations for work which were more personal, and it was found that they wouldn't do from an industrial point of view, and they are being superseded. Do you want us to go back?

**T.R.** In my way of thinking, the notion of smallness is subsidiary to the notion of the personal. We can't go back to the conditions of a much smaller population. But in a wide variety of enterprises, a small scale is necessary for personality, though it is not sufficient. We can make things small and just as impersonal, like sweatshops.

**Q.** Smaller units need not mean sweatshops, but rather, flourishing small businesses in which it is said that people know each other. But these smaller enterprises are constantly being merged, and the personal relationship gets lost.

**T.R.** I am saying it is not just smallness, but something extra that is needed to provide for personal fulfilment within small as well as large organisations. This argument is only in a quantitative way linked with Schumacher's thesis.

**C.G.** In fact the theme of *Small is Beautiful* is being forced on industrial societies, where we are seeing a revival of small independent units, as distinct from the multi-national dinosaurs.

**T.E.** On the question whether smallness may not work, I'd like to cite the evidence of an enquiry which looked into a number of small businesses that got merged, where it was found that every one of them depended initially on an individual who was very able, good with people, and good with markets as a business man. Then the business went to his son, and then perhaps to his son's son, who found they would either have to go out of business or merge. So one ingredient you need is the original bloke. Recently the world's largest computer was built by a team of a score of men led by one man, something which IBM would find quite unbelievable.

**Q.** I don't see how you can get societies to function except by having people gifted at understanding others and offering them scope. So it is the really gifted individual that is needed.

**T.R.** Many of the problems regarding management and organisation arise from people feeling that they are in some way

*special*—hence the individual hair styles, forms of dress and so on, and this comes out in some of the movements for various kinds of liberation. Insofar as people think they are special, they see the institutions in industrial society as based (if they are to function) on an alienating discipline. So, in increasing numbers, people are just not going to be prepared to work on assembly lines; they won't accept standardised methods developed to meet the expectations of society. Big institutions, whether they are business organisations or mass political movements, are beginning to break down because they discourage this value of "specialness". People are saying, "I am special, and the whole damn world ought to take notice of me."

*D.E.* If you say, "I am special, and the whole damn world ought to take notice of me", every institution, not only the big ones, would break down. You are saying something which is true on the one hand, but also which makes it impossible for people to work together if it is all you say.

*T.R.* Yes, to say this is to behave like a spoilt child, and you can't build industrial institutions on a population of spoilt children. We are producing a population of spoilt children. All the institutions around us, even those that are well-intentioned, are highly bureaucratized and demand a certain kind of predictable, standardised behaviour which we can no longer expect. So they are disintegrating. I am suggesting that what is happening in the midst of this disintegration is something extremely valuable—the assertion of the dignity of the unique human personality.

*G.D.* Let us go back to your metaphor of the earth as having a living consciousness. There seem to me to be two things about this. First I see this as a necessary metaphor, in the sense that even if it is not true, one has to believe in it for survival. The other thing is that when you speak of the earth reacting on its human population, this is presumably on the entire population, not just on certain sections that are powerful. This is the first moment in history when the entire global population is within reach of one another. Isn't the question less what sized units of the technology you have than concern for how these units operate on the world as a whole? Our ideas are prefabricated to operate in other ways and we want new conceptions of the purposes of technology.

**Q.** One thing we want to avoid is the use of technological concepts as metaphors which we impose on the ways we think about ourselves. These technological metaphors have grown up since the Industrial Revolution. But that people matter is not a new idea; though you can say it hasn't ever been carried out, it has been put forward in all sorts of civilisations. So if you want to start with a new idea, why don't you start with "What is a spoiled child?" How are you going to manage anything with only spoiled children? You are going to need a mystical tradition to enable the spoiled children, who are potentially the strong and creative characters, to find something which will help them to grow out of being spoiled children.

**T.E.** If it is to be a spoiled child to refuse to work on a production line, then I am for him. We would be far better off if we had to produce things in other ways.

**Q.** The production line may make for a spoiled child because it causes such irascibility.

**T.E.** I don't know if you meant "spoiled children" as pejorative?

**T.R.** I was using an expression that is frequently used. I don't doubt the way this discontent manifests itself can look like this. What is being manifested is a way of life that may have had prototypes in the past in Latin quarters and among an eccentric few, but wasn't a prominent public fact. You can tolerate an eccentric, anarchic few, but now you get more and more supposedly ordinary people responding to this personalist spirit. The book I am in the middle of is not simply asserting this attitude, but saying that there must be some welcome for it.

**Q.** I wonder how far you feel you have some sort of integrative principle or vision which would give a point to this movement which, as has been said, could be disintegrative and leave people not even feeling valuable.

**T.R.** What impresses me about the ways many of these movements are trying to realize themselves is that they are forming small communities, just as monasticism began as a disintegrative movement and then produced stable communities.

**Q.** The monastic communities had a universal faith. Do you envisage something like that?

**T.R.** What I am drawing on in the comparison is the way in



which a turning inward, a private exploration of the self led to the building of communities. I am not suggesting these experiments will be monastic in a traditional or doctrinal sense, but that the monasteries achieved a balance of personality, technology and ecology which we have lost.

*D.E.* They also had traditions of training; they weren't just people coming together to explore their inner life. They had discipline and rules — you may not want to emphasise the rule, but at least they were very structured communities.

*T.R.* I was taking up a word used in criticism and suggesting there may well be a stage in development where children are "spoilt".

*Q.* Indeed everyone may have to be a spoilt child at one stage, but we need to be taught how to go beyond that stage, and not just stay with the big Ego who is the universe. The monastic communities have no patience with spoilt children — they are very tough with them — except that the novice mistress will say, "Yes, she is a spoilt child, but look at her potential." The trouble is that the monastic training can become stereotyped and the rules get on top; the remedy is to have the true contemplatives at the centre who know when to jump over the rules.

*T.R.* I was concerned with how the desire for self-exploration can generate round itself a very practical kind of community, and that this can be done.

*G.D.* But you can't have millions and millions of small communities.

*T.R.* I don't know how many you can have. It depends on whether you want to preserve the existing industrial civilisation.

*Q.* You want temporary monasteries. Monasteries can become quite extraordinarily set. You want something that is a mixture between university and monastery. What goes wrong with Christian monasteries is that you don't leave, except by a painful break with them. The Zen notion was that you could go for about seven years and then, when you had had your kensho, you could go back to the world. Thomas Merton, who was in the *T. to T.* group as a correspondent before his death, used to write of the possibility of a temporary novitiate.

*T.E.* Do you think that the "Human Growth" movement may

founder because in fact people don't think they have got to do all this self-investigating? It is possible that this desire for inner experiences which probably most of us here have may get bred out of people in a few generations. It has been suggested that our need for encounter groups and other cleansing systems, including religions, may well arise from our childhood experiences which leave us scarred.

*Q.* It is Utopian to think people's interests are never going to clash. Also people have to go through periods of unhappiness if they are going to be in a position to be able to fulfil the choices they have themselves made. It isn't all sweetness and light, and this applies above all in the mystical quest. I think you, Ted, really know this, and are asking for a new mystical core to our culture. Can you see hopeful next steps, if we are not going to go into millions of communities?

*T.R.* I should be loath to give a blueprint for a personalist order of things. There would be a starting point in education, not treating children as having to be filled with information, but as individuals with their own potential.

*G.D.* Having tried to teach, I know you have to have something you are teaching. How do you just educate potentialities?

*D.E.* Two generations ago there was a widespread movement led by John Dewey for "child-centred" education. Then they came up with saying, "These kids just aren't learning anything." How do you avoid a swing of the pendulum?

*T.R.* The reference to Dewey is interesting. Whatever Dewey meant, it got into the hands of the established bureaucratic school system. My brother started school after the war in New York City under what was called progressive Dewey education and it went like this: he wasn't allowed to read before the age of nine, whether he wanted to or not. At a certain time each day, he had to finger-paint, and at another time play with bean bags. It had become a strict method of education, with a new set of compulsions, because the school system was too big to be flexible.

*D.E.* I don't see how you can be interested in the child without also having something to teach, and if you have nothing else, the what were meant to be experiments with finger-painting and bean bags will turn into fixed methods.

*Q.* Can we get Ted onto the idea that no civilisation before ours

has had the notion of the sacred duty of individual competition, which has gone to the extreme in the U.S.A. If you want research done in the U.S. you have two research teams to compete, and inside each team you have two people for each job, facilitating general neurosis all round. Why did this set in?

In the Steiner schools it seems possible to get children to take delight in other people doing things well, providing there is something you can do too. The problem then is the shock when they go into the outside world.

*D.E.* There is quite a considerable literature on what, following David McClelland, is called N-Ach (need for achievement). Some of this assumes that achievement is competitive and self-interested, but some of it is concerned with how you try to pitch yourself against a standard of excellence you set yourself—wanting to do something well was a motive not enough recognised by social psychologists.

*Q.* The corollary of competition is the notion of equal rights. One of the best institutions for dealing with delinquents in this country—Mr. Lyward's—was based on the fact that, since everyone was completely different, if two boys committed the same offence, one might be punished and the other given sweets. There was no question of equal rights, and in a short time this was recognised. What you had done was tied up with why you did it, and whether you needed encouragement or not.

*D.E.* This fits with what we were saying about communities. George Lyward, the head of this particular community, Finchden Manor†—which was a remedial school for disturbed boys of high intelligence—was a very remarkable person. He got them interested in themselves and each other so that they understood the reasons for differences of treatment—otherwise it would just have looked manifestly unfair. I asked him about this once, and he said it was possible because they could come to understand what a particular individual needed. This was possible in a small community with a very remarkable person running it, prepared to take endless time,

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† See the discussion between four boys of Finchden Manor in *Theoria to Theory*, IV, 4.

and dealing with boys of high I.Q. Large scale communities have to be more impersonal. Part of the democratic idea in politics was not only the assertion of rights, but also that people might feel that in some degree they counted.

*T.R.* Democratic methods are now having to give way to accepting the judgments of experts whose views can't be disputed. The public just feel they are like passengers in a ship at sea, at the mercy of the experts in charge of the ship.

*Q.* Even in a small boat you can't be anarchic, but everyone on it can work together with something like a united will. In a disaster in the political world, suddenly you can get a united will, like in a storm in the boat, but in the ordinary course it is difficult to get enough of this united will.

*C.G.* Coming back to technology. It is producing smaller as well as larger inventions, and some of these are extremely liberating. I look forward to the day when I can have a small, cheap computer attached to my telephone.

*T.E.* At least microprocessors may allow everyone to have access to computing power. We might see fewer huge assembly lines if, for example, design of personalised items (like caravans to fit your family) were possible by microprocessor.

*Q.* One of the great liberators has been electric power coming into nearly every house.

*T.R.* But the big electrical grids also break down, and then whole urban populations are left helpless. The paradox is that things get worse as they get better. With all the best intentions we create a Frankenstein monster.

*Q.* Do we? One electric power line in Antigua, Guatemala, didn't feel like a Frankenstein. Are you sure the introduction of electric power produces a Frankenstein monster?

*T.R.* What I am calling in question is the technocratic social form that goes with accelerated technological development, and the price one pays in terms of freedom. I am suggesting that it is possible to create a new kind of social system. At present we are at the mercy of the experts.

*Q.* But there is also a big revolt against being mystified by the experts. People are wanting to be shown how things work, and going

in for "do-it-yourself". Why all this mystery about experts? Isn't it a particular kind of mystification *plus* oppression *plus* corruption that you feel you are up against, not just expert opinion itself? Half-baked education always produces this.

*T.R.* I take it for granted that the advance of technology leads to greater and greater specialisation of experts.

*Q.* I think you have a superstition about specialisation. The trouble is that there has been a rapid expansion of half-baked education and technology with people not understanding what they are doing.

*T.R.* I think people feel there is too much to know and too much that they can't understand.

*Q.* It is very necessary not to sit down under your fear of experts. No one can master everything, but if you have competence in one thing and a capacity to learn other things when you need to, you need not be scared by experts. This isn't being omniscient, but knowing enough about how things work.

*D.E.* If you are talking about deferring to experts at the level of government decisions, it is notorious that the experts disagree with each other. The experts don't all speak with one voice, for instance, about nuclear energy. It isn't a question of kowtowing to a united consensus of experts.

*T.R.* Ordinary citizens may try to have public meetings about things like this, but they don't feel they are making the decisions. That is a matter of debate between experts.

*D.E.* In England it isn't just that. You have meetings where people get up and cross-question the experts.

*T.R.* I will give you an instance from the U.S. We have to decide on whether we should chlorinate water, and there is the question of whether chlorinated water can produce cancer. How do we know? You can call meetings, but how are they able to decide? Different scientists have produced different evidence.

*Q.* You have got to see how good that evidence is. Scientists can be producing a doomwatch atmosphere.

*T.R.* What does a government do? Set up a committee to study the question, a committee of experts, and if it challenged, it is by other experts.

**Q.** No. It is a political decision, not decided in the end by the experts. It isn't the case that when the British Government makes an ass of itself it has just followed a committee of experts. In a small island ordinary citizens can get into the discussion. But in a large landmass like the U.S. there is this feeling of the remoteness of the citizen.

**T.R.** I can't train myself in all these fields of expertise.

**Q.** You can know enough to know when someone is being phoney.

**T.R.** Also, there are so many things now said to be sciences, and people are careering round claiming to be experts in them. Society is getting to depend on these experts at its core.

**D.E.** Shouldn't people be taught to be more aware of what genuine science is like, and so be less likely to be taken in by bogus claims?

**T.R.** We could say we want a system of education which will cope with the fact that we are becoming an expert-dependent society. That is one route. Or we could take another and say we don't want this kind of social system in any case.

**Q.** These need not be alternatives. What you have made us see is that you want small groups of people who can set themselves to acquire what Solzhenitbyn calls "civic valour". You need also scepticism about whether the experts really know what they are talking about.

**T.R.** The experts have got to make it appear, when they are employed by governments, that they do know, or they will be dismissed.

**Q.** Then they have got to be prepared to be dismissed. People have not necessarily got to know all that much, but have to be able to smell when people are lying.

**T.R.** I am raising the question of the expert who is not a phoney and not lying, but society has become dependent on him.

**Q.** Whether it really has must always be called in question. Every line of expertise is getting phoney claims built into it, and this is a moral question. There are not only forms of expertise, but forms of oppression, and this is no new question. This is where civic valour comes in. You need the skill to confront people. You have got to be

prepared to go to them and say, "There is something wrong here", even if they are great Nobel prize winners.

### Addendum by Ted Roszak

As one must expect in any informal conversation, a great many of the ideas that were raised in our T. to T. session managed to get somewhat compressed and abbreviated. What such talks gain in spontaneity they often lose in complexity. May I mention that many of the points touched upon in our discussion have been treated at some length in my books? For example, technocratic politics and the mystifications of expertise are a major theme of my book *Where The Wasteland Ends*. (See the chapters "The Artificial Environment" and "Citadel of Expertise".) Similarly, the latter day manifestations of the counter culture—especially in the form of new religious movements—are the main subject of *Unfinished Animal: The Aquarian Frontier and the Evolution of Consciousness*. Finally, personalist values, economic decentralism, and global ecology—with explorations of new directions in family life, education, work, and a critical examination of the future of the industrial city—are the main concern of my forthcoming book *Person/Plant: The Creative Disintegration of Industrial Society*, which will be published by Gollancz in early 1979. The book also develops my thoughts on the contemporary relevance of the monastic model of communitarianism.

## **Black holes**

CHRIS CLARKE

[This is an exposition given at a Seminar of the *T. to T.* group in June 1978. Some of the principal questions and comments are indicated as it goes on. I am grateful to Kit Dodson of the University of Lancaster for many helpful contributions.]

*C.C.* The theory of black holes has reached its present state through three main stages: (i) a Newtonian theory by Laplace, which was not developed and had no lasting influence; (ii) Maxwell's electromagnetic theory, followed by special relativity, which implied that black holes were impossible; (iii) general relativity, which now provides the standard model for a black hole.

i) Laplace, in 1798, remarked that, if a body with the density of the Sun, or a few times greater, were sufficiently large, then its gravitational pull at its surface would be so great that light would not be able to escape from it. His argument (1799) was based on the fact that in Newtonian gravitation theory there is a well defined escape velocity for any gravitating body, such that no particle thrown up from the surface of the body with a speed less than the escape velocity can escape, but is drawn back onto the body. Laplace calculated how large a body had to be for its escape velocity to be greater than the velocity of light. If this holds, then light itself will not escape but will be drawn by gravity back to the body — provided that light has the form of particles that are thrown out with a fixed velocity and then subsequently fall freely under the influence of gravity. Perhaps Laplace himself had doubts about this assumption, for his theory of the star so big that it trapped light was omitted from later editions of his "Exposition du Système du Monde".

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ii) The idea that light was a stream of particles that might be affected gravitationally was apparently demolished by Maxwell's description of light as electromagnetic radiation. In this theory (which is now a basic part of physics) the velocity of light emerges as a function of certain fundamental electrical constants. Thus light always moves at a speed that is a fundamental constant and so cannot be accelerated by gravity in the way particles are. Special relativity incorporated this result (which was verified to a high accuracy experimentally) into a consistent dynamics based on taking this fundamental velocity as an absolute limiting velocity: the dynamics of special relativity—which again are well confirmed experimentally—are such that there is no way of accelerating anything so that it exceeds the speed of light.

Thus stage (ii) of this history refutes stage (i) and we are back where we started; since, according to this, the velocity of light cannot be affected by gravity.

iii) Now we come to general relativity. The main basis for this theory is the *principle of equivalence*, which is most easily stated in terms of a system in free fall.

*Question* Just tell us what “free fall” means here.

*C.C.* It is the state of something free in space. Einstein used the example of a lift cut free from its cables and track. Now we have the actual example of astronauts in a spacecraft when its rockets have stopped firing and it is free of all but gravitational influences. If one is in a freely falling situation such as a satellite then one sees no gravitational effects around one: it is a state of “zero-g”, as they say.

The principle of equivalence says that, in this state, gravity is completely cancelled by the free fall. The name “principle of equivalence” comes from the idea that gravitational force and the acceleration of falling are equivalent in all their effects, so that if one has the right acceleration then gravity can be cancelled exactly. In traditional Newtonian terms of speaking, the principle embodies the idea that everything falls with the same acceleration; so that, in the case of a satellite, everything falls at the same rate and there is no acceleration of one thing relative to another. Consequently, if

one is oneself part of the system then one experiences no acceleration of the things around one relative to oneself.

*Comment* With the advent of space travel this has become the secondhand experience of everyone, whereas before it took a lot of imagining; just as, at the time when Galileo developed mechanics the idea of perfect steady motion was rather far from everyday experience: Galileo took the example of a ship, but it would have been a very odd ship for people to have felt no motion in it.

*C.C.* We now have to make the principle a bit more precise. If the satellite is a large one then the parts further from the earth will experience a slightly different gravitational pull from the parts near the earth (since the pull gets weaker according to the inverse-square law) and the direction of the gravitational force, directed towards the centre of the earth, will not quite be the same at one side as at the other. So the acceleration that the satellite has because of its free fall cannot precisely cancel out gravity at all parts of the satellite: there will be a slight residual effect due to the difference in the gravitational pull at different places, an effect that becomes progressively weaker as the size of the satellite or other region being considered becomes smaller. The principle of equivalence is strictly true only in the limit as the size of the region becomes vanishingly small.

*Question* Then surely the principle of equivalence is only an approximation. Is it ever possible for it to be actually realised?

*C.C.* The principle is accurate *as a limit*. This means that, whatever accuracy you specify, I can choose a system sufficiently small so as to exemplify the principle to that accuracy. In other words, if we establish a certain accuracy with which to do our measurements, then there is a corresponding size of region (the size depending on where we are in space) within which — in free fall — no gravity is detectable to that accuracy. If one increases the accuracy of measurement available, then one must make the region smaller if gravitational effects are to pass undetected. For most experiments near the earth the size of the region is a few tens of metres; i.e. in a satellite ten metres across one will not in practice be able to detect any gravitational effects unless measurements of exceptional sensitivity are used.

For a fixed level of accuracy, every observer freely falling in space is surrounded by a domain (call it a “domain of free fall”), within which he sees no gravitational effects. Within this domain special relativity holds to the specified accuracy, without gravitational corrections. That is, unless you can compare yourself with more distant objects outside the domain, you have no way of telling that you are being influenced gravitationally: you might just be hanging in a void. It is as if each observer had a torch whose beam only lit up a certain limited region round him, wherever he was. When two observers come near each other their domains overlap for a while and there is a region in which they both agree on what physical laws hold, with no gravity for either of them. (Note that the domains are not fixed on space, like a patchwork quilt: each observer carries his own domain round with him, and wherever we might imagine a potential observer, then we can theoretically construct the domain that would be centred around him.)

The viewpoint of general relativity is that at each place and time there is a certain “natural state”—the state of free fall—for which there is a domain of free fall where special relativity holds to a given accuracy. If one is not in this natural state (as we are not here on earth, since we are not freely falling) then one is accelerating relative to the natural state; and because of this acceleration one experiences all sorts of effects (if one lets go of something it falls down, i.e. it returns to its natural state) which we call a “gravitational force”.

*Comment* Isn't this a very odd concept of acceleration: to describe us sitting here on the earth as accelerating?

*C.C.* It is indeed: but it is a concept that is central to general relativity.

To return to black holes: the principle of equivalence suggests that light should be affected by a gravitational field. For, suppose we imagine a bulb that emits a flash of light in all directions inside a satellite. As seen by the observer in the satellite, within his domain of free fall the light will move out with the same speed in all directions (according to special relativity), forming a steadily expanding spherical shell. But let us now also suppose that this satellite is itself falling down onto a star with steadily increasing

speed. Then from the point of view of someone describing the whole picture from the outside the light too must in some sense be accelerating towards the star.

The result that light is accelerating appears to conflict with special relativity (stage (ii)) according to which light has a fixed speed and cannot accelerate. We can resolve the conflict by noting that general relativity upholds special relativity but restricts its domain of applicability. It is applicable only within a domain of free fall, e.g. within the satellite. It is not applicable within a larger domain covering the whole star and its surroundings.

*Question* Can this possibility be tested, or is it just a mathematical theory?

*C.C.* The principle of equivalence has been checked experimentally to an accuracy of one part in 1,000 000,000 000 so that it is thought to be a fundamental principle of nature, and not just the result of a chance cancellation of gravitational and acceleration effects that happen to be approximately equal.

The idea that a star's gravity can affect light has been checked in the case of the sun by observing the apparent positions of stars and radio sources when their light/radio signals come to us on paths that pass near the sun: the sun's gravity deflects the light, causing a source to appear to be in a different position (as compared with its apparent position relative to its neighbours when the sun is not in that part of the sky).

*Comment* If the principle of equivalence is so fundamental, then one feels there should be a terrestrial experiment that shows all this happening.

*C.C.* There is: electromagnetic radiation (this time gamma-rays) is shone upwards from the bottom of a tower to the top. It arrives at a slightly lower frequency than when it was emitted (i.e. if it was visible light it would be redder). This is understandable when we use the idea that the tower, fixed on the earth, is accelerating upwards relative to the natural state of free fall. So, as seen by an observer falling freely down past the tower, the tower is moving upwards more rapidly when the radiation gets to the top than it was when the radiation left the bottom. Thus we have a situation where the detector receiving the radiation is moving relative to the source

when it emitted the radiation; and in such a situation there is a Doppler shift of the frequency (the effect that is used in a radar speed-trap). So we have here a direct test of an application of the principle of equivalence to electromagnetic radiation.

Now that it is realised that gravity can indeed affect light, then a black hole becomes once again a possibility. All theories that accept the principle of equivalence (including general relativity) predict that if a star is sufficiently massive then there will be a region round it where the inward gravitational acceleration is so great that any light emitted will move down onto the star, in whatever direction it is emitted initially. We should note that, although the stage-(i) concept of a black hole was a simple Newtonian matter, its reinstatement at stage (iii) is much more sophisticated, the arguments being based on experiments backed by modern technology: the deflection of light by the sun, which is right at the limit of precision of photographic astronomy and depends on radio astronomy for reasonable accuracy; the reddening of light as it travels upwards, where the radiation used consists of gamma-rays emitted by iron nuclei whose frequency is known to be very precise because of the Mössbauer effect; and the experimental test of the principle of equivalence, which was first done by Eötvös in the nineteenth century to a surprisingly high accuracy but which only became an overwhelmingly strong piece of evidence when the experiment was refined by Dicke using vacuum technology and modern electronic measuring techniques.

*Comment* So our view of the universe is very much affected by the technology at our disposal.

C. C. Let me describe our present conception of the simplest sort of black hole: one that is spherically symmetrical. To do this, it is essential to think in terms of *space-time* — the set of all “places” at all “times”. (In general relativity “space” and “time” have no meaning as separate concepts.) For a spherically symmetrical black hole, by definition the same in all directions, we only need to describe what is happening on a line through the centre; everything depends only on the distance from the centre and the “time”. Thus in this case space-time can be represented adequately on a two-dimensional piece of paper as a space-time diagram. In this, space is represented

more or less horizontally and time is represented more or less vertically. (So the left and right edges of the diagram are the parts at some distance from the star; the top is what happens towards the future and the bottom is what happens towards the past.) I say “more or less”, because one cannot draw well-defined space and time axes on such a picture: there is no single reference frame covering the whole picture, only local reference frames restricted to each small domain of free fall.

On a space-time diagram the history of a particle is represented as a line running from bottom to top. Also the history of a very short pulse of light is represented (approximately) by a line, and these light-lines are very important because of the fundamental role of the velocity of light as a limiting velocity. To indicate this on a diagram we can select a point and draw two lines representing the histories of two pulses of light emitted at that point, one moving out from the star and one moving inwards; we could also draw in the local time and space coordinates used by an observer in free fall within part of his domain of free fall (Figure 1).

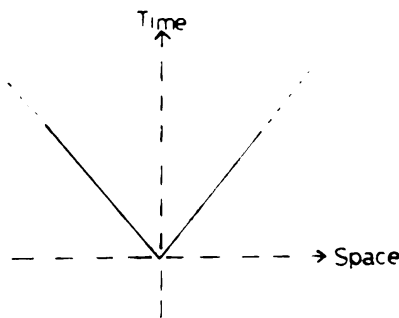


FIGURE 1.

If we were trying to draw a second spatial dimension in our diagram, imagined to be perpendicular to the plane of the paper, then light could be emitted in any one of a circle of directions in the two spatial dimensions and the light-lines for all these directions would form a cone (Figure 2).

*Question* How far are we bound to use metaphors in all this? Obviously you are using the metaphor of time being likened to

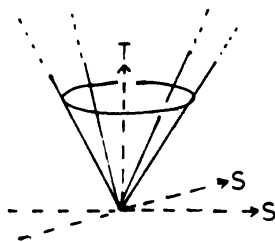


FIGURE 2.

space; and in the course of this space probably gets likened to time and loses some of its spacey quality. And “black hole” is itself a metaphor.

*C.C.* The whole of general relativity depends on drawing an analogy between time and space. But, given this analogy, relativity can be presented as a completely articulated mathematical theory, and there is no need to keep bringing in additional analogies to guide one’s work. In this respect, general relativity is quite unlike almost all other modern scientific theories: a text-book in the subject can still read like Newton’s “Principia”, with the laws on page 1 and rigorous mathematical deductions from them following. And the diagrams we are drawing are exact representations of the results of these deductions. “Black hole” is of course a picturesque expression for a place where things just disappear.

We are now in a position to give the space-time diagram for a black hole that is formed by a spherical star that is shrinking in size, its gravitational pull becoming steadily stronger as its spatial extent becomes smaller until a region is formed from which light cannot escape: the black hole region (Figure 3).

At the sides of the diagram space-time has its familiar structure: we say that it is flat. As one moves towards the centre, the gravity of the star causes the paths of freely falling particles to get more rapidly nearer to the centre as time progresses, so that their paths in space-time curve in. Corresponding to this, the reference-frames in domains of free fall tilt inwards towards the centre. There is a critical distance from the star, points at this distance forming a sphere round the star called the *horizon*—light emitted outside the horizon can, if it goes in the right direction, escape to infinity; light emitted inside the horizon is inevitably drawn inwards.

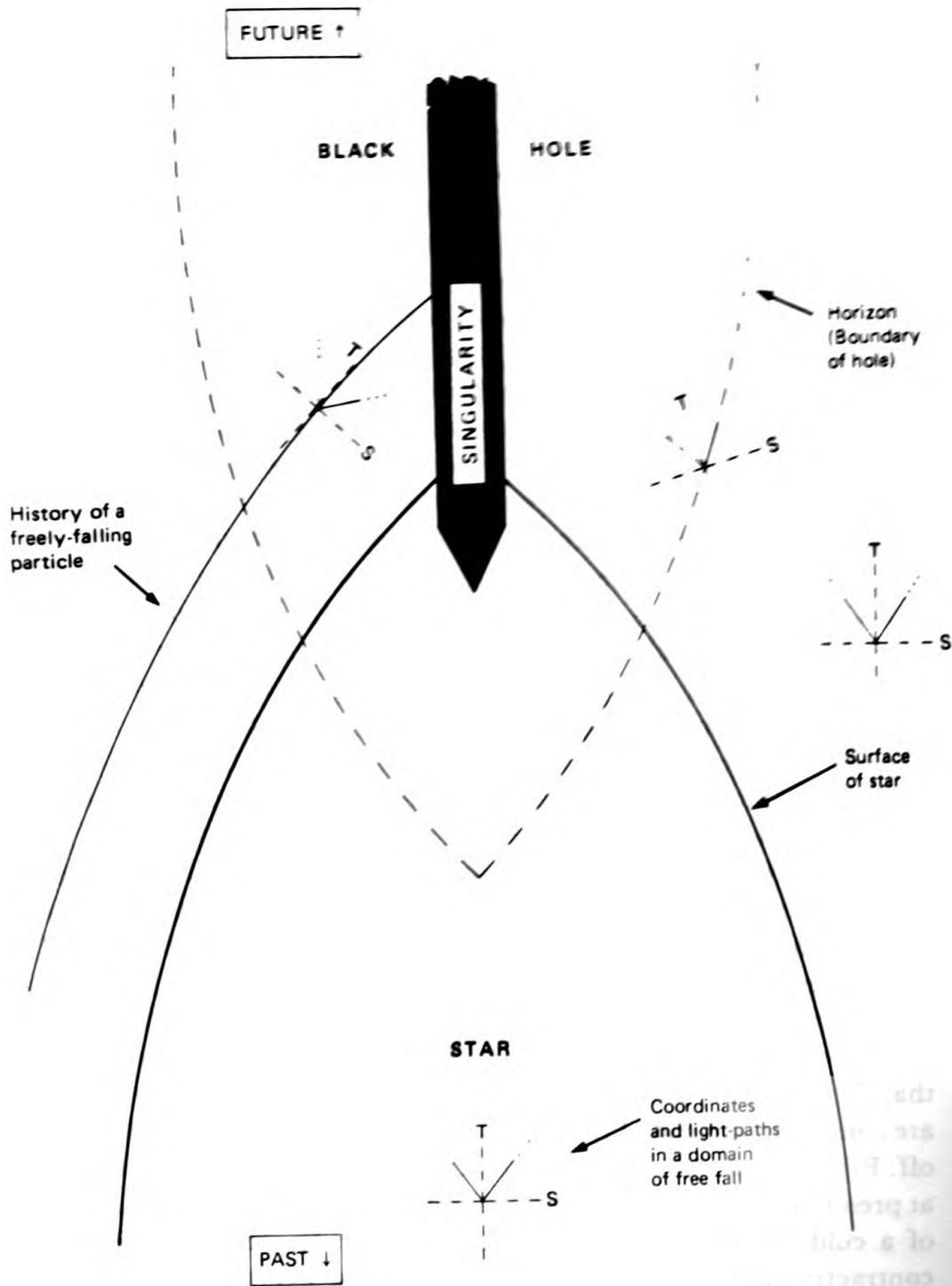


FIGURE 3.



On this picture we can only observe directly the region outside the horizon. The inside of the black hole can only be constructed theoretically by extrapolating inwards according to a theory such as general relativity which lays down how the orientation of the domains of free fall change as one varies the position in the diagram. (This is governed by *field equations* which are much less well tested experimentally than the principle of equivalence.) On most of the theories that are actively entertained as possibilities the extrapolation becomes impossible at a certain stage (at the middle of the top of our diagram). This is called a *singularity* (a technical term for a place where the theory breaks down in the sense that no further extrapolation is possible within the theory). In the particular case of the spherical star we are describing here the size of the domains of free fall shrinks to zero as the singularity is approached.

*Question* Is this all story-telling, or does it exist in reality?

*C.C.* There is an astronomical object, a visible star associated with an intense radio- and, most importantly, X-ray-source, for which the most satisfactory explanation is that the X-rays come from matter falling towards a black hole in orbit round the visible star. (There are other explanations, but they do not account for so many of the observations and they are admitted to be contrived even by their proponents.) But this observation, and any others like it that may follow as X-ray astronomy gets under way, will only be accepted as evidence if one is prepared to admit black holes as an a priori theoretical possibility. Most people, with greater or less reservations, accept general relativity as the simplest theory of gravitation compatible with observations, so the main point of discussion concerns whether or not there exist stars of sufficient size and density to create a black hole. The main argument for this is that there are very many stars a lot more massive than the sun which are coming to the end of their fuel, and which therefore have to cool off. Present theories of matter (indeed, any theories of matter as it is at present conceived, within broad limits) do not allow the existence of a cold, stable final state for such a star: it can only keep on contracting until it forms a black hole, or else explode. Computer-simulations suggest that usually explosions do occur—these are the supernovae. However, the star is not completely disintegrated by the

explosion: observations of the remains of supernovae have shown that some at least of them leave behind a neutron star: a highly compacted cold stable state that can have a mass of up to about twice the mass of the sun, at most. Neutron stars are so compressed that they are within a factor of ten of being black holes, so that it seems reasonable to guess that some supernovae will leave behind too much matter to form a neutron star, and will give rise to black holes. The alternative is to postulate that there is some mechanism whereby the star always explodes in such a way as to leave enough matter behind to form a neutron star, but never so much as to form a black hole—which seems unlikely: how does the star know in advance just how much matter it is supposed to throw off if it is not to become a black hole? So one concludes that the likely end-state of a large star, after a supernova explosion, is a black hole.

This, then is the picture that forms the accepted background to current research in black holes. At present the main interest centres around the incorporation of quantum theory into the subject, a revolutionary step that was first successfully taken by Stephen Hawking at Cambridge. This takes us into a field that is certainly more speculative than the sort of thing we have discussed so far; so perhaps we can go on with this current phase of work another time.





# **Psychological theory and the religious mind**

## **II. Unquiet passions and distracting images**

FRASER WATTS

In the first article in this series, I presented a rather positive view of the spiritual life, suggesting that, by liberating people from personal emotions of pride and shame, it can give them an enhanced freedom of action. Though it is part of classical descriptions of the Christian life that it is liberating (St. Augustine described the service of God as perfect freedom) there is another side to it, which must now be considered.

The spiritual life has normally also involved efforts of self denial and self-discipline. On occasions these have been almost alarmingly severe. Perhaps the fourteenth century German mystic Suso is the most extreme case that has been documented. He describes for example a very tight undergarment he wore at night, on which he had fixed 150 sharp brass nails pointing towards the flesh. This is only one of the multitude of tortures he devised for himself (See James, 1902). His rationale is:

He was in his youth of a temperament full of fire and life; and when this began to make itself felt it was very grievous to him; and he sought by many devices how he might bring his body into subjection.

What can modern psychology make of such practices? One possible response is the one that follows from Freudian psychodynamics. As far as their origin is concerned, it would see them as arising out of unresolved conflict and pathological guilt about basic human impulses. It would also see the consequences of such self-denial as being pathological rather than therapeutic. The impulses denied in

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this way would be considered as likely to become unconscious and to find expression in other disguised and pathological forms.

This is a severe charge. The question is whether it should be believed. There has been a tendency among Christian psychologists to assume that Freudian psychology is scientifically valid and something that must simply be come to terms with. But of course this is not the case. Many of Freud's ideas must be regarded as no more than speculations based on a limited amount of case material, much of it perhaps untypical. There has been a continuing debate among philosophers about how far Freudian psychology is capable in principle of scientific validation (e.g., Farrell, 1961). Among psychologists who have tried to find ways of putting Freudian hypotheses to the test experimentally there has been some disagreement about the results (Kline, 1972; Eysenck and Wilson, 1973) but no one could claim that there has been overwhelming support for Freudian psychology.

The point of this digression is that because Freudian psychology is itself of rather doubtful scientific status, there is no need to believe the criticisms Freudian psychology would make of religious practices of self denial. They may prove to be correct but we do not need to believe them. We do not have the kind of careful empirical study of the psychological consequences of such self-denial for us to know exactly what their psychological consequences are.

Whatever the validity of this kind of depth-psychology critique of self-denial, there are other ethical and theological criticisms of such practices which should be mentioned briefly, though they are not the central thrust of this article. Such physical mortification seems to be based on a dualism that separates the physical and the spiritual, and regards the former as evil and the latter as good. Contrary to this, it has often been one of the fundamental insights of contemplative religion that good and evil are intertwined, and that the goal of the spiritual life is the transformation of the whole man, not the subjugation of the body to the spirit. William Blake puts the point strongly when he writes to his friend Linnell:

**I . . . am very sorry for all such who may be led to such ostentatious exertion against their eternal existence itself, because it is mental rebellion against the Holy Spirit, and fit only for a soldier of Satan to perform.**

With these views in mind I have little inclination to defend extremes of self-denial against the psychological criticisms made of them. However I believe there is a coherent psychological case to be made for limited forms of self-discipline, undertaken for specific spiritual objectives, and this is the case that I wish to make in the remainder of this article.

In doing this I shall make particular reference to the writings of Augustine Baker on contemplative spirituality. Of the classical mystical writers he is one of the most explicit and systematic about the self-discipline that he regards as a necessary preliminary for the spiritual life. He also writes with a degree of down-to-earth practicality that makes him unusually appealing among contemplative writers to a psychologist. He seems to have used his long experience as a spiritual director of nuns as an opportunity to make quite exact observations about methods of following the spiritual life. His strong emphasis on the early stages of the spiritual life means that in content, as well as in style, he is relatively close to psychology. The issues concerning emotional and attentional processes that are the main focus of concern at the beginning of the spiritual life are very close to scientific psychologists' concerns with such functions in the ordinary person. Some of the later stages of the spiritual life involving unusual states of consciousness are perhaps less easily related to basic psychological theory.

Besides Augustine Baker, I shall also make some reference to Rudolf Steiner. Though they are widely separated in time and culture, Baker a seventeenth century British benedictine and Steiner an Austrian polymath working at the beginning of this century, they both have a similar practical approach to the spiritual life. Steiner's treatment of the "accessory exercises" dealing with the control of thought, will and feeling (Steiner, 1969, pp. 245-249) covers similar ground in a practical and constructive way.

Perhaps the most important thing about the way these writers' approach their subject is their emphasis on the *pragmatic* basis of spiritual self-discipline. It is not presented in *moralistic* terms of overcoming evil affects of the self. Rather it is simply that certain kinds of self control are necessary preliminary accomplishments if further progress is to be made in the spiritual life. This is evident,

for example, in the way Baker introduces the subject in *Holy Wisdom* (Baker, 1964, p. 70):

There are two general impediments that nature lays in our way to hinder us from attending to God. The first is distracting images; the second, unquiet passions.

There is a similar orientation in Rudolf Steiner:

In a proper school of spiritual training certain qualities are set forth that require to be cultivated by one who desires to find the path to the higher worlds. First and foremost, the pupil must have control over his thoughts (in their course and sequence), over his will, and over his feelings (p. 245).

From a psychological point of view, the motivational basis of this kind of training programme is quite different from that involved in the kind of mortification in which Suso indulged. The latter conforms to a punishment paradigm in which certain responses are followed by punishment, with a considerable degree of gratuitous punishment thrown in for good measure. With Baker and Steiner the motivation is positive. Self-control is undertaken to achieve desired objectives ("to attend to God" or "to find the paths to the higher worlds"). It thus conforms to a reward-based learning paradigm, even though the reward may be rather long delayed.

Decades of research on learning processes (see for example Bolles, 1975; Aronfreed, 1968) have made it clear that there are important differences between reward and punishment based learning paradigms. In the first place, punishment is often simply less effective, especially when the response being punished is strongly motivated. Further, punishment can be counter-productive (Miller, 1963) and lead to a strengthening of the response being punished, especially when the response is motivated by anxiety. Finally, punishment can by induction lead to a generalised suppression of all motivated behaviour (Skinner, 1938). This is clearly undesirable. Incidentally, it seems to me very likely that the problems of aridity so much discussed in the mystical literature, represent some such phenomenon. My argument would therefore be that the psychology of motivation indicates a clear distinction between the punishment of undesirable tendencies and a training programme undertaken for positive objectives. The latter is not open to the same criticisms as the former.

It will be necessary now to consider more specific lines of objection to the control of feelings, "unquiet passions" as Baker calls them, a line of argument that is linked to the common analogy between emotion and energy. The assumption is that emotion accumulates rather like energy, and that it needs to be released. If, on the contrary, it is "bottled-up" it can lead to inner tensions, "spark over" into other activities etc.

From this point of view any programme for the control of feeling looks rather objectionable. Consider, for example, Baker's remarks on the control of anger. He emphasises the importance of "not breaking forth into words of impatience" or "designs of revenge suggested by passion" (p. 204). This looks like a recipe for "bottling-up" the feelings involved. Steiner (pp. 247-8) makes similar remarks about the importance of controlling the outward expressions of feeling.

Though the idea of emotion as a kind of energy that needs to be released is very common, it is one that can be confidently rejected by anyone who is prepared to base his judgement on the experimental evidence. There are a great many detailed problems with the model (Hinde, 1960) difficulties that multiply as the model strives for greater precision. However, the most central objection to be made in the present context is to the assumption that emotion is a homeostatic drive. Hunger and thirst are fairly good examples of homeostatic (i.e., self-regulating so as to restore equilibrium) drive states. Deprivation from food leads to hunger, which leads to the consummatory activity of eating, which in turn restores the drive state to equilibrium. However, if drives are classified into homeostatic and non-homeostatic ones (Grossman, 1967) emotion, like sex, must be classified as non-homeostatic. Emotional states seldom lead to consummatory activities that restore the emotional state to equilibrium. This is best understood in relation to a specific example such as anger. The evidence (Benkowitz, 1962; Quany, 1976) suggests that expressing anger does not normally reduce the intensity of the feeling. Anyone who would wish to criticise the recommendations of Baker and Steiner against the expression of emotion on the grounds that people feel better when they express their feelings is flying in the face of the evidence.



However, there are other issues here apart from simply whether feeling should be expressed or not. It should be noted that there is no suggestion that people should try not to *have* feelings. Steiner is very explicit here.

The pupil shall by all means rejoice over what is joyful and sorrow over what is sorrowful. It is the outward expression of joy and sorrow, of pleasure and pain, that he must learn to control. If he honestly tries to attain this, he will soon discover that he does not grow less, but actually more sensitive to everything in his environment that can cause emotions of joy or pain.

This last point is an interesting claim that has some plausibility. Perhaps, rather like tasting wine, too strong a sensation is more difficult to gauge accurately than a weak one. However, the main point is that it is the expression of feelings that is being discussed, not the experiencing of them.

The other important point here is the degree of struggle that should go into the control of feelings. Baker is very critical of authors who encourage conflict.

As for example in case of an injury received, they advise that we should call to mind all the circumstances that are apt to kindle indignation and resentment; and as soon as the passion is inflamed, then to suppress it by consideration of the example of our Lord, and His precept of charity to enemies, of the dangerous effects of revenge, and the blessed rewards of patience etc. (p. 178).

My guess is that though there is nothing psychologically harmful about the non-expression of feeling there is something harmful in a *conflict* over its expression. On this basis, I think Baker is very wise to caution against such practices. The passage in which he gives advice on how to deal with "hurtful or pernicious" thoughts that come into the mind during sleeplessness is particularly felicitous, and well captures his gentle, measured approach.

. . . in case they be simply vain thoughts that then wander unsettled in his mind, let him not willingly pursue them, but rather neglect them. Whereas, if they be sinful imaginations, let him as well as he can, divert quietly his mind from them, and now and then without much force lift up his mind unto God, or use some familiar prayers, or say the beads without much forced attention . . . (p. 236).

Clinical psychology has a variety of techniques for helping people to overcome over-intense and troublesome feelings, techniques

which seem likely to be of use in the early stages of the spiritual life, and which are in the same tradition as those given by Augustine Baker and Rudolf Steiner.

The first involves repeatedly exposing oneself to a situation that elicits strong feelings, until the reactions "habituate" and one comes to feel them less intensely. This simple principle, is probably the foundation of the modern treatment of specific emotional reactions such as spider phobias by desensitization (Rachman, 1974). It needs to be carefully done so that the person never feels very much emotion, beginning with conditions that are likely to produce only mild reactions. The principle appears to work equally well whether a person confronts the real situation or simply imagines it. The latter, of course, makes it easier to ensure that one begins with only mildly distressing situations, and that the emotion will habituate rather than increase with repeated exposure. The whole thing needs to be done in a very calm, relaxed condition in which emotional reactions are weak, and a considerable number of repetitions of a variety of related situations are used.

The second approach is to do with how a situation is perceived and interpreted. It is clear that the kind of assumptions one makes about a situation have a considerable effect on the emotional reactions one experiences. For example, imagine you are waiting at a bus stop. The bus when it comes is driven past you. How angry you feel will depend on whether you think the driver did it deliberately or whether he did not see you. If you do not take the incident personally, your emotional reactions will be much milder (Pastore, 1951). The methods of cognitive therapy (e.g., Mahoney, 1974) can help people to identify such unwarranted assumptions that underlie emotional reactions and to counteract them with a rational appraisal.

My third example is to do with some specific morbid or guilty preoccupation that may repeatedly intrude into the stream of consciousness maintaining emotional states that would otherwise have subsided. One method of dealing with this is the technique of thought-stopping (see Mahoney) in which the person may be asked to focus his mind for as long as possible on some alternative topic. When this is no longer possible he gives a signal, the therapist shouts

the instruction "stop", and the client reverts to his chosen thought, again for as long as he can. The average period of time for which the alternative thought can be sustained gradually increases from perhaps only a few seconds in the first session to fifteen or thirty minutes.

Finally, there is growing evidence that the systematic use of the well-trodden technique of Transcendental Meditation, used clinically, may have similar effects in reducing emotional lability, distractability etc. (e.g., Boudreau, 1972). This is not surprising, given the similarity between Transcendental Meditation and the same aspects of the clinical psychology techniques I have described.

The central argument for the value of such techniques for controlling emotions lies, I suggest, in the relationship between emotion and attention. It was attention to God that led Baker to be concerned about "unquiet passions", but the effect of strong emotions on any kind of concentration can be just as serious. The series of studies on day-dreaming and fantasy ("stimulus independent thought") carried out by Jerome Singer at Yale University (e.g., Singer, 1975) provide a useful conceptual framework here. Three general dimensions of fantasy life have emerged.

- a) A creative use of a vivid fantasy life, associated with positive attitude towards it.
- b) Preoccupation with fantasies associated with negative affective states such as guilt.
- c) A state of distractibility, associated with anxiety and tension, in which fleeting, disjointed and poorly developed imagery predominate.

Any serious approach to the spiritual life will need to find a way of dealing with the second and third of these. It should be noted that they are both exacerbated by emotional states, the second by specific emotions associated with the fantasy concerned, while there is accumulating evidence (e.g., Horowitz, 1970) that stress and high arousal produces a lot of distracting and disjointed imagery. High arousal also tends to increase the level of hallucinations in people

who suffer from them. Clearly these also need to be controlled in undertaking meditation. The specific field where the effects of emotion on attention are best understood is the effect of anxiety on taking examinations. One of the central reasons (Vine, 1971) why anxiety can lead to poorer performance is that it tends to produce a lot of worried rumination that interferes with attention to the task in hand. The same would be true of attention to other tasks.

My argument is thus that there is a very close link between "unquiet passions" and "distracting images" and the central reason why the former are a subject of concern in the early stages of the spiritual life is their association with the latter. As well as emphasising the importance of achieving equanimity of feeling, Rudolf Steiner actually advises that concentration exercises should be undertaken as a preliminary to the spiritual life. His suggestion is to take a simple object such as a pencil and spend five minutes thinking consistently about it and shutting out all other thoughts. The similarity of this to the clinical method of "thought-stopping" will be apparent.

The concern of this article has been with clearing the ground as far as emotions and other distractions are concerned, so that a serious meditative life can begin. In the next I shall have to undertake the more difficult task of examining, in the light of general psychology, the cognitive processes on which meditation is based.

## References

- Aronfreed, J. (1968), *Conduct and Conscience*, London, Academic Press.  
 Baker, A. (1964), *Holy Wisdom*, Wheathampstead, Anthony Clarke Books.  
 Berkowitz, L. (1962), *Aggression—A Social Psychological Analysis*, New York, Academic Press.  
 Bolles, R. C. (1975), *Theory of Motivation*, 2nd Edition, New York, Harper & Row.  
 Boudreau (1972), Transcendental meditation & Yoga as reciprocal inhibition. *Journal of Experimental Psychiatry & Behaviour Therapy* 3, 97-98.  
 Eysenck, M. J. and Wilson, G. D. (1973), *The Experimental Study of Freudian Theories*, London, Methuen.  
 Farrell, B. A. (1961), Can psychoanalysis be refuted? *Inquiry* 1, 16-36.  
 Grossman, S. P. (1967), *A Textbook of Physiological Psychology*, New York, John Wiley.

- Hinde, R. (1960), Energy models of motivation, *Sym. Soc. Exp. Biol.* 14, 199-213.
- Morowitz, M. J. (1970), *Image Formation and Cognition*, New York, Appleton.
- James, W. (1960), *The Varieties of Religious Experience*, London, Fontana.
- Kline, P. (1972), *Fact and Fantasy in Freudian Theory*, London, Methuen.
- Mahoney, M. (1964), *Cognition and Behaviour Modification*, Cambridge, Mass., Ballinger Publishing Company.
- Miller, N. E. (1963), Some reflections on the law of effect produce a new alternative to drive reduction. In M. R. Jones (Ed.) *Nebraska Symposium on Motivation* Vol. XI. Lincoln, Univ. of Nebraska Press.
- Quanty, M. B. (1976), Aggression catharsis: experimental investigations and implications. In R. G. Green & E. C. O'Neal (Eds) *Perspectives on Aggression*. New York, Academic Press.
- Pastore, N. (1952), The role of arbitrariness in the frustration-aggression hypothesis. *J. Abnorm. Soc. Psychol* 47, 728-731.
- Rachman, S. (1974), *The Meanings of Fear*, London, Penguin.
- Skinner, B. F. (1938), *The Behaviour of Organisms*, New York, Appleton, Century-Crofts.
- Singer, J. L. (1975), Navigating the stream of consciousness: Research in day-dreaming and related inner experience, *Amer. Psychol.* 30, 727-738.
- Steiner, R. (1969), *Occult Science*, London, Rudolf Steiner Press.
- Vine, J. (1971), Test anxiety and dissection of attention, *Psychological Bulletin* 76, 92-104.

## **Moral and aesthetic modes of religious expression**

PRATIMA BOWES

The distinction that I am making between the aesthetic and moral modes of religious expression is not absolute in the sense that we cannot say that the whole of a religious tradition, like Christianity or Hinduism, is aesthetic, or that it is moral, and certainly it is no part of my contention that division into moral and aesthetic modes is the only one through which differences of religious expression can be viewed. I am deliberately using here the phrase "religious expression" and not the term "religion", for what I want to focus on are precisely certain modes of expression of the religious impulse that accompany different ways of perceiving religious reality, and these expressions can appear in different places. Different religious traditions can however show a certain preference as regards one of these expressions and perceptions and this has become clear to me in the course of reflecting on certain long-standing and typical Christian criticisms of Hinduism, the main burden of which is that Hinduism is lacking in morality. I believe that these criticisms fail to appreciate Hinduism for what it is, for the critic does not quite comprehend that he is in the presence of a different sort of religious perception, and what this presupposes cannot be judged in the terms of the presuppositions and standards that he carries with him as a person operating in the moral mode. I have chosen the terms "aesthetic" and "moral" in aid of elaborating what these differences are. These terms may not do their job perfectly but I have found no better. I have chosen the phrase "religious expression" with its two varieties

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the “aesthetic” and the “moral” in preference to “religion” also to emphasize that it is certain tendencies within the totality of a tradition that I am talking about, moral in Christianity and aesthetic in Hinduism, and not a tradition in its totality. A tradition is always complex enough to hold contrary tendencies, and certainly aesthetic mode tendencies stemming from its Greek sources exist within Christianity. But since my purpose here is to clarify certain differences that cause failure of communication, and incomprehension of Hinduism on the part of Christians, I am addressing my remarks to Christianity only in so far as it exemplifies the moral mode – which does tend to be dominant there – and not in so far as it shows aesthetic tendencies; and vice-versa for Hinduism. The summing up of the whole of the tradition of Christianity or Hinduism is not relevant for the purposes that I have set myself in this paper.

To say that religion practised in a certain culture is dominated by the moral mode is not to say that aesthetic values are lacking in this culture. It is only to say that the stance that dominantly characterizes its *religious* perception and practice is moral in its orientation. Equally to say that religious perception and practice in a certain culture are aesthetic in nature is not to say that moral values are non-existent in that culture. It is only to say that the stance that characterizes its *religious* perception and practice is aesthetic in its orientation. I am here treating a religion as a cultural phenomenon, that is, as a human institution that has been historically established, an institution that is formed of doctrines, dogmas, myths, symbols, rites, rituals, as well as certain characteristic social and moral practices – all devised by human beings and all geared (ostensibly) to the understanding and realization of religious reality. I am assuming for the purposes of this paper that there is a religious reality the existence of which is independent of man’s religious thoughts and activities and that man’s religious thoughts and activities, directed towards this reality, do at times get in touch with it. Anyway, a religious culture or tradition exists within the totality of a larger cultural field that shows other features of importance, geographical, social, political, economic, moral, aesthetic and so on, and I am saying that its characteristic institutions (dogmas,

rites, etc.) develop in a certain way partly at least because of the impact on it of these other features. Religion as a cultural institution of course, in its turn, influences these other features of a culture within which it exists. To say that a religion is a cultural phenomenon, that it develops in characteristic ways because of its genesis and development in a certain cultural milieu, is not to say, I repeat, that there is no religious reality to which man's religious response may appropriately be made. It is only to say that human beings belonging to different cultures have responded to this reality through a variety of different models, models which took shape amongst a group of men and spoke to them, because the background of their experience was such that what it signified could be to them revelatory of religious reality. From my Hindu background I find it easy to assume that religious reality itself, a reality which is infinite and absolute, which is no one thing but the inexhaustible ground of all things, can be pictures, *being the all*, under a variety of different models—there being no one model which is a photographic copy of it, so to say. It must of course be understood that the reality itself exceeds the model or models whether singly or jointly.

I am thus treating a religion, that is to say, a historically established religious tradition, as not being coincidental with religious reality itself, it being a characteristic way in which human beings belonging to a certain cultural group have understood the mystery of religious reality and have developed ways of approach to it via certain models. These models have been generated out of a certain background of experience both social and psychological. (I shall not concern myself with the latter aspect in this paper.) I am thus assuming that wherever there has developed a religion amongst a group of human beings, religious reality, which is everywhere understood to be infinite and eternal, whatever the differences in models used, has impinged on man but that its reception has been mediated by psychological and cultural factors. This mediation by human factors is not peculiar to religious reality but is present everywhere in respect of all human perceptions of reality. Since religious reality is not one thing amongst other things but is the ground or source of all things there is no way in which human beings with their finite abilities can perceive it or talk about it except by



giving it a shape via a model and men have developed a variety of models, of which the aesthetic and moral modes are two expressions.

Before I give some account of what I mean by these modes I shall make a brief point that has some relevance about the nature of Hinduism. To say that a religious perspective or practice is aesthetic suggests to a person operating in the moral mode that the totality of the culture to which this perspective belongs has no moral dimension. This is because the moral mode itself is based on the idea that man's moral practice has been derived from divine commandments. This is not the case with the tradition where the aesthetic mode prevails, and if religion as a cultural phenomenon is part of a total cultural complex then the fact that religious perception or practice, as such, is not geared to the purposes of morality (all human behaviour of every kind may be said to have moral implications) does not mean that the culture to which this practice or perception belongs is necessarily lacking in moral resources, since it may have other sources within the culture for the propagation of moral values. In the Hindu tradition, for instance, a distinction is made between what is called *dharma* (religious living) and *moksha* (spiritual liberation), the latter being the concern of religion, narrowly viewed. Books dealing with *moksha* certainly say that one who has not attained moral purity cannot attain *moksha*. Nevertheless the state of *moksha* itself is not a state of moral goodness; it is an infinite mode of being that is beyond the distinction of good and evil. Good and evil distinctions are made by man for a purpose, and certainly one of these purposes is spiritual liberation, a very important purpose quite apart from the purpose of harmonious social living. Ultimate reality has no purpose, it just is, as viewed from the aesthetic point of view, and it is inclusive of everything that man may judge to be good, bad or indifferent for their specific purposes. There is thus a paradox here, that one has to be good in order to be beyond good and evil, but Hinduism accepts paradox to be central to the being of man. A statement of this nature that ultimate reality is beyond the distinction of good and evil, taken out of all context and without any reference to the concept of *dharma* which deals with the problem of righteous living and moral purity, may well appear to a person operating in the moral mode to be daemonic,

and indeed, as all good ideas can be put to a bad use, a daemonic use of this idea is not impossible. But a spiritual aspirant brought up within the Hindu tradition will never take this idea to be a *carte blanche* for being as evil as one likes. Anyway whatever the moral failings of Hindu culture, and there are some glaring ones, the Hindu people, as a matter of historical fact, have not been aggressive towards others as have been peoples for whom one of the defining characteristics of religious reality is moral goodness. But the two religions, the Hindu and the Christian, are so differently structured—the relative separation of religious practice from moral aims, *as such*, being an example of this difference—that the enormous complexity of Hinduism and its pluralistic structure pose a genuine problem of comprehension for the Christian as to what the implications of Hindu ideas are. It is to clarify certain of these basic differences that I have chosen the term “aesthetic” in respect of some Hindu tendencies as opposed to tendencies found in Christianity that I am calling “moral”. All religions are of course ultimately about God (or religious reality conceived under some other name), or at least this is what constitutes the ultimate direction of all religions, but an approach to God can be mediated by different concerns and as a result different religious cultures can produce different models which colour religious belief and practice. Religious reality being the all lends itself to this treatment and this means that all models reflect something of religious reality but no model captures it all.

A primarily moral attitude to religious reality is a relatively recent phenomenon in human history in that it took definite shape with the rise of monotheism among the Jews, and it is my contention that it is the Jewish experience of life, its socio-cultural, political circumstances, that evoked a morally oriented monotheistic model of religious reality. Prior to Jewish monotheism, most religious cultures in the Middle East (including the Jewish culture), as indeed the world over, were polytheistic. The terms “polytheism” and “monotheism” are somewhat misleading because they suggest that there is a choice between two alternatives and two only; either one believes in many gods or one believes in One God, it is not possible to accept both. This is not in fact the case. Most polytheistic cultures accept the

unity of religious reality by accepting either that there is a Supreme Creator God who is not involved in the day-to-day administration of the world but under whose direction the many gods function, or that there is an all-pervasive and unitary religious reality of which the different gods are expressions in different name and form. It is only monotheism which insists that there is only God and that gods cannot exist alongside of God, as subordinate sources of power. I am going to give reasons in a minute why monotheism takes this position, reasons which are cultural in nature. But in the western intellectual tradition an explanation of the monotheistic contention that there can be a God but no gods is found in the evolutionary doctrine of progress, which says that ideas, like everything else, move along a scale of better and better approximations to truth until perfection is reached and absolute truth happens. In case of religion this point is reached with the rise of monotheism and once there we can see that polytheism, representing an earlier phase, is false. For me, however, it is not clear why the monotheistic model, where God is the absolute monarch of all He surveys, should be thought to be a progress on the polytheistic model that God creates and then delegates power to subordinate sources to run the day-to-day administration of the universe (a bureaucratic model rather than a one man show). If God is a personal being, as monotheism insists is the case, if He can enter into a contract with a group of human beings, deliver commandments on which a culture is to be based, or send His son to redeem mankind, it is not clear why He cannot rule with the help of a number of agents (gods) to whom responsibilities have been delegated to run the day-to-day administration of various departments (gods are departmental heads, so to say); that is, why the idea that God creates, rules, and saves single-handed is a better idea than that He creates and then delegates responsibilities to others to rule while Himself remaining the sovereign head of the organisation. If anything, a model in which power is shared seems to me a more "progressive" model than where it is autocratic.

The reason why Jewish monotheism forbade the practice of polytheistic worship seems to me to lie elsewhere than the evolutionary idea where a more highly developed idea has to leave behind a

less developed one for the sake of progress. Polytheistic worshipping, that is, adoration of gods, is aesthetic, while Jewish monotheism was bringing into being a different attitude, a mode of viewing religious reality that is primarily moral in nature, and this new attitude could take deep root in the community only through the destruction of the aesthetic attitude hitherto prevailing.

Before I go into the development of Jewish monotheism and the destruction of Jewish polytheism in the process, I shall try to convey some ideas of what I am taking the moral and aesthetic attitudes to religious reality to consist of. Generally speaking, a moral orientation is one of doing, of achieving some purpose that is judged to be good as contrasted with something that is not good. It is selective and judgmental, and so geared to striving as opposed to mere being. The aesthetic orientation is precisely the opposite, its main aim is to be, in the state of realization of a totality wherein differences are overcome even while existing as differences, where all things are seen as justified in some ultimate sense for the simple reason that they are what they are. The aesthetic attitude to religion is thus celebratory, and it is based on the consciousness of life being something that one ought to be grateful for, based both on the enjoyment of various good things of life as well as the acceptance of various "evils" like death, disease, war, suffering and the like which in human experience are inextricably mixed with the "good". Acceptance of life in a polytheistic complex is this acceptance of both good and evil as "necessary" components in the living process that is known to man (this does not mean that people in a polytheistic complex do not try to combat disease or death; it is their final acceptance, as evaluated in an aesthetic attitude, that I am talking about). Polytheistic gods are representatives of here and now values (and disvalues) of life both "good" and "evil", like health, wealth, beauty, success, social operation, progeny, fertility of the soil, love, sex, death, war and the like, and these are brought into a sacred complex by looking upon them as gifts (or punishments) from the gods. Man's enjoyment of life is by this stratagem seen as a part of something bigger than man that transcends him and yet impinges on him in his everyday living. Celebration of gods in a polytheistic culture is thus celebration of life itself, as it is found,

and Jewish polytheism was of this nature, equally with every other variety of polytheism.

But life, as it was found, was for the Jews highly problematic, socio-politically speaking, because of the special circumstances of their life, owing to the fact that, as a people recently emerged from a nomadic existence, they did not have a land to call their own in which to develop their own style of life. The constant dispersion of the Jewish peoples, exile and the rest, meant that keeping the people together as a community was itself a problem, and in face of a problem of this dimension polytheistic celebration of life, *as it is found*, appeared to be irrelevant to the needs of the community at least in the opinion of some elders. These special circumstances evoked another model and another idea of divine activity in human living. This is the monotheistic image of God, an all-powerful Personal Being who is not only the sole creator of the universe but its sole administrator, whose will is law and under whose love and care a group of human beings obeying his laws are knit together as a special community that will be looked after directly by Him as their Lord and Sovereign. It is easy to see that this is a political model and it took shape amongst people whose circumstances of life made them acutely aware that to keep the community together was itself a problem. It is not that it is logically impossible for God to coexist with gods, as subordinate sources of power, but the idea of gods belongs to the aesthetic mode, and since what is now being proposed is moral, the gods were declared to be false and their worship forbidden. It is now to be rendered instead to God, the "political" Lord, who deals directly with the subjects He has chosen to be Lord of, to whom He has offered total care and protection in return for a promise on their part to obey His commands. This is a task that the gods were not conceived to deal with. This political character of God, who can control man's total destiny, can even promise them a land already inhabited by other people, was badly needed for the mobilization of the Jewish psychological resources towards the important social task of keeping the community striving as a closely knit community in a world which was hostile or perceived to be hostile. Thus developed the moral mode of religion

aimed at securing the purposeful striving of a community towards achieving certain socio-political objectives as a group. Indulgence in worship in the aesthetic mode would have dissipated the energy that had to be organized into the moral mode, something hitherto non-existent as a dominant expression of man's conception of God's role in human living. Man's relationship to God now becomes predominantly a moral relationship, mutual duties and responsibilities on the part of both parties, involving contract, obedience, promise of land, etc. This moral approach is also shown in the Jewish consciousness that all their suffering is a punishment for disobeying God's commands, and indeed that all suffering of mankind is a result of punishment. The dominant motive behind religious striving then becomes the achievement of a moral purpose, which is seen as God's purpose for man.

Christianity as an offshoot of Judaism took over the moral mode of viewing religious reality. No doubt important changes occurred; the community involved was no longer believed to be one ethnic group, needing total care including even physical space to establish itself, so the political model of "the Lord" was changed to the social model of "the Father". But the detaching of the moral task of achieving God's purpose from a particular ethnic group also meant that Christianity became a proselytizing religion, which believed itself to possess absolute truth about God's purpose for man, as revealed through Jesus Christ. This enlarged community of believers in Jesus was to be brought about through moral striving, in which values like caring for one's neighbours and doing good had a prominent place. But apart from action, the moral approach is shown in certain characteristic beliefs, like original sin (automatically transmitted from Adam to all mankind), an absolute distinction between good and evil such that God is all good, evil having its source in something else, the judgmental character of Christianity whereby some men are believed to deserve eternal hell for not carrying out God's purpose in their life of three score years and ten, and the like. As man's fallenness is a result of his will, a moral deficiency, so does his perfection lie in the perfection of his will through acts of charity and loving kindness to others. This is very

important for religious practice because of the moral orientation of this religious approach, despite the fact that salvation cannot be earned by good works, it can only come as a gift from God.

What I have said above marks out the moral mode as distinct from the aesthetic. The moral mode looks upon life as a battleground where a constant war has to be waged against evils of all kinds, evils that act against the purpose that God has in mind in engaging in creation, the establishment of the kingdom of heaven on earth (or some other place) where absolute goodness will reign. The purpose of human life is to act towards this end; it is not to enjoy being alive (which is one of the motivations behind the aesthetic mode), and celebration is now permitted of only what is "good", not what is "evil", and there is no question of evaluating life, such as it exists, as good. (No gods exist in a monotheistic culture, but gods of evil things like disease, death, sex, war and the rest are like anathema and arouse particular revulsion when seen to exist in a polytheistic culture.) Since the kingdom of heaven is a place of absolute goodness, all souls who would inhabit such a place would exhibit perfect brotherly love towards each other. The establishment of God's purpose on earth then includes such moral values as doing good to others and alleviating their suffering as marks of brotherly love. In this context of moral striving for goodness—religious practice consists, primarily in the effort—the general orientation towards life, especially in a religious context, becomes purposive, and the chief value of life is seen to lie in doing rather than in being. I know that there can be no doing which is not rooted in being and vice-versa, but there can be differences of emphasis, and this is what makes one culture different from another.

The aesthetic mode is structured very differently. We have already looked at a particular component of this mode, polytheistic celebration of life. In most polytheistic cultures there is a god of social cooperation and a god of moral purity (Mitra and Varuna of the Vedas), but they do not here express the whole of man's religious impulse, as they tend to do in the moral mode of monotheism, coexisting as they do with a god of sex, a god of war and the like. This idea of celebration of life, as such, is expressed in the Hindu concept of *lila*—the idea that whatever exists, things that men for

their purposes can with justification designate as good, bad or indifferent—is an element in the spontaneous expression of the divine in plentitude and a part of its self-enjoyment in multiplicity. The story of Krishna's life in the Puranas is an example of this concept of *lila*. Krishna lives life to the full on every front including war and sex, and yet he transcends it all at the same time. Anyway man's moral striving happens within the fullness of God's being and play (Krishna incarnates himself in human form whenever necessary to fight evil) and it is thus one of its legitimate expressions. But the realization of divine plentitude as expressed in one's own being through participation in God's play has a content that is not coincidental with the content of moral striving or even moral purity, however necessary these may be towards the realization of spiritual freedom.

Besides polytheism there is another component in the aesthetic mode, as it functions in the Hindu tradition, and this is expressed in the idea of non-dualism. According to this philosophy Brahman, the divine immensity, the ever-enduring, infinite and absolute reality, expresses itself (the neuter gender is used to indicate that ultimate reality is above even such distinctions as personality and impersonality) in the multiplicity of this world in different name and form. Man is thus of the same essence as ultimate reality itself (this idea is embodied in the Upanisadic dictum "that thou art") and so he participates in an infinite mode of being—as indeed does all existence but on an unconscious plane. The aim of spiritual endeavours is to realize the freedom of this infinitude here and now. As all suffering is ultimately caused by the limitations of finitude, this realization of spiritual freedom also means the realization of the bliss of being, the bliss that belongs to the very fact of existence, as such, without any reference to the fulfilment of desires on which our finite happiness depends. To gain this independence one has of course to renounce the ego's project to fulfil itself through maximizing the satisfaction of its desires, and this may involve one in the practice of asceticism. It is claimed paradoxically, that the highest enjoyment of being, an enjoyment that transcends the limitations of the finite ego's desire-bound joys and sorrows, can best be attained through the practice of asceticism with its renunciation



of all desires for enjoyment. Asceticism however is not the goal of spiritual life; it is only a means of gathering together spiritual energy through which freedom is achieved. And this freedom means enjoyment of the bliss of being without dependence on satisfaction of desires.

These two somewhat different goals, enjoyment of life, as it is, with all its joys and sorrows as involved in the practice of polytheism, and delight of being, as such, that can be felt independently of desires and their satisfaction, can be pursued at different times in man's life and in any case the privation involved in the renunciation of ego-fulfilling desires is believed ultimately to produce a rich dividend — the "bliss of being" talked about above, something that is not dependent on getting or not getting a desired object. Once the ego's persistence for fulfilment has been taken care of, the bliss of being can happen because that comes out of seeing all beings, including oneself, in the Self and the Self in all beings. A man of moral impurity, a man obsessed with the project of maximizing the ego's prospects in the world, is by definition unable to achieve this dimension of being. Nevertheless the goal of spiritual practice is this freedom of being, not moral perfection. The good and evil distinction is important for man not only for social reasons but also for the purification needed for spiritual striving, but this distinction does not belong to reality from the ultimate point of view, because this includes all. This does not rule out man's moral concerns at levels less than the ultimate, which is where even a spiritually free man belongs most of the time. The relativistic-pluralistic structure of the aesthetic mode allows this multiple belonging, so to say, as it allows polytheism along with non-dualism, for what is one has many expressions.

Now the aesthetic mode with its relativistic-pluralistic structure developed in India (as elsewhere, but I shall confine my attention to India) because of the circumstances that prevailed there. If, as was the case with India, the land is vast so that successive peoples of many different origins, races, colours, cultures and languages could come there and all find a niche for themselves, no pressure is generated for the projection of a doctrinally absolutistic structure with which to build a community that faces other communities in a

confrontational attitude. The coexistence of groups of human beings of a wide variety who despite all their differences could find cognate conceptions of divinities in one another's belief systems—a thing common in polytheistic cultures—can help to produce a sense of unity in diversity, of being part of a multi-faceted reality. The vastness of India and its enormous distances, the panoramic diversity of its landscape, extremes of weather but with a number of very different seasons clearly marked, the profusion of flora and fauna, were conducive to the appearance of a cosmic viewpoint of totality in which everything is included (this is aesthetic) rather than the primarily man-centred one of the moral mode. The knowledge of the ultimate unity of all things—the key perception of the aesthetic mode—however needs self-knowledge, the finding of the infinite in man's own being. Hence the need for meditation, the spending of some time on oneself.

There is no doubt that all societies have a moral point of view, and this includes the Indian, morality being essential to the existence of a society. Nevertheless if the religious point of view becomes almost identified with the moral then a good deal more motivation is generated in a religious practitioner for achieving the values of doing good and alleviating suffering than is naturally present in the aesthetic mode, and this is good for society. But what one loses on the swings one gains on the roundabout. A religious practitioner operating in the moral mode is less likely to have the cosmic experience of the ultimate oneness of all things, which secures him spiritual freedom, here on earth. He is also less likely to achieve the bliss of being of the aesthetic mode as he pursues his purposeful striving against evil. Clearly there are people who have to come to terms with themselves, that is, be released (at least relatively) from certain internal pressures of the ego, through pursuit of self-knowledge in meditation, before they can even undertake the task of doing good to other people. And a great deal of harm has been done in this world by people who have launched out in doing good without self-knowledge. Thus the aesthetic mode can achieve things not specifically catered for in the moral. Christianity's criticism of Hinduism sees only its loss, not its gain. The reason is that the moral mode, because of its selective,

judgmental character, arising out of belief in one way only, fails to see that the aesthetic mode can be another and a valid expression of man's religious quest.

This does not mean that the aesthetic mode cannot be made an excuse for apathy and unconcern for others, under the pretext that all things, being elements in a totality, are justified. I have found that all ideas are dangerous since they can be made to serve a purpose which is contrary to what was originally intended. All that one can say in defence of the aesthetic mode against the attack that it is morally dangerous is that a religious perception properly belonging to the aesthetic mode can happen, at least in its fullness, only to a person of high moral integrity. This is paradoxical, but as I said earlier, paradox is central to man's being, at least as far as the Hindu tradition is concerned.

## What kind of freedom?

A preliminary enquiry into some of the translated works of Nikos Kazantzakis

SONIA GREGER

Κρήτη νησι τοι λεβεδιάς  
Ἴσι λευτεριάς δασκάλα  
Ἴην ἱστορία ἐγραψες  
μὲ αἶμα καὶ μὲ μπάλα

Crete, island of courage,  
Teacher of liberty,  
You inscribed history  
With blood and bullets.

A Cretan Mantinade

Perhaps Greece's most famous modern writer outside Greece, Nikos Kazantzakis, was born in Iraklion, Crete, in 1883 and died in Fribourg, Switzerland, at seventy-four in 1957.

Two of his books, *Zorba the Greek* and *Christ Recrucified*, were made into films, the latter renamed "He who must die", and these have given his works a certain popularity; but those particular books are not the main objects of my interest and will be referred to only in passing. My concern here is to examine more closely than has yet been attempted an idea, or rather a passion, which both livens and informs all his work – the idea of freedom.

In particular, I have examined the novel *Freedom or Death*, first published in Greek in 1953. The story is set in Kazantzakis' native Crete, where freedom – important to all Greeks – has been the overriding faith and passion of the people during centuries of occupation by one alien culture or another. "Freedom or Death" has been the slogan of resistance fighters throughout periods of suffering

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and humiliation. Often it has meant death without freedom, sometimes freedom of one kind has been won, at least for a time, at the cost of many lives; but throughout, this belief in their ultimate freedom and individual identity as Cretans has given their lives and characters a quality of endurance and persistence, perhaps often stubbornness, which has brought many of them, almost inevitably, both freedom *and* death. A true Cretan would never ask “What price freedom?”, or, indeed, “What *is* freedom?”. He knows it only as the ultimate and intrinsic value. One’s desire for it ‘needs no explanation or justification. Ask one now “Is Crete free?” and he will answer “Yes”, glad to be making money during the tourist season with no evident danger, but taking nothing for granted and still jealously guarding his Cretan identity. Hard times are only a few years past. Certainly at times an identification of freedom with death was in Kazantzakis’ own mind – and in those of the selectors of his own words now inscribed on his tomb on the boundary walls of Iraklion:

I fear nothing;  
I hope for nothing;  
I am free.

For one whose Christian faith was regarded as very much in doubt it must have seemed an appropriate and nice thing to record on the passing of the local, and possibly partly misunderstood, great man of letters. I would have chosen a different quotation and one very similar to the words inscribed on W. B. Yeats’ grave in Ireland. The work of the two writers has much in common. Yeats’ grave records:

Cast a cold eye  
On life, on death  
Horseman, pass by.

I would have chosen, for Kazantzakis’ tomb, the following words from the beginning of his *Odyssey*:

Freedom . . . is but a scornful, lonely song the wind has taken . . .

So what price freedom? It would seem, from every one of Kazantzakis’ works, that it never pays off. Why, then, should he,

like all good Cretans, regard it as the highest value? For a better understanding it is helpful to do an analysis of freedom as presented in his books—to sort out different kinds or senses of freedom—and then see how they might be related to each other both in the books and in human experience.

## I. POLITICAL LIBERTY

The most evident type of freedom in *Freedom or Death* is *political liberty*: release from the yoke of an occupying oppressor, the Turks. It is difficult for us, living in an island, England, which has absorbed and adapted to a complex of different cultural influences, to understand islanders who fiercely protect their ancient identity. It is normal in Crete to communicate through symbols, Christian and pagan, which have not changed their meaning through hundreds, even thousands, of years. “Do you have basil (in your country)?”, asks an old woman of her foreign daughter-in-law; doing her best to accept this alien being for her son’s sake. “No.” “It grew on the grave of Christ” said the old woman, and fell silent.”<sup>1</sup> In these symbols the people seem to find all the answers they need and a corporate identity; but, as Yeats also saw, Kazantzakis’ novel reveals that “things fall apart”, and the symbolic meanings cannot stand up to the scrutiny of alien cultures. Hospitable and even over-ready to commit themselves in friendship to a foreigner, the Cretans have been prepared to adapt to the ways of others; but their oppressors have been at the worst, inhumanly cruel, at the best, tactless, so forcing the Cretans to resist with equal ferocity. (I would say, though, of all the people I have met, a Cretan has most difficulty in being tactless.)

Broadly, the characters in *Freedom or Death* can be grouped in three categories. The vast majority are those who experience and understand the corporate identity; they are plants which consist mainly of roots. These include a few with high office and power who, in their desperate attempts to reconcile Cretan and Turk, Christian and Moslem, and to avoid bloodshed, live indecisively, irrationally, with unresolved contradictions.

The second category contains two people only. They know and understand foreign ways. Cosmas, who, like Kazantzakis himself, has studied in Europe and “knows Frankish ways” returns to his home in Iraklion bringing a foreign and Jewish wife. He says:

She has opened my head and heart; she has taught me to love foreign races, which I hated, to understand foreign ideas, which I fought, and to feel that we human beings are all of one origin.<sup>2</sup>

Cosmas has some little hope that he may be able to help those in the other two categories to see reason, eventually to bring about some kind of intellectual synthesis; but neither the intellects nor the politics are in a state of readiness.

He visits the Metropolitan in Iraklion, who is responsible for all the Christian souls in Crete, telling him that there will be no support from abroad for the Cretans against the Turks.

“Unhappy Crete,” said the Metropolitan again, raising his hands to Heaven. “How long yet?” Perplexity overcame them both. They were silent. At length the Metropolitan, to give their thoughts a new direction, asked:

“You’ve been for many years in the land of the Franks. What’s happening there? What have you seen? We live here in the wilds.”

“Many things, good and bad, Mylord! Where am I to begin?”

“Are they believers?”

“They believe in a new Godhead, a cruel, Great-Power one, which may someday become all-powerful.”

“In what?”

“In Science.”

“Mind without soul. In the Devil, that means.”

“We have entered into a terrible sign of the Zodiac, that of the Scorpion – of the Devil, Mylord.”

“The rest of mankind perhaps. Not we Cretans. We have a higher belief than in the individual. The belief in tears and sacrifice. We are still not departed out of the sign of God.”

Cosmas said nothing. What would be the object of speaking? The Metropolitan was old and believing. Other support than belief, he had none.

“Not we Cretans, nor the Russians either,” the Metropolitan went on. “When I was an Archimandrite in Kiev, I understood what believing means. What God means, and how He comes down upon earth and goes about and speaks with men. As long as Russia exists, I have no fear.”<sup>3</sup>

Whether the Metropolitan is thinking politically, theologically, or in a confusion of both, he is being rather naive.

The third category of character is occupied by the hero of the book, Captain Michales and, at the end of the story, after Cosmas has not only failed to convince his uncle, the captain, of the futility of fighting but been overcome himself by a kind of sacrificial blood-lust, by Cosmas also. These characters are the *palikares*, the heroes who fight ferociously for Crete and die in the name of freedom. It is understandable that the English translator of the book, which is called in Greek *Captain Michales* and subtitled "Freedom or Death", has called it in English "Freedom and Death".<sup>4</sup> The first sense of "freedom" – that of *political liberty* – has, in the past, led almost inevitably to an identification of freedom and death. Today the Cretan people, having since 1913 the political context they desire, as a part of Greece, call themselves free. In the most obvious sense of the word, they *are* free.

## II. DIONYSIAN FREEDOM

The second kind of freedom I shall call *dionysian freedom* – that which opposes all form, order and law; anarchy. Kazantzakis was much influenced, while still a young man, by the works of Nietzsche and the distinction made in the latter's book *The Birth of Tragedy* between the Apollonian spirit and the Dionysiac spirit is one which can usefully be applied to the former's works. The Apollonian spirit strives towards form, order, light, clarity and harmonious control. The Dionysiac spirit appears to work in opposition to that, but in fact there must be creative dialogue or tension between the two. The Dionysiac spirit strives towards "original oneness", to undifferentiation, to identification between man and man, man and beast. It works in darkness, ecstatic intoxication, and was expressed amorally in primitive times through orgiastic rites. Barriers are broken down in the rush back to "original oneness" and the resounding of the gospel of "universal harmony"; all this, paradoxically, letting lust, blood and destruction flow freely. For Nietzsche, the Apollonian spirit must work *with* the Dionysiac if it is to create vital and adaptive structures – whether artistic, political or moral. If it



entirely opposes the anarchic drive it produces rigid structures and taboos which repress and destroy human freedom and creativity. Kimon Friar writes in his Introduction to Kazantzakis' *Odyssey*:

Nietzsche confirmed him in his predilection for the Dionysian as opposed to the Apollonian vision of life: for Dionysus, the god of wine and revelry, of ascending life, of joy in action, of ecstatic motion and inspiration, of instinct and adventure and dauntless suffering, the god of song, music and dance . . . (but) He had always strongly felt the opposing attraction of Apollonian clarity . . . He . . . recounts how Dionysus came out of India clad in multi-coloured silks, laden with bracelets and rings, his eyes ringed with black, his fingernails painted crimson. But as the god proceeded into Greece, his adornments fell from him one by one until he stood naked on a hill at Eleusis. Dionysus, the god of ecstatic and visionary drunkenness, had turned into Apollo, the god of serene beauty.<sup>5</sup>

In his autobiography *Report to Greco* Kazantzakis explains how, for him, the geographical position of Crete — pitched between three continents — provides at least the possibility of a spiritual-intellectual synthesis of the Apollonian and Dionysian spirits. He calls this potentiality, or special way of looking, the “Cretan Glance”. He wrote:

Crete, for me (and not, naturally, for all Cretans) is the synthesis which I always pursue, the synthesis of Greece and the Orient. I neither feel Europe in me nor a clear and distilled classical Greece; nor do I at all feel the anarchic chaos and the will-less perseverance of the Orient. I feel something else, a synthesis, a being that not only gazes on the abyss without disintegrating, but which, on the contrary, is filled with coherence, pride and manliness by such a vision. This glance which confronts life and death so bravely, I call Cretan.<sup>6</sup>

He illustrates this special way of looking by referring to the Minoan frescoes which show bull-leaping.

This direct contact with the Bull honed the strength of the Cretan, cultivated the flexibility and charm of his body, the flaming yet cool exactness of movement, the discipline of desire, and the hard-won virility to measure himself against the dark and powerful Bull — Titan. And thus the Cretan transformed terror into a high game wherein man's virtue, in a direct contact with the beast, became tempered, and triumphed. The Cretan triumphed without killing the abominable bull because he did not think of it as an enemy but as a collaborator; without it his body would not have become so strong and charming or his spirit so manly. Of course, to endure and play such a dangerous game, one needs great bodily and spiritual

training and a sleepless discipline of nerves; but if a man once trains himself and becomes skilful in the game, then every one of his movements becomes simple, certain and graceful. The heroic and playful eyes, without hope yet without fear, which so confront the Bull, the Abyss, I call the Cretan Glance.<sup>7</sup>

Here then, in the Cretan Glance, is the heroic, playful look which is without hope, yet without fear. Constantly alert, it is very much to do with living. On no account is the absence of both fear and hope to be equated with death. "Freedom" here is a living dialogue, or game, between Apollonian and Dionysian spirits. Any nihilistic interpretation<sup>8</sup> of those words on Kazantzakis' tomb

I fear nothing; I hope for nothing; I am free.

is, I contend, entirely inappropriate to the writer's vision.

The playful quality of the Cretan Glance is, in some respects similar to Kierkegaard's notion of the absurd. For him, striving for faith is, paradoxically, to live a life of "infinite resignation" and to remain in a condition beyond hope and despair, expecting nothing. Only then, and with constant vigilance and the maintenance of this condition, might faith, *by virtue of the absurd*, come into one's life. Kierkegaard used a technique in his writings aimed at drawing the reader into paradoxical states of mind without providing any solutions. Only thus could he hope to initiate someone into his special "glance". I believe that it is appropriate to read Kazantzakis somewhat similarly. He claims to have experienced the Cretan Glance himself. He never tells us exactly what it is, or how to exercise its synthesising power. Indeed, so many conflicts and tensions are expressed in his writings that any overt and Apollonian intellectual synthesis is evidently not possible. The *only* way to resolve the conflicts, especially the political ones, would seem to be through action which leads to death.

At another level, however, I believe he is inviting the reader to exercise the Cretan Glance, to face the paradoxes and even be prepared, if that should prove the only way, to face death, like Cosmas. But the activity is initially, and for as long as possible, to be an intellectual and spiritual one. Only as a last resort—and when the game no longer works—may it be transformed into what is

always potentially present – violence and death. “We were fighting” he says to his “grandfather”, El Greco, “in the empty air, beyond hope and beyond despair”. Artist and thinker, neither was cut out to be a Cretan *palikare*; but very like the resistance fighters in the passes and on the high mountains, fighting Turks in the cold, thin air, they are fighting in the rarefied air of intellect and spirit, never shifting too far from the Dionysian forces expressed in horror, blood, violent action and death. The end of *Freedom or Death* clearly presents Kazantzakis’ “predilection” for the Dionysian:

“Don’t flinch, nephew,” said Captain Michales to Cosmas. “There’s no hope. Long live Crete!”

“You’re right. There’s no hope, uncle. Long live Crete!” They drew their daggers and rushed forward. The snow was already beginning to veil the outstretched dead. Every red fez grew white. Two vultures swooped down towards the men busy killing one another. They described their circles and craned their necks.

In the tumult of the hand-to-hand fighting, uncle and nephew were parted. The Turks surrounded Cosmas. Captain Michales saw it from a distance, broke through the train of soldiers with which he himself was surrounded, and rushed forwards to free him.

“Wait a moment, nephew,” he called out to him, “I’m coming!” But it was too late.

“He’s coming himself, Captain Michales,” screamed one of the native Turks, mockingly, and threw Cosmas’ head at his face.

Captain Michales stretched out his hand and raised the severed head by the hair like a banner. A wild light haloed his face, which was filled with an inhuman joy. Was it pride, god-like defiance, or contempt of death? Or limitless love for Crete? Captain Michales roared:

“Freedom or . . .”

. . . and did not finish. A bullet went through his mouth. Another pierced his temples. His brains splattered on the stones.

### III. FREEDOM BY INDIVIDUAL RESPONSIBILITY

My third type of freedom needs some introduction. As far as I know, Kazantzakis’ work has not been explored for existentialist thought. The influences upon him which have been stressed are those of Nietzsche, Bergson and Buddhism. Certainly he articulated his philosophy in the terms of his teacher, Bergson; but, at least arising out of the Nietzschean influence, it is not unreasonable to seek some

relevant thinking from those broadly grouped as existentialist philosophers. I have already referred to Kierkegaard. At least one other is, I believe, pertinent.

John Macquarrie, examining ideas about freedom in his book *Existentialism*, refers in particular to Berdyaev. The following extract suggests freedom again as involving tension, or dialogue, between dionysian and apollonian forces.

Berdyaev shares (with Camus) the same passionate spirit of rebellion against everything that diminishes human life. "Freedom needs resistance and struggle . . . The ancient taboos surround man on every side, cramp his moral life. And to liberate himself from their power, man must feel himself inwardly free, and only then can he struggle externally for freedom." And the goal of this struggle is the creativity that is truly human. "Man's liberation is not only *from* something, but *for* something. And this '*for*' is man's creativity."<sup>9</sup>

The dionysian, irrational, anarchical freedom is a necessary pre-condition for another type of "freedom". Berdyaev distinguishes the two. The first is "the primordial, irrational freedom which precedes good and evil and determines choice between them". The second is the final reasonable freedom, "freedom in good and truth", so that "freedom is understood both as the starting point and the way, and also as the end and the aim". Macquarrie says that in Kierkegaard, too, is the distinction between "the primordial anxiety that comes before the exercise of freedom and the subsequent anxiety or care that accompanies man throughout his life."<sup>10</sup>

Now the "primordial, irrational freedom" of Berdyaev and the "primordial anxiety" of Kierkegaard seem very close to what Kazantzakis describes as "The Cry". Kimon Friar explains it:

At the start of (a man's) journey, he hears an agonised cry within him shouting for help. His first step is to plunge into his own ego until he discovers that it is the endangered spirit (or "god") locked within each man that is crying out for liberation.<sup>11</sup>

**But this recognition immediately brings responsibility, for**

In order to free it, each man must consider himself solely responsible for the salvation of the world, because when a man dies, that aspect of the universe which is his own particular vision and the unique play of his mind also crashes in ruins forever.<sup>12</sup>

Berdyaev's "final, reasonable freedom" is an end, the seeking of which entails Kierkegaard's "subsequent anxiety or care that accompanies man throughout his life". If the primordial, irrational freedom (the dionysian) is a dark abyss, the "reasonable" end is still, at least in part, unknown. If the latter, apollonian form is to be brought about creatively and with appropriate flexibility, it must always be related back to the primordial. Indeed, the very motive for bringing about the reasonable end resides in the "cry" in each human being. So there is a sense in which the abyss is to be located in both origin and end. We can, I think, equate Kierkegaard's "subsequent anxiety or care that accompanies man throughout his life" with Kazantzakis' insistence that "man must gaze open-eyed and without illusion on the dark Abyss which eventually must swallow all". Kazantzakis

. . . insists, simply that it is precisely on this abyss that man must erect the structure of his life and work; that the great affirmation of life has meaning and value only when it accepts and rises above the great negation; that such is the double vision necessary to a realistic apprehension of life.<sup>13</sup>

For Berdyaev, freedom "proceeds from the abyss which preceded being"—the primordial act of freedom which is irrational. Kazantzakis' Cretan Glimpse, which attempts to gaze into both dionysian origin and rational, apollonian end, accepts that each is unknown and feared. His abyss contains both. It is not, therefore, entirely irrational. The reason (or otherwise) and the responsibility lie on the shoulders of the individual who must decide, or allow others (perhaps his ancestors calling through his own blood) to make his choices for him.

The second type of freedom—*dionysian freedom*—although clearly to be distinguished from the third, is to be understood always by operating in relation to it. I call the third type, not apollonian (although this concept is clearly embodied within it), but *freedom by individual responsibility*. Kazantzakis' Cretan Glimpse is a combination and exercise of *both* these types—the dionysian *and* the responsible freedom. Responsible freedom inevitably brings discomfort and anxiety. Perhaps the majority would wish to be free of such a freedom.

#### IV. FREEDOM-WITH-JUSTICE

*Freedom by individual responsibility*, necessarily relating back to *dionysian freedom*, also has to be related forward to my fourth type, which I will call initially “democratic freedom”; and this, of course, brings us full circle to relate with the first; political liberty. I use the term “democratic” not in any prescriptive, political sense but simply to refer to an end or ideal, largely unrealised, which embodies notions of justice and the rights of all people, individually and collective. Perhaps it can be equated with Berdyaev’s “final, reasonable freedom, freedom in good and truth”, though I make no attempt to give it religious meaning, as Berdyaev does in Christian terms. Because of the fairly narrow political tone of the word “democratic” I call my fourth type of freedom *freedom-with-justice*. As far as Kazantzakis is concerned, it must remain unformulated and obscure—almost as dark as the abyss itself. Concern for it is, however, an essential part of his own “cry”. He cares for it absolutely. Friar points out that “in contrast to Nietzsche, Kazantzakis had an intensive love for the common man and a belief in socialistic orders which try to alleviate poverty and lift oppression”.<sup>14</sup> We see Father Yanaros, in *The Fratricides*, doing all he can to help his people and discovering in the process that it is no use turning to his ikons or his god for advice, for God is waiting for *him* to find, or make, solutions. (God is stressing in fact, freedom type III). In *Christ Recrucified* are two rival camps, one a set of prosperous villagers, led by their Father Grigoris, and one set of refugees who are driven by the others to attempt to create their own village and community, led by Father Fotis, on the bare stones of the mountain. The rich deny the poor, but it is among the poor that the vision and the “cry” still survive. There are, however, no “reasonable” solutions; only recurrent suffering and sacrifice on the part of those who care. But Kazantzakis believed, in Bergsonian terms, that all those who allowed the “cry” to work itself out within their lives would eventually bring a new and better era.

“How ought we to love God, Father?” Manolios asked one day.

“By loving men, my son.”

“And how ought we to love men?”

"By trying to guide them along the right path."

"And what is the right path?"

"The one that rises."<sup>15</sup>

The path rises to ever-more arid parts of the mountain and to the despair which must be transcended by the Cretan Glance. Only then (and I am almost tempted to add here, in Kierkegaardian terms, "by virtue of the absurd") may things improve.

In the meantime, this is how Kazantzakis saw our condition.

The epoch through which we are passing seems to me decidedly anti-classical. It seems to break the moulds in political, economic and social life, in thought and in action in order to achieve a new balance—a new classical age—on a higher plane; to create that which we have called a new Myth, and which might give a new and synchronised meaning to the world at last. Our age is a savage one; the Bull, the underground Dionysian powers, has been unleashed, the Apollonian crust of the earth is cracking. ["And what rough beast," wrote Yeats in *The Second Coming*, "Slouches toward Bethlehem to be born?"] Nobility, harmony, balance, the sweetness of life, happiness, are all virtues and graces which we must have the courage to bid goodbye. They belong to another age, either past or future. Every age has its own face; the face of ours is a savage one; delicate spirits cannot confront it; they swerve their eyes in terror; they invoke the noble and ancient prototypes; they cannot look directly at the contemporary, prodigious, and dreadful spectacle of a world in painful birth.<sup>16</sup>

The Captain Michales of *Freedom or Death* is not a "delicate spirit" and he can confront the savage face, even glory in it. He does it through listening to the voices of his Cretan ancestors who are speaking in his blood. There is very little that is "reasonable" about Michales. In a sense, he is "invoking the . . . ancient prototypes". I suggest that, for all the strength and power of the ancient Cretan forms, alone they too may operate as "rigid structures and taboos which repress and destroy human freedom and creativity". Like Zorba, Captain Michales is quite a character, but it is in the person of Cosmas that the deepest and most subtle meanings of freedom are expressed in *Freedom or Death*. He travels from Crete and, in the process, comes to understand much. He knows, however, that it cannot be enough. He remains a Cretan, offers his Cretan commitment to a foreigner (his wife) and returns thinking there may be something he can *do*. What he discovers is that still the time dictates

what he can and cannot do. Without his knowledge, his wife and unborn child are sacrificed and he gives his own life and blood beside his uncle's in the mountain pass. Kazantzakis still saw only the possibility of freedom *and* death in Crete, and he has set his own understanding of his native country into his understanding of the world predicament.

Since he died and within merely the last decade the Cretan predicament has changed. The development of tourism since the cease of the Colonels' rule in 1974 has brought considerable economic improvement, but still there are some people in the villages far from tourist tracks who are very poor. To what extent, I wonder, would Kazantzakis regard his island as free today? How far are the changes superficial or fundamental?

The Cretans now have political freedom — my first type. For the existence of the second — dionysian freedom — there is plenty of evidence, particularly perhaps where traditional conventions and taboos remain strongest in the attempt to control it. The third and fourth types: responsible freedom and freedom-with-justice, probably remain as problematic in Crete as elsewhere in the world, yet there is a way in which I feel personally that Crete, and Kazantzakis' interpretation of his native land, may offer the possibility of some progress. I believe that Kazantzakis was identifying a valuable, highly developed and very demanding human skill when he wrote of the Cretan Glance, though, of course, a person does not have to be in any particular geographical position or of a particular nationality in order to exercise it. This skill, the capacity to live with neither optimism nor pessimism yet to live as constructively and creatively as possible even in the face of despair is one which Nietzsche attributed to the Greeks of the sixth century B.C. In *The Birth of Tragedy* he attempted to refute the popular notion of his time that the ancient Greeks were a harmonious, optimistic and cheerful people and claimed that, on the contrary, they suffered from a fundamental pessimism and distrust of life and were ravaged by rivalries, jealousies and intrigues. According to Nietzsche, Apollonian attempts to rationalise their situation, like those of Socrates and Plato, were mere decadent whistling in the dark. What was *not*



decadent was that "tragic attitude which is beyond pessimism and optimism, and bravely affirms life in spite of its pain and evil."<sup>17</sup> *This*, I suggest, is what we find in Kazantzakis' heroic figures; in Captain Michales and, when he, too, becomes a *palikare*, in Cosmas.

In his Preface to *The Birth of Tragedy*, which Kazantzakis knew well, Nietzsche wrote:

Is pessimism *necessarily* the sign of decline, of decay, of failure, of exhausted and weakened instincts – as was the case with the Indians, as is to all appearance the case with us "modern men" and Europeans? Is there a pessimism of *strength*? An intellectual predilection for what is hard, awful, evil, problematic in existence, owing to well-being, to exuberant health, to fulness of existence . . .

This pessimism of *strength* is what Kazantzakis is trying to identify when he writes of the Cretan Glance. It brings together wisdom built on bitter experience and a mature, persistent robustness. We find it in the character of Zorba, in Michales, and in Cosmas we see the international figure, the European, learning to become a Cretan like his forefathers. For Cosmas the process is far more difficult, for he brings all the trappings of a learned but decadent Europe and has to transform it, with Michales' help, into the *strong* pessimism of a *palikare*. The time dictates that his personal freedom will coincide only with death and self-sacrifice, but there may be a time for others when this will not be so. In the autobiographical *Report to Greco* Kazantzakis records his words to a friend:

We are going to beat our heads against the bars, then beat them again; many heads will be smashed to pieces, but one day the bars will break.<sup>18</sup>

Smashed heads, like those of Captain Michales', have helped to bring Crete political freedom and the respect of other less dogged, perhaps less robust peoples. An Englishman, Hilary Skinner, wrote in 1869

There is something in the old, uneconomical policy of braving martyrdom, religious or political, which will bear the keenest test of western valuation. There is stuff in such a people that will redeem many short-comings and win them a place among the nations which most zealously study the example of long-departed Greeks.<sup>19</sup>

It is a distortion, however, to think of Cretan bravery only in terms of sacrifice. As Kazantzakis insisted, this must always be related to, and balanced by a force for *living*, for it is in living that the Cretan Gance must be exercised. This robustness is illustrated in the barber's shop in *Freedom or Death*. Cretans are arguing about the relative merits of a woman and a horse. A foreigner in the shop prefers to withdraw from the attractions of both.

"Neither the horse, nor the hanum! They're all more trouble than they're worth!" The goat-beard wheeled round: "Hey, you tit-bit from Syra," he said, "the whole of life is trouble, only death brings repose. I mean well towards you, but don't talk like that to Cretans. We might misunderstand you and bury you alive . . ."

The poor man from Syra shuddered . . .

"Alive?" he now asked, and drew back in alarm. "Why, my good friend, would you bury me alive?"

"Because do you know what we call people who talk like you? Dead!"<sup>20</sup>

We should not think only in terms of political freedom being bought by the many smashed heads sacrificed for the sake of Crete. We should also think of freedom — possibly in all four senses — eventually being bought by those who dare first to *live*.

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### References

1. *Freedom or Death*, p. 387. Faber, 1966.
2. *Freedom or Death*, p. 391.

3. *Freedom or Death*, p. 390.
4. Translation by Jonathan Griffin, publ. Faber and Faber 1966.
5. *The Odyssey: A Modern Sequel*, transl. Kimon Friar. Simon and Schuster 1958  
Intro. xiv-v.
6. *Report to Greco*.
7. *Report to Greco*.
8. A stress on nihilism in Buddhist thought – which is, I believe, unfair and unbalanced in relation to Buddhism itself – has been largely responsible for such interpretation.
9. John Macquarrie. *Existentialism*. Pelican 1973. p. 141.
10. *ibid.*, p. 140.
11. *Odyssey. ibid.*, p. xiii.
12. *Odyssey. ibid.*, p. xiii.
13. *Odyssey. ibid.*, p. xx.
14. *Odyssey. ibid.*, p. xv.
15. *Christ Recrucified*.
16. Quoted by Kimon Friar. *Odyssey. ibid.*, p. xx.
17. Jacko Lavrin. *Nietzsche*, p. 17. Studio Vista, 1971.
18. *Report to Greco*, p. 196.
19. Hilary Skinner, *Roughing it in Crete in 1868*, p. 271.
20. *Freedom or Death*, pp. 13-14.

## **Energy—a new possibility; some old questions**

BRIAN WYNNE

IT IS AXIOMATIC amongst social scientists that the closer any area of belief and activity relates to the wellsprings of prevailing social order, the more heavily defended in ritual and myth it becomes. The energy question is certainly at the very wellspring of industrial society, and wildly different beliefs, values and visions of the future converge (or rather collide) under the rubric of “the energy debate”. The social and technical problems involved in servicing our own affluence become daily more acute, more so in the energy field than elsewhere. Yet so much is invested in cherished technological schemes that it becomes impossible to disentangle particular forms of energy production not only from political and economic values, but from passionate utopian or apocalyptic sentiments heavy with quasi-religious symbolism of ultimate oblivion, or ultimate escape into the promised land.

The utopian fantasies of the 1950's nuclear enthusiasts are by now notorious. We look back with a knowing grimace upon the religious fervour which attended nuclear power even as late as 1965, when the Minister of Power informed Parliament<sup>1</sup> that in the British Advanced Gas-Cooled Reactor (AGR) “We have made the greatest breakthrough of all time . . . we have hit the jackpot this time.” The AGR is now widely regarded as a colossal flop, even by many inside the industry. Indeed even in the early 1970s, the CEBG was intending to order no less than 34 nuclear reactors based upon energy demand scenarios and building schedules which bore the stamp more of spiritual inspiration than of contact with reality.<sup>2</sup>

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The Atomic Energy Authority's 1975 nuclear-led energy scenario, severely mauled by the Flowers Commission amongst others, showed the same blinkered zeal.<sup>3</sup> Not only nuclear fission has promised us redemption however. The nuclear fusion scientists announced twenty years ago that they had effectively solved the energy problem and that unlimited supplies of energy were imminent from controlled nuclear fusion. Twenty years later another "great breakthrough" is announced, yet the promises remain unfulfilled.<sup>4</sup> The utopian hopes however, remain—fusion will "solve" the energy problem forever, so the fable goes.

The converse of redemption of course, is apocalypse. If we won't swallow the utopian vistas of, say, the nuclear buffs, then there are always dark threats of chaos and disorder to emphasise if we forego the full blooded commitment. Thus the argument goes that we must go full throttle for nuclear power in order to save society from the candle and the cave, and the disruption which would follow lack of energy supplies to fuel our affluence.

It is unfair to draw examples of this kind of fervent absolutism in the energy "debate" only from the pro-nuclear side, and to suggest that all pro-nuclear people display such quasi-religious commitments. The apocalypse was after all first invoked as a weapon of argument by "alternative energy" advocates, often by associating nuclear reactors with the devastation of Hiroshima. Equally, utopian faith is often placed in the comprehensively redemptive power of *their* pet technologies, windmills or the sun. Yet again the technology is invested with magical elements in its supposed intrinsic power to produce benign social changes across the board; and with religious dimensions in its supposed purification of an ambiguous and threatening social world in which energy and its socioeconomic connotations loom large. A melanesian anthropologist might coin a term akin to "cargo cults" to describe some key aspects of our energy debate.

Recently an eminent physicist, Professor Tommy Gold, has introduced an extra dimension to the energy issue, one which might well be a candidate for the familiar title of "ultimate solution", because of its immense—but so far speculative and theoretical—potential. That it has not been immediately adopted by any of the

prevailing lobbies suggests that its implications and connotations render it an awkward fit into the “purified” ideologies of the dominant schools of opinion. Gold’s scientific pedigree is impressive – he was joint author with Fred Hoyle and Herman Boudi of the “steady state” theory of the universe. He has now advanced the theory that under the earth’s crust there may be supplies of methane which would satisfy global energy needs for at least a million, probably twenty million, years.<sup>5</sup> Methane being the main basis of natural gas and the basic hydrocarbon molecule which makes up the longer hydrocarbon chains of oil, it could in principle be very conveniently integrated into present patterns of supply and use of fossil fuels, whose imminent *disappearance* we are, ironically, now contemplating. The implications of such a potential “superfix” to the world’s intensifying energy crisis demand immediate attention, even as the status of Gold’s theory itself is clarified by further investigation. This article offers one small contribution in the form of a series of preliminary observations on the theory itself and on the possible sociopolitical implications if it were shown to be correct.

The general view that hydrocarbon, especially oil and gas, resources are by no means as limited as the prevailing conventional wisdom suggests has had a good airing recently. Professor Peter Odell is one expert who has emphasised that “proven reserves” which the oil industry talks about, are only a small proportion of real “resources”. The proportion varies with economic and technical developments and judgements (a point which is explained later). Godel has also recently criticised the conservative and, in his view, entirely misleading forecasting techniques employed by the energy establishment in its official estimations of oil and gas reserves.<sup>6</sup> In the short term at least, we are certainly in for a major glut especially of natural gas in Britain, unless extraction-rate policies are changed radically. However none of this adds up to a substantial belief – worth betting a full energy policy upon – that oil and gas from the organic decay process will be sufficiently prolific entirely to destroy any notions of energy shortage from these sources a hundred years or so hence, let alone 20 million years hence.

Gold’s theory of the origin of the methane deposits which he postulates is entirely separate from the familiar biological decay

process, of organic matter such as wood. It was well summarised in a recent report in *New Scientist*:<sup>7</sup>

The starting point . . . (is) . . . the creation of the earth and the other planets from the solar nebula 4.5 thousand million years ago. The nebula, a giant cloud of gas and dust, would surely have contained, among other minerals, large quantities of simple carbon compounds—carbon dioxide and methane—as well as the more complex kinds of carbon compound found in carbonaceous chondrites. If the outer few hundred kilometres of the Earth's bulk had been assembled from materials including these gases and the carbonaceous chondrites, it could reasonably be expected that the heat and the pressure of substantial depths within the crust would conspire to produce a steady leakage of carbon-based gases from the crust into the atmosphere.

Gold suggests that the abundant carbonaceous minerals in the earth's surface are the result of such "terrestrial outgassing". These contain carbon in oxidised and unoxidised form. Assuming that only carbon-dioxide had outgassed, this would leave the problem — what has happened to the huge quantities of oxygen which the unoxidised carbonaceous minerals would have had to give up?

Gold calculates that the unoxidised deposits would have released 20 planetary atmospheres of oxygen during geological time—that is roughly 100 times more oxygen than we presently have in our atmosphere—and this is clearly incompatible with the geological record. His exit from this seeming *reductio ad absurdum* is characteristically ingenious and plausible. He suggests that carbon dioxide is not the sole outgassing carbon-bearing gas—methane should also come out of the earth in large quantities and it would have the right chemical properties to "mop up" the oxygen excess in the manner of a chemical "scavenger".

This leads to the conclusion that the oxygen level in the earth's atmosphere is the balance between the extra processes of oxygen production and such scavenging, in addition to the usually accepted processes of oxygen production and consumption (such as photosynthesis; coal and oil burning, etc.). It is ironic that a more recent discussion of the consequences of fossil fuel burning as an energy source, highlighting the possibly serious consequences of overheating the earth due to the increased levels of carbon dioxide from such burning, should ignore the Gold hypothesis.<sup>8</sup> Amongst other things that discussion reported that scientists believe that carbon dioxide "sinks" must exist somewhere to have reduced levels well below what

would otherwise have occurred from known global processes of carbon dioxide production and consumption. Methane outgassing could conceivably act as one such "sink" mopping up carbon in its oxidised form by combining with carbon (in methane) in its opposite (reduced) chemical form. One hopes that Gold and the "carbon dioxide greenhouse effect" scientists are talking to one another.

In support of his hypothesis, Gold draws together circumstantial evidence from a wide variety of different areas and fields, and the idea itself generates some subsidiary theories that should be empirically testable. The most striking piece of circumstantial support comes from the observation that some of the most productive oil and gas fields discovered in the world have lain on old earthquake fault lines, and at depths well beyond what would have been expected of the usual biogenic deposits (from decayed wood, etc.). The significance of this is that if Gold is correct and there do exist vast reservoirs of methane beneath the earth's crust waiting to "outgas", fault lines of earthquakes, volcanoes, etc., would presumably offer the best means of rising towards the surface and eventually outgassing into the atmosphere. One would therefore expect such deep reservoirs around such faulted zones. Whether this association is consistent and therefore significant is not yet clear, and given the complexities of gathering and sorting evidence, differentiating various factors, and relating them to competing theoretical ideas in this field, may never become clear. Even so, the potential practical pay-offs might be so great that whatever the status of the theory, exploratory deep drilling in the areas of geological faults would presumably be very worthwhile. The general suggestion that earthquakes, volcanoes, hot springs, etc. should have methane egress accompanying them could be tested fairly simply. Gold argues that the historical record of flames and explosions associated not just with volcanoes, where we tend to expect that sort of behaviour, but with earthquakes and hot springs, indicates the presence of inflammable gas such as methane. Furthermore he suggests, the widely observed phenomenon of animals moving away from earthquake zones immediately before they occur may be due to the "signal" given by preliminary escape of



methane. (This theory could of course be correct in principle, but the mechanism be based upon another gas altogether.) Tests could again be made to investigate the validity of such an idea. Equally testable is the suggestion derived from Gold's theory that the fish killed in large numbers in marine earthquake zones are not killed by the physical shock-wave, but poisoned by the hydrogen sulphide which would be transported out from the deep earth with methane and other gases during an earthquake. A final phenomenon which Gold attempts to explain by use of the outgassing theory is that of rock fracture and slip in earthquakes. The conventional idea is that deep rocks, say 5 km under the surface, come under stress, rupture and release the huge amounts of stress energy by sliding past one-another. Yet under the temperature and pressure of such depths, brittle fracture and slip of this kind would be impossible without a "lubricant" on the fracture-slip plane. Methane under the same pressure as the rock could offer such lubrication. Once a fault plane formed, it would prevent resealing of the rock, and ensure that subsequent build-up of stress would be released by new movement on the old fault system—a very common observation.

It is hardly necessary to comment upon the various scientific questions which remain to confront Gold's ambitious attempt to unify a presently incoherent mass of anecdote and observation stretching across several disciplines. As noted briefly above, several aspects can be put to the test of relatively simple empirical observation and measurement, and presumably are receiving just such attention. Yet several of the empirical questions even if they are resolved in Gold's favour, still leave large vacua in our knowledge. For example, if methane is shown to be emitted at earthquakes, does this prove that deposits on the scale suggested by Gold exist, or that the mechanisms which he postulates really do operate? The methane which one might detect at earthquakes may have humbler origins, it being a pretty common gas. Likewise if one finds that fish are killed in earthquakes not by physical shock but by hydrogen sulphide, what have we proved about methane deposits and outgassing? Also one notes that Gold emphasises the significance for his theory of the purity of methane found at, e.g. mud volcanoes, in contrast to methane taken from biogenic fields. Yet elsewhere it is

noted that large quantities of hydrogen sulphide are emitted with the postulated methane. This may be of practical importance as well as of theoretical significance.

However, although one can raise some questions about the scientific status of Gold's methane outgassing theory, these are both natural and welcome as the meat and drink of the possible development and establishment of the theory. When one turns to the question of the possible contribution of such postulated methane deposits to the world's energy situation, what further questions might be raised?

Firstly one has to point out what is as obvious as it is often neglected, namely that what is (let us assume) there is not necessarily available, technically, economically, or politically. Disputes about the presence or scale of resources such as oil, coal, uranium are not just scientific disputes about how much is where, and in what chemical and physical form. Usually far more significant are conflicting views as to how much is *accessible*, at a price that can be paid. This entails more questions in the realms of engineering, economics etc., than of "pure" science, and "the truth" is more open to manipulation simply because detailed knowledge and expertise is usually exclusively "owned" by the oil companies, who have an interest in creating a climate of scarcity. The dispute between Professor Peter Odell, now adviser to the Secretary of State for Energy and the "oil Establishment" dominated by the oil Corporations is a case in point. Odell argues that the pessimistic projections of oil reserves made by the oil companies and accepted as the conventional wisdom are an expedient to help raise prices, to favour increased retention of profits because exploration and extraction are supposedly so prohibitively expensive, etc.<sup>9</sup> But Odell's dispute with the conventional view is less over actual quantities of oil in the ground, and more over the price it would take to get it. What *counts* as a reserve depends on a judgement of technical feasibility of extraction from "marginal" (but high aggregate volume) deposits, and it is easy for this judgement to move dramatically. The same would apply to the Gold methane deposits, except more so, since they are reckoned theoretically to reside at greater depths than conventional gas fields. Even if Gold's theory is correct, is the methane accessible?

### A NEW POLITICAL ECONOMY?

Accessibility of course must be phrased in political terms as much as technical and economic ones. How would the political-economic map of the world be redrawn by the discovery that such vast deposits could be tapped only in, say, Turkey and North Korea? Would the ensuing struggle to benefit from such reserves entail escalating conflicts of the kind we are seeing over, e.g. uranium in Africa, or would mankind be jolted by the enormous bounty offered in nature, to a new departure in cooperation to ensure adequate distribution to all? Assuming that access to such deposits would not be widely and evenly distributed throughout the world, even setting aside the political-economic conflicts which might plausibly ensue, there would remain the question of how to distribute? Liquefied methane gas tankers might entail aggregate risks that would make a nuclear reactor benign by comparison (in terms of risk of major accident per megawatt of energy realised, leaving aside other risks in the nuclear fuel cycle).<sup>10</sup> A system of piped distribution, probably across many national boundaries, would be not only expensive and difficult, but would be another example of many of the evils which antinuclear devotees regard as the unique property of their own *bete-noir*. It would be highly centralised as an energy supply system, requiring such high levels of social coordination as to compromise other areas of traditional freedom. It would be vulnerable to sabotage by terrorist or disgruntled worker. And again like nuclear power, it would probably be so expensive as a social investment as to preclude its being merely one constituent of a pluralistic and largely decentralised energy system. Furthermore if it were unevenly accessible throughout the world, it may ironically cause an *intensification* of nuclear developments in those have-not areas due to a fear of being left behind in economic competition. Thus it might be the opposite of an alternative to nuclear power.<sup>11</sup>

The association of different kinds of energy technology with different ideological commitments is an extremely complex and interesting social psychological issue. In the antinuclear movement for example several different sets of commitments run together, but part company over alternatives. Some of those whose main concern is the environment would opt for solar, wind and wave power,

perhaps with little or no emphasis upon the overriding need to reduce energy *consumption*. Others argue that wave power would definitely, and the others might possibly, still require a highly centralised, technocratic power system. For them the goal is decentralisation, even if the environmental hazards overall may be greater than for nuclear power.<sup>11</sup> The problem of security and civil liberties is particularly complex, yet also particularly crucial in my view. The fact that we have had transnational oil and gas pipelines for years with only relatively infrequent sabotage and accidents would be no guarantee that in a world dominated by methane-dependence, the attention of terrorists would not turn to such systems. The psychological undercurrents, not only of potential terrorists but of society at large in this respect are virtually inscrutable. There are, after all, many easy targets for terrorists to exploit so as to create or threaten major disasters, besides nuclear facilities. Yet we continue, rightly in my view, to treat nuclear facilities as something special in this respect. Whether individual Gold-methane deposits would be so colossal and so few in number, and so difficult to exploit as to require gargantuan investments of technology, and thus rivet the hopes, fears and anxieties of society upon them, still remains to be seen.

There would be further negatives in any cost benefit balancing Gold-methane as an alternative to nuclear power. One topical question mark against all coal and hydrocarbon burning is that it produces carbon dioxide in the atmosphere and significant increases in carbon dioxide levels cause temperature rises on the earth which might cause major climatic and socioeconomic upheavals. So far carbon-dioxide fluctuations have been less the result of burning hydrocarbons than of changing natural factors, nor is it certain that small increase of temperature would be deleterious. However, if the whole world were to turn to methane as its main energy source, the changes induced might be large, and catastrophic. A simple technical expedient—"scrubbing" effluent streams to remove carbon dioxide into solution—might be viable in relatively centralised units, but probably not at innumerable individual combustion units. Again the social implications of this might prove unpalatable to the committed decentralist.

A further set of problems relates to the whole question of the viability of a growth-oriented industrial society. Not only are there the questions—can we sustain the supply of materials resources required in order to go on indefinitely expanding production of things, and find places for all the effluents to go without affecting our environment unacceptably? There are also the social questions, penetratingly analysed by, e.g. Fred Hirsch.<sup>12</sup> Might Gold-methane be a seductive invitation to slide further down a slippery slope before we begin collectively to face up to the ultimate questions of how we distribute a cake which is no longer expanding, and how to redefine public notions of human fulfilment in less material and more humble ways? Perhaps not, because that problem is a minority problem in the world of today—our affluent neurosis. It does not impress the starving or homeless in the third world. To them Gold-methane might herald the coming of the basic material needs which we have long taken for granted. It would be an energy supply less mystifying and inherently inaccessible than nuclear power, and more suited to the less sophisticated infrastructures of the under-developed countries. (If only we could believe they would receive priority.)

Thus whatever may be the problems inherent in any overall expansion of energy conversion in our own society, regardless of its nature—coal, methane, wind, nuclear, etc.—Gold-methane would justify its existence for me on two counts:

a) it would presumably, if available at all, be accessible relatively quickly, and therefore extend the period of grace before an irreversible plunge into a fast breeder reactor future. It might offer a viable alternative to plutonium futures altogether;

b) it would offer in principle at least, abundant supplies of energy in easily usable form, to the countries who need it most desperately. Even the Atomic Energy Authority has recognised that nuclear power is inappropriate technology for much of the third world. They use this “progressive” position to lobby for more nuclear power in the advanced industrial world, on the specious argument that this would release much needed oil from our use to that of the third world. Would that this might be so, but there is no

example of any similar transfer having occurred in the past. Unfortunately, one fears that if Gold-methane ever materialises, it will help us only to obscure yet further the real problems of peace and cooperation, and to be the source of further strife. On the other hand, one could probably have said the same for every energy supply system and most other technologies since the candle. Whether Gold-methane exists is in the lap of the gods. Whether, if it does, it will flow, is up to us and the gods. Whether if it flows it will do so to the benefit or detriment of mankind as a whole, is up to us guided, I hope, by the Grace of God. Perhaps the very messiness of Gold-methane in terms of its lack of neat fit into the current dogmas of the energy debate, will allow us to avoid the usual condemnation or worship and look at its possibilities and implications with fresh and sensibly cautious gaze.

#### Notes and References

1. *Hansard*, 25 May, 1965, col. 892. Even "electricity too cheap to be metered" was promised!
2. Walt Patterson, *The Fissile Society*, Earth Resources Research, London, 1977.
3. Royal Commission on Environmental Pollution—Sixth Report (1976)—*Nuclear Power and the Environment*, Chairman Sir Brian Flowers, HMSO, London, Cmnd 6618. See Chapter IX for a discussion of energy strategy. The AEA originally suggested 210-285 GW of nuclear electricity in the year 2000; three years later the Government is talking in terms of 40 GW (See Energy Commission paper number 5, *Energy Forecasts—A Note by the Department of Energy*, January 1978).
4. See *New Scientist*, 24 August, 1978.
5. For an extensive report of Gold's theory, see David Paterson, "Methane from the bowels of the earth", *New Scientist*, 29 June 1978, pp. 896-9.
6. See *The Times*, 5 Sept., 1978, p. 8. "Energy shortage horizon keeps receding"; and M. Godet, *Crisis of Forecasting and Emergence of Prospective Methods* (Pergamon, 1978).
7. See Note 5.
8. John Gribbin, "Fossil fuel: future shock?", *New Scientist*, 24 Aug., 1978. See also U.S. National Academy of Sciences Report, *Energy and Climate* (1977).
9. For one glimpse of this controversy, see Odell's evidence and cross-examination at the Windscale Inquiry, transcripts day 73. See also a letter in *The Guardian*, 15 July 1978, "Is the overflowing oil pool merely a mirage?" critical of Odell from an environmentalist, Richard Johnson.
10. By "aggregate risk" I mean the overall risk, as the product of probability (frequency) of occurrence, and the average damage caused by one such occurrence:

**RISK = PROBABILITY × CONSEQUENCE** is the equation used by safety experts. As a society we are notoriously inconsistent in our evaluation of risks in different fields of activity, though not necessarily “irrational”. One general observation is that the aggregate risk from several relatively small harmful events (e.g. car accidents) will be perceived as much less significant than the same aggregate risk from one large harmful event (e.g. an air crash or hotel fire). Likewise we may view the risk attached to many relatively small gas tanker accidents as insignificant compared to a large nuclear accident, even if the “aggregate risk” were the same. Some would dispute that a large gas tanker explosion would be any less damaging than a major release of radioactivity (e.g. by a core-meltdown and containment-failure) from a nuclear reactor.

11. As argued comprehensively by e.g. Herbert Inhaber, “Risk of Energy Production”, Atomic Energy Control Board of Canada, AECB-1119; and C. L. Comar and L. A. Sagan, “Health effects of energy production and conversion”, *Annual Review of Energy* 1, (1976), 581-599. This is still an open issue, as the reader might suspect!
12. Fred Hirsch, *The Social Limits to Growth*, (London, Routledge, 1977).

## **Comment**

### **Creativity and knowledge—An alternative view**

One of the stated objects of the two papers by Ronald Brown recently printed in *Theoria to Theory* (XI (4) 1977 and XII (1) 1978), was to promote discussion on the relationship between Creativity, Religion and Science. What is interesting about the papers, is not so much Dr. Brown's thoughts themselves that are striking, but the examples cited. The way they are cited mirrors certain contemporary fallacies and misunderstandings; many of which are based on impressively general assumptions. I want to consider some of these, and to suggest a perhaps more radical way of looking at the whole concept of creativity, and its connection with Knowledge and the process of "knowing". For example, the way "Science" is sometimes accredited with a superior "knowing" analogous to the dogmatic superiority taken up by the Church in the Middle Ages.

Contemporary philosophers have spent much time on considering the "meanings" of statements, words, clauses, etc. What is perhaps slightly more difficult to analyse are the overtone-associations of particular words, which give rise to nuances and shades of meaning, which may differ from person to person. "Creativity", for example, is obviously an activity of a creator, which if exercised through the "act" results in that which is created. The cornerstone of both our culture and civilisation, is the Christian Tradition which like the Judaic Tradition within which it arose, holds that in fact there is only one Creator, and that is God. The Book of Genesis speaks of the creative-power of the Spirit or Word of God "moving across the

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face of the waters. Later Old Testament writers possibly under the influence of the Stoics identified the Greek word LOGOS with SOPHIA (Wisdom). This fusion gave rise to the concept of knowledge being manifest through the laws and orders in creation, being as it were, an image or mirror.

Can we speak of man "creating" in the same way that we speak of God creating? The word "create", we are told (OED), means, "to bring into being"; yet there is a subtle distinction between "being" and its embodiment. I would suggest therefore, that what is often called creativity, is merely a process of transformation—the changing of one form into another. For example: the "iron" that made the Forth Bridge was not actually created. The natural iron oxides were transformed to iron by suitable refining and smelting processes, and whether the iron eventually was given the form of a razor blade or the Forth Bridge; the substance itself—the iron, had not been created.

Given that each "thing" has its nature, and that there are natural laws governing its relationships with other things; it is obvious that "transformation" can only take place if the agent has some understanding of the properties of the things involved. Where this is a discovery of natural laws, it is obviously the proper field of the scientist. The scientist seems to be almost obliged to restrict his awareness to the limits made possible by his instruments. The artist, on the other hand, is principally concerned with expressing the immeasurable through the various forms of the measurable. We do not normally speak of either the man-of-religion, or the man-of-science as being "creative" in the same way that we say an artist is "creative". So assuming that we can discover what "creativity" is in this context, can we discover where and how, such an activity takes place? It seems appropriate to consider at this juncture, the operation of the mind in what might be described as a creative act.

Creativity is most surely not just thinking. For the thinking-mind can perhaps be the most conservative of all the mental faculties storing, collating; what has *been* brought to its attention. The mind—or this part of it at least—seems to operate from the past and so in the context of our discussion it cannot be said to bring something new into being. But it can see new ways of arranging

what is brought to its attention. Whatever is made by man in the physical world is a *result* of an activity which has already taken place in the mind. An analogy may be drawn between this mode of operation, and the role played by an architect's drawing. The drawing is a result of a number of influences; and even if the building is to be modified during its construction, the result of that modification has been already perceived as a result in the mind ("idea". Gk. "to see"). The mind is therefore in some way concerned with the creative-act; but the question remains, How? But let us go further. It is a known fact that the individual *may* become "inspired" (as distinct from aspire), or experience a "flash of intuition"; Ron Brown gives many examples of this. The result of such "flashes" is usually either a restatement of what is subsequently seen as the obvious—and therefore could not be new; or, it—the idea, knowledge, etc., appears to be new to those who do not remember having experienced it before. To the person who has had the "flash" it is much more like having something uncovered to him. Experience tells us that "inspiration" and the "flash of intuition"—or insight, has come from a point of origin in our being, far deeper than the almost "normal" level of the thinking-mind. The point may well be made by drawing an analogous situation from the field of chemical kinetics (the study of chemical reactions, determination of reaction rate, identification of reaction order etc.).

The mind develops patterns of thoughts or patterns of thinking. Most of what is normally described as "thinking" takes place within the constraints of these patterns. In the case of a chemical reaction, it may be started by adding energy in the form of heat, or catalysis, or higher energy such as ultra-violet radiation. In the case of "heating" reactants together, the reaction usually proceeds along a number of ordered steps to form the product or products. Catalysis initiates a reaction by producing a metastable active chemical species, which provides local initiation sites. Ultra-violet radiation on the other hand, disrupts the stasis-state of non-reactive normality by dislocating the non-reactive pattern. Energy is produced within, or by, the excited state, enabling the reaction to proceed. This reaction path may be different from the thermally induced one.

Relating this to intuition and its "flash" (which, like "Grace", is a

process which the agent has no control over, and cannot pre-determine); a certain comparison may be drawn. The whole process could be described as a kind of energy shock which disrupts or dislocates the habitual patterns within the normal thinking-mind.

The interesting thing about these “flashes”, is not only the immediate and subsequent effect they have on the habitual pattern of thought; but they do not, as it were, tell us anything which we already in a sense, did not know. The sense of this recognition will and does vary, from individual to individual, and from situation to situation: but the immediacy of the apprehension so characteristic of intuition, serves to distinguish it from the more reflective phenomena of insight. Whilst I would agree with Ronald Brown, that it has, and indeed produces a freshness, a newness of view, I would suggest that its “newness” is not the newness of the newly-created, but the newness of discovery.

The mark of the true artist is not only the qualities reflected in his work, but that he almost intuitively seems to leave himself out of the picture as much as possible. Leonardo da Vinci, it is once said, refused a commission simply because part of the contract was that he should sign the finished “work”. Mozart’s descriptions in his letters, as to how he wrote his Symphonies, makes it quite clear that he regarded himself as a translator, or transformer. The music was, as it were, already written. Shakespeare’s genius becomes the more apparent when it is realised, not that he did not invent his own themes, but the way in which he used his sources—bringing elements from many sources together in such a way as to produce a new form. Shakespeare was just following a tradition, but see what he made of it! Literary analysis of early literature such as *The Iliad*, *The Odyssey*, and the Anglo-Saxon *Beowulf*, clearly shows that a substantial proportion of the content—in terms of word-groupings and formulaic phrases, was in fact inherited; thereby making it impossible to talk about its creator, or about the “work” being completely original.

If one considers the poetic and literary tradition in general, then it must be remembered that the spoken word preceded the written word. For example; the Islamic insistence on the accuracy of the Qur’an, is based on the fact that its transmission was, and still is,

oral. The words were learnt by heart. If one examines the literary tradition in any of the great cultures and civilisations, one discovers a particularly consistent attitude towards the poem by those that recited it; namely, that they were in some way, a mouthpiece for divine beings or gods. They did not claim any prerogative for originality or creativity. It was the Muse or God that provided the impulse. It was the Muse or God who provided the inspiration and “created”. It was this creative power, which at its height, was referred to by Plato and Dante, among others; as “the divine frenzy”.

In the Bible are many examples of such “inspiration”, ranging from “The Song of Songs” to the “Book of Revelation”. It could perhaps be suggested that the experience of having one’s tongue touched with a burning coal brought by an Angel, and the “prophetic” “And Lo, I dreamed a dream” . . . ; are all part and parcel of the same thing. One can agree that there may well be similarities between St. John’s “Prologue” and contemporary Greek religious poetry; but can those similarities only be limited to a possible cultural influence? And was this not, one of the questions that Plato raised when he was poetic in being sceptical about contemporary poets? If indeed it is as Elgar said, that “works of art are not composed, they’re waiting to be discovered”; does not the “agent” become dependent with respect to the “act”, rather than independent?

Mozart would have probably agreed with Elgar. It was, as he put it in one of his letters, “hearing all at once”. It was discovery through listening. Perhaps man’s most “creative act”, is then one of listening, is one of discovery or rediscovery. It is an interesting word “discover”; the experience of a veil being lifted momentarily from the eyes. Science is said to “discover”; the scientist seeks to know the laws by discovering them first. If one looks at the history of science, then it becomes obvious that one has to be careful—even on a literal level, about calling a discovery (or thought) new. How long ago was it actually first stated that the earth is round, and revolves around the sun?

The religious-man, also “seeks to know”; but it is more the unity in diversity, than the diversity. He has the advantage perhaps, that

he need not be limited to instrumental proof; for he recognises that irrespective as to how sophisticated his measuring instruments are, they are only really a mechanical extension of his senses.

For the ancient Greeks, the ultimate knowledge, the knowledge above all other; was the knowledge of oneself. The inscription "Know Thyself" over the temple at Delphi was accompanied by another; viz. "Nothing is too much". What has this to do with creativity?, we may ask. We answer, that which is created embodies knowledge of itself, its creation, and its creator. For Plato, an idea (from a Greek root "to see"), was a form apprehensible by the mind. Insight, inspiration, and intuition; seems to by-pass this world of our ego, seeming to come from a world or realm beyond the world of "me and mine". Such phenomena as inspiration, intuition or insight, bring with them knowledge. The experience of this vision, may produce something akin to the certainty of faith; and a yearning "to know".

In this context, the role of science could be seen as twofold: to discover the laws operating in the Creation, and to express them in an intelligible forum for the benefit of humanity. But it must not be forgotten, that such knowledge is not an end to itself. Science, if it is not bound by its own self-imposed limitation, must lead a man to the sense of the religious; to an awareness of the presence of the Divine through the use of reason. A great Saint once said; "Reason took me as far as the Door, but it was Your Presence that let me in".

The Continuum of the one act of creation is such a door. This is surely the real relationship between Creativity, Religion and Science.

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## Comment

### “The flash under the eyelids”

. . . apart from the wide area of agreement and shared interest, where we might personally diverge from you “Epiphany Philosophers” is that we choose to have a different slant on what RELIGION means. O.K.: a liturgy may express (in any one of its many varieties) what religion is thought to mean to a lot of people. But there are so many fences to come down one-side-or-the-other-of!

We [i.e. H.B. and her surgeon husband] profoundly wish to keep the situation as wide open as possible and would go along with Blake’s idea that the true artist (in the widest sense of the word) is man’s closest link with God: —

. . . I rest not from my great task  
To open the Eternal Worlds, to open the immortal eyes  
Of Man inwards into worlds of thought, into Eternity  
Ever expanding in the bosom of God the Human Imagination.

As a postscript I enclose a PICTOGRAM which is homing in on this whole area.

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**“THE FLASH UNDER THE EYELIDS”**

Pictograms of Perspective (Part of a series in process of composition)

**I. PICTOGRAM ONE: “More skilled than Icarus”.**

1. I am just about old enough to begin to write poetry.  
 You lift up my hand  
 Which you have known for fifty years  
 And say: “The skin is getting thin,  
 It’s a nuisance getting old.”
2. But my heart leaps!  
 My skin is getting thin enough to tear;  
 My spirit, inside this egg-shell,  
 Is more than ready to pick its way through.
3. And then: — coming out of its cave,  
 The solitary confinement of my life,  
 It will have tales to tell  
 Which will seem like poetry  
 To the ones who have served faithfully at home.
4. I shall be the one who has come back  
 From the Country of Lost Souls  
 Where men stand on their heads;  
 I shall be the one who has been resurrected  
 After my long burial in Life.
5. . . . I spoke of writing poetry;  
 But the thin skin on my hand  
 Will let it pour out of me  
 Without being configurated  
 Into an alphabeted language.
6. Poetry transfigures living  
 Always; but poised here on the thermal updraught of my life,  
 Feeling my outstretched wings, like sails

Supporting my flight-bones, —  
 At last, the lacked Perspective  
 (That that naked, forked animal Man  
 Is forced to live his days without)  
 Should, for a flash be clear to me.

7. And as I then glide down the windy high-roads  
 At a speed that makes past life seem unbegun  
 Able to shoot through barriers of Space and Time,  
 My flight-control must be more skilled than Icarus':  
 And somewhere shall be heard  
 That strange, last legacy of song  
 Sung only by a dying bird!

HONOR BICKFORD

*Haford Lon  
 Itafod Bilston  
 Handegla  
 Nr. Wrexham  
 Clwyd*

© Honor Bickford





## Comment

### Morality and Cosmology in Hinduism

I still read, with much interest, *Theoria to Theory* and I was of course specially interested in the discussion “Morality and Cosmology in Hinduism”, published in your latest issue.

I thought Pratima Bowes remarkably good and, having myself, for so many years, lived surrounded by Hindus I found myself agreeing with practically everything that she said (and nourished by fresh information, on all sorts of aspects of the thing). She might perhaps be interested in learning that the person from whom, possibly, I learnt most about Hinduism—at its higher social, or perhaps we should say caste levels—was “Rajaji” (C. R. Rajagopalachari). This occurred, mainly, during what must have been a rather distressing period in his life when—unlike nearly all leading members of the Congress Party—he stood aside from the “quit India” agitation, launched by Gandhi against British rule, during the worst phase of the war, against Hitlerism and Tojoism, in 1942.

Two little critical points emerge. I object, strongly, to the phrase “the civilizations of the East”, in line 2 of the discussion. It is absurd. As an honorary adopted Chinese (see my latest book “Unmade Journey”), I find this peculiarly misleading. One could not object, of course, to Judaism, by implication, being lumped together with Islam — if not with Christianity. But to my way of thinking, Chinese religious attitudes (if any, they’re not a very religious people), don’t accord with the foregoing *at all*— anyway, if one regards “Chinese” as practically synonymous with Confucian. This generalization is indeed less applicable to the Buddhist aspect, though, even there,

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Buddhism in China (from such little chance as I've had of observing it, in Lan Tao, near Hong Kong) became very Sinified, or Chinese-ish.

One triviality, I feel there's a mistake, a bit more than half-way down p. 106. Perhaps Tanya Zinka is wrong, and Taya Zinkin is meant?†

IAN STEPHENS  
49 Hertford Street  
Cambridge

(Ian Stephens was editor of *The Statesman* Calcutta and Delhi 1942-51, and has written widely on matters concerning S.E. Asia. See his dialogue with Raymond Panikkar in *T to T* 1.2) Ed.

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† Yes indeed: we apologise to readers and to Taya Zinkin (Ed.).

## Sentences

From "Markings" by  
Dag Hammarskjöld<sup>†</sup>

*When all becomes silent around you, and you recoil in terror—see that your work has become a flight from suffering and responsibility, your unselfishness thinly disguised masochism; hear, throbbing within you, the spiteful cruel heart of the steppe-wolf—do not then anaesthetize yourself by once again calling up the shouts and horns of the hunt, but gaze steadfastly at the vision until you have plumbed its depths.*

*For him who has responded to the call of the Way of Possibility, loneliness may be obligatory. Such loneliness, it is true, may lead to a communion slower and deeper than any achieved by the union of two bodies, but your body is not going to let itself be fobbed off by a bluff: whatever you deny it in order to follow this call, it will claim back on you if you fail, and claim it back in forms which it will no longer be in your power to select.*

*It is not we who seek the Way, but the Way which seeks us. That is why you are faithful to it, even while you stand waiting, so long as you are prepared, and act the moment you are confronted by its demands.*

*The alienation of great pride from everything which constitutes human order.*

*A fable: once upon a time there was a crown so heavy that it could*

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<sup>†</sup> *Markings* by Dag Hammarskjöld. Translated by W. H. Auden and Leif Sjöberg, © Alfred A. Knopf Inc. and Faber and Faber, and reproduced by permission.

*only be worn by one who remained completely oblivious to its glitter.*

*Now you know. When the worries over your work lose their grip, then this experience of light, warmth and power. From without—a sustaining element, like air to the glider or water to the swimmer. An intellectual hesitation which demands proofs and logical demonstration prevents me from “believing”—in this too. Prevents me from expressing or interpreting this reality in intellectual terms. Yet, through me there flashes this vision of a magnetic field in the soul, created in a timeless present by unknown multitudes in holy obedience, whose words and actions are a prayer.*

*— “The Communion of Saints”—and—within it = an eternal life.*

## Notes on Contributors

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