

Theoria to theory; an international journal of science, philosophy, and contemplative religion.

London, Gordon and Breach Science Publishers.

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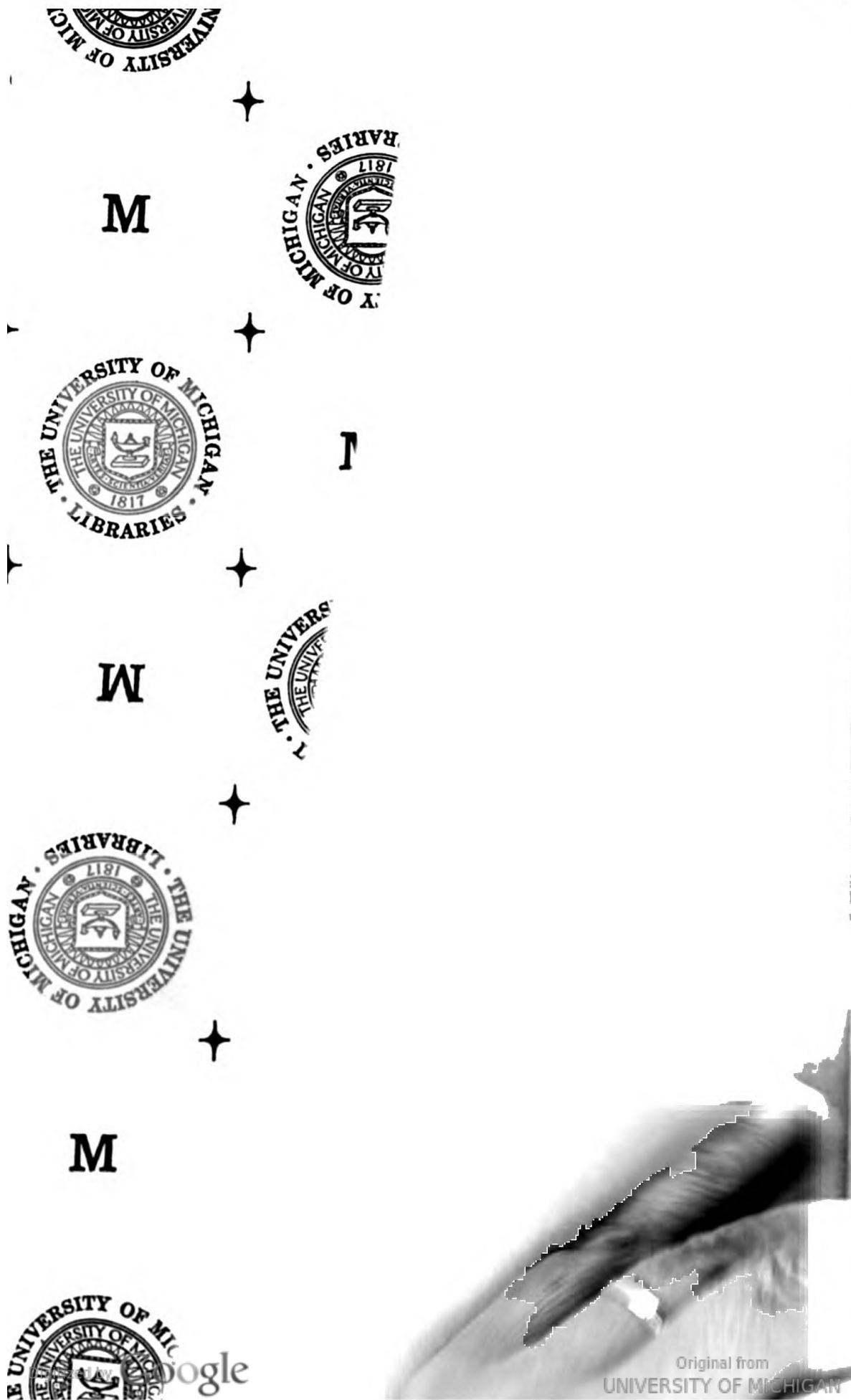
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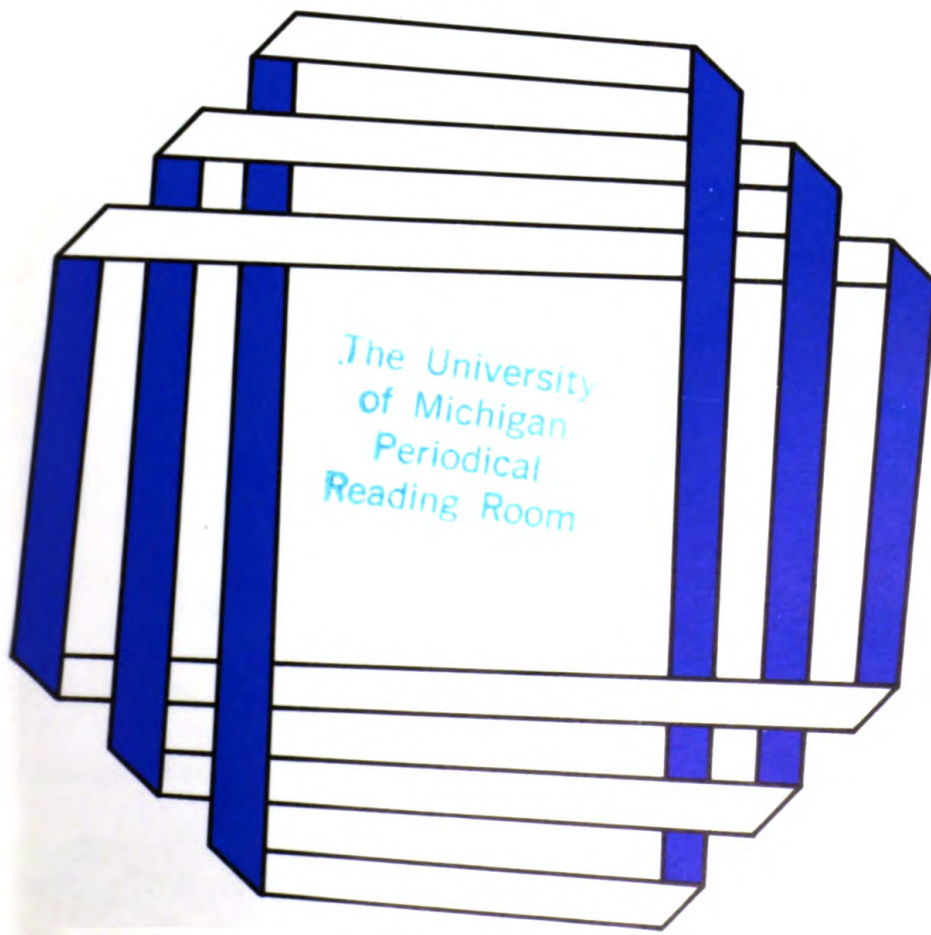
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SEP 23 1974

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Volume 8, Number 1 (1974)

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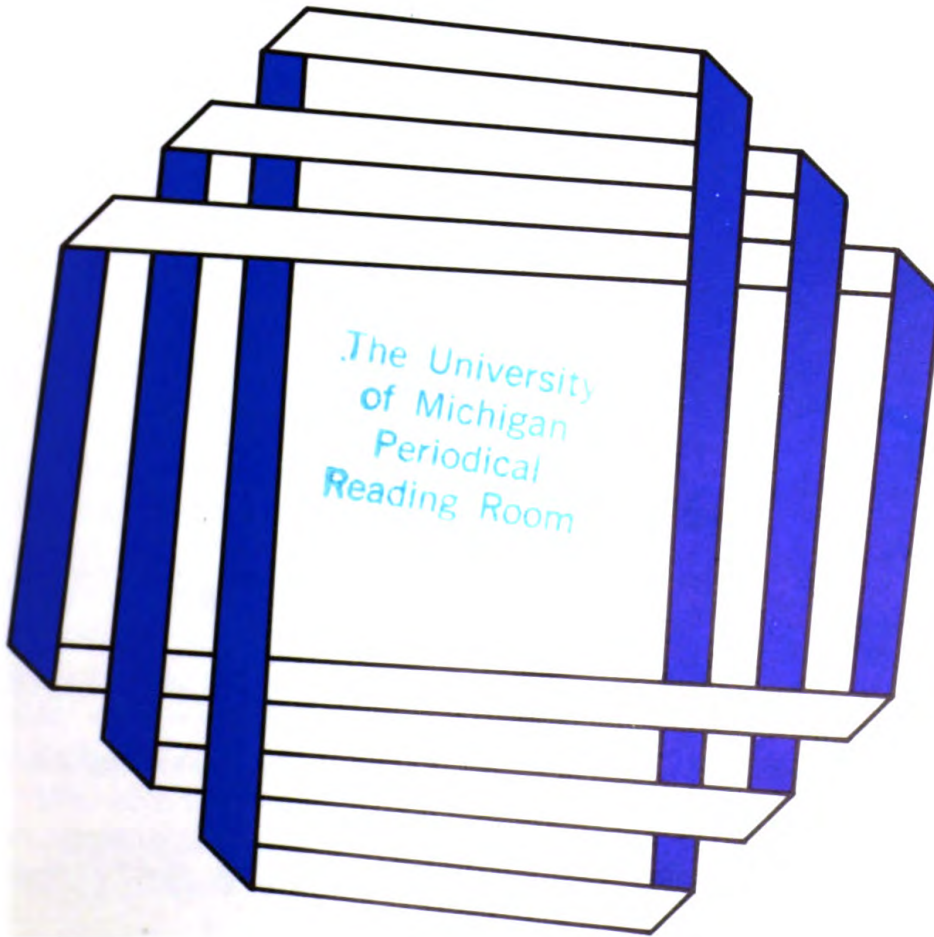
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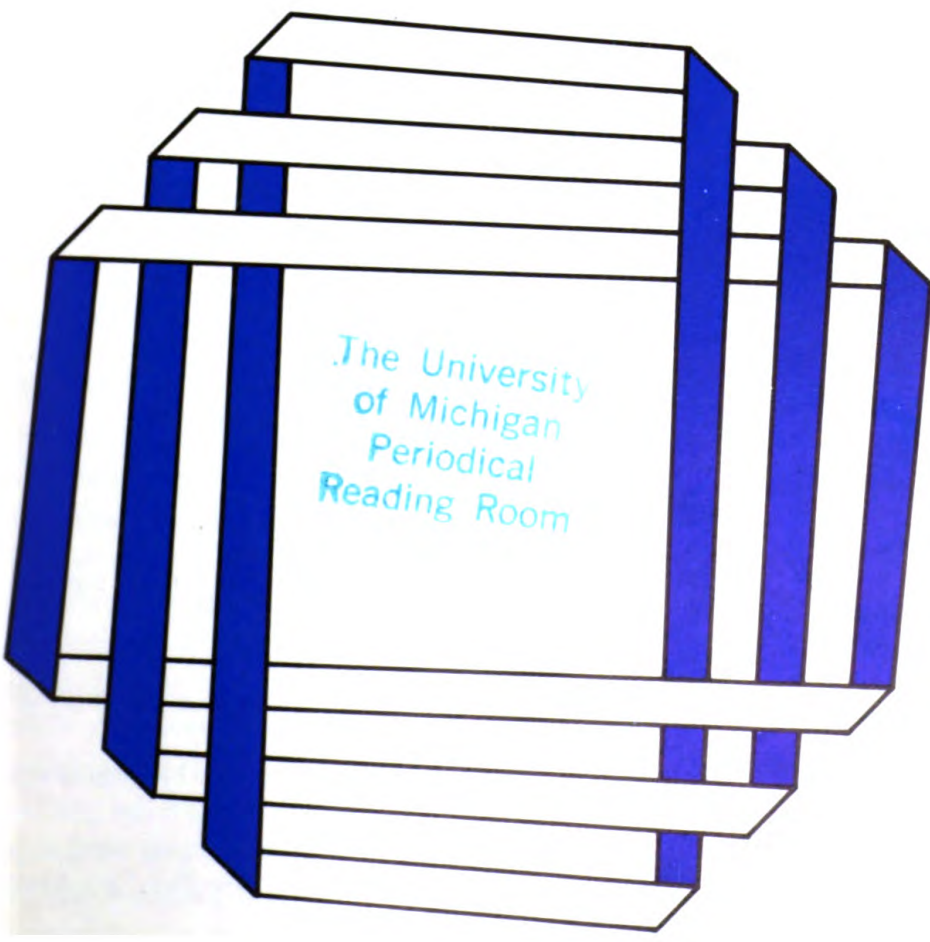
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THEORIA to theory

An International Journal of Science, Philosophy and Contemplative Religion

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Explorations in the sciences and technology that affect our understanding of religious and philosophical questions—these are the basis of this quarterly journal. *Theoria to Theory* holds that traditional religion has been primarily, and at best, concerned with mystical or contemplative experience; therefore it is important to a widened science in providing one source of insight. *Theoria* was the old Greek name for this insight; *Theory* here stands for an enlarged and revised scientific understanding. The journal represents an effort to keep the two terms with each other.

The journal was started in 1966, when this approach was outside current theological, philosophical and religious fashion, but times have changed, and the interests of *Theoria to Theory* have become those of an influential avant-garde. However, implementing the approach is not so easy. Real understanding proceeds at its own rate, and demands precisely the "waiting on God" that contemplatives should but do not always manage. Any other approach leads, on the one hand, to occultism, and, on the other, away from the spirit of adventure within science.

Editorial correspondence, submitted articles, and books for review should be addressed to The Editor, *Theoria to Theory*, 20 Millington Road, Cambridge, CB3 9HP.

Subscription Rates *four issues per volume*

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U.S.A./Elsewhere

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The subscription rates include a distributing charge of \$7.75 for postage and handling *or* airfreight to the U.S.A. and Canada.

Subscriptions may be sent to Gordon and Breach Science Publishers Ltd., 42 William IV Street London WC2, England *or to* Gordon and Breach Science Publishers, Inc., One Park Avenue, New York, N.Y. 10016, U.S.A.

Subscription inquiries should be addressed to the London office.

JANUARY 1974 issue

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Editorial

From many backgrounds and for many reasons a number of people nowadays are convinced that there are critical points in the sciences where new alignments of concepts are needed. One of the reasons why this journal has focused so much attention on parapsychology is that the diverse phenomena that are dealt with under this label point up the critical areas and offer hints as to the direction in which we must move. Uri Geller, whom we discussed in the January issue last year, has now become a figure of public interest, disturbing many of the comfortable "certainties" of academic science and philosophy. Perhaps he will disturb us more. If Geller can do what he seems able to do, then we are faced with deciding how to respond. There are circles where this sort of phenomenon is greeted as a sign of the failure of science, as a cue to withdraw from the critical pursuit of understanding and embrace the occult. There are others where it is held that a minor revision will do and that the physicists who said that telekinesis was impossible failed to appreciate the power of existing theory. But neither of these responses is right. What is needed is an examination and reappraisal of many of our concepts and a great deal of directed and intelligent research. Even if Geller is a clever trickster there is work to do. For, as the discussion with Heisenberg in this issue shows, there are problems at the conceptual base of physics itself. We are facing a serious intellectual crisis whose solution will demand hard work from philosophers and physicists.

Yet, with a few notable exceptions, academic philosophers have failed to deal seriously with our problems. If, as the parapsychological results suggest, the conceptual framework of physics won't

Theoria to Theory
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do, then “common sense” and “ordinary language” will do even less. So it is a little disheartening to read Prof. Bernard Williams’ recent book, *Problems of the Self*, a collection of “ordinary language” papers in which he covers a number of problems which are also those raised in a very awkward way in parapsychology. Prof. Williams holds the Knightbridge Chair of Philosophy, which was held once by Broad, who, unlike his successor but one, gave serious attention to the paranormal.

An examination of the book shows up some of the inadequacies of a method of which Williams is a first-rate practitioner. The papers in question (basically the first five) deal with the relation between people and their bodies. It might have been expected that Williams would discuss some of the claims that have been made about out-of-the-body experiences in, for example, Robert Monroe’s book *Journeys out of the Body*, or Celia Green’s *Out-of-the-body Experiences*. But he does not. The whole argument is carried on entirely without reference to cases where these problems actually arise.

The case Williams discusses most interestingly is an imaginary situation where two persons swap bodies. But the argument here exemplifies a peculiar philosophical inadequacy of his position. Throughout this paper, Williams seems to presuppose that the only way we can really change a person is to change his body; but this is a large part of what he is trying to show. He considers the case where two men (A and B) have their memories read off their brains (part of their bodies) and stored in, say, a computer. They are then read back; but A’s body gets B’s memories and B’s body gets A’s. The question is what A should say before this process occurs if asked whether he would prefer the A body or the B body to be tortured after the change. (All this granted a selfish point of view.) Williams thinks that we should identify with our bodies and not our memories, adding: “It would be risky; that there is room for the notion of risk here is itself a major feature of the problem.” (p. 63) Indeed it is; but that is because we do not yet know what sorts of things would happen after such treatment. If we insist on discussing cases where no information is available, our conclusions are liable to be “risky.”

Williams' choice of a computer analogy is an important indicator. For he belongs to a philosophical school that holds that philosophy requires no contact with science and actual cases. To complain that Williams has ignored conceptual problems that have a (putative) empirical content is to refuse to do philosophy his way at all. Yet here Williams has committed himself to a picture of the human person that derives from work in computers and "Artificial Intelligence." He talks rather vaguely of extracting "information from a man's brain and stor[ing] it in a device" (p. 47) and the word "input" appears later on the same page. And he also says this:

Thus we can imagine the removal of the information from a brain into some storage device (the device, that is, is put into a state information— theoretically equivalent to the total state of the brain), and is then put back into the same or another brain. (Such a process may, perhaps, be forever impossible, but it does not seem to present any purely logical or conceptual difficulty.)

The notion of "logical or conceptual" difficulty here invoked is surely very odd: from an analysis of everyday concepts we have moved to an assumption of the computer model of the brain. (I take it that Williams' refusal actually to mention the word "computer" is a feature of his method.)

There are surely very grave conceptual problems about the idea of separating a man's memories from the rest of his person. Nothing in the "logic" of the concept of "memory" guides one to an understanding of the plausibility of such analogies and this one seems to be question-begging. For a computer memory is a store of discrete units of information, each of which has a numerical label that enables it to be called for by the central processor, which goes progressively through a program, as that program dictates. It is possible for a given unit of information to take the form of a new instruction for the central processor. The plausibility of Williams' case rests upon the possibility of clearly distinguishing the memory bank and the central processor and nothing in the ordinary conceptual framework guarantees the separability of a person and his memories.

It would have been more instructive in this context to consider

the phenomenon of “possession,” which provides us with real problems of personal identity; and, in a sense, Williams does. In the first paper (“Personal Identity and Individuation”) he discusses a person, Charles, who wakes up with Guy Fawkes’ memories. Williams holds that we cannot say that Charles has become Guy Fawkes because two people might wake up with Fawkes’ memories at the same time and, though they would both have the same right to be *called* Guy Fawkes, they couldn’t both *be* Guy Fawkes. But why not? In a recent Aristotelian Society paper, Jonathan Harrison has suggested that, “logically” speaking, it is possible for a person to be embodied in several places at once. This result is defended by arguments that fall in the same tradition as Williams’—the methodical examination of ordinary usage, answering the question “What would we say if . . . ?” There must surely be something wrong with a method that can lead to exactly opposed conclusions. It may be the case that persons cannot occupy more than one body at a time; if so, then only one person at a time would be able to be Guy Fawkes. But these facts would not be facts discoverable by logical reflection alone. An empirical background is needed. It is not that philosophers ought to go into the laboratory or do field-work; but they must work in the context of a general knowledge of what happens (or seems to happen) in the world. Part of the problem with Williams’ method is that it fails to face the fact that our concepts and our knowledge are not independent and that common-sense concepts are bound up with common-sensical beliefs. If common sense is wrong, then so are its concepts, and examination of them reveals only their defects. In an area where so little is known, this sort of common-sense theorizing is inappropriate. Ordinary language parapsychology is as unhelpful as ordinary language psychology—and incidentally the ordinary language theology that is so fashionable in the divinity schools.

Interestingly enough, when Williams is faced by a problem in expounding his thesis, he is not averse to leaving logical for pragmatic arguments. On p. 11 for example, he says that in order to test Charles’ claims about Guy Fawkes, we should have to make reference to Guy Fawkes’ body. For the way to find out if

Charles' claims about Guy Fawkes are true is to see where Fawkes' body was at the time and whether Fawkes was doing what Charles says he remembers doing. Now if this person changed bodies too often such checking, Williams says, would be "impossible." So it might be. But this is a practical, not a logical difficulty. What is practically impossible is getting at all the historical evidence we would need.

Williams' general attitude to the paranormal is revealed by these few brief remarks on clairvoyance:

To describe Charles as clairvoyant is certainly not to advance very far towards an explanation of his condition; it amounts to little more than saying that he has come to know, by no means, what other people know by evidence. But . . . [this explanation] might be the best we could offer.

This passage contains a very obvious mistake; to say that someone is clairvoyant is not to say that he knows what he knows "by no means", but that we do not know how he knows. Now the obvious response to such a situation is to try and find out how he knows. But notice what Williams has done; he has given a toe-hold, paradoxically enough, to the occultists. For he has implicitly accepted that clairvoyance isn't explicable. He then proceeds to ignore it completely, presumably because he thinks that it can't happen.

Williams comes very near here to exercising the "Blue Book theorem", which is discussed by Prof. Hynek in his book *The UFO Experience*. What the theorem says is: "It can't be, therefore it isn't."

Expressed this way, the theorem is a truth of modal logic. Necessarily not-*p* implies not-*p*. But this truth is utterly lost when it is interpreted as sanctioning the inference from "A claims to know that necessarily not-*p*" to "not-*p*." Indeed, the best possible way to test A's claim in such a case would be to try and find out whether, in fact, not-*p*. The name "the Blue Book" will remind philosophers of Wittgenstein. It is tempting to suggest that it is a part of the Wittgensteinian legacy. For the practice of attending to the nuances of ordinary language leads very easily to ignoring the crude challenges of the extraordinary.

None of this commits us to there being UFO's or disembodied

persons or anything else. What we are committed to is demanding that there be serious investigation of all these awkward cases. We are glad to see that the new editor of *Nature* (Vol. 246, Dec. 1973) agrees.

* * * * *

We publish in this issue a “double dialogue” with Werner Heisenberg—the most famous living scientist. In the first part Vintila Horia asks about religion and science; in the second part we introduce new possibilities to press Heisenberg further. An unexpected result is a rather new slant on “complementarity” which is the aspect of science from which Heisenberg expects to get a clue to the place of religious language and concepts. Whereas many exponents of quantum-theoretical orthodoxy sees complementarity as a part of the formal structure of fundamental physics, Heisenberg sees the clash of different concepts as a challenge to look deeper. In the case of quantum physics this suggestion is that the deeper goal lies in the direction of greater mathematical abstraction, but this may not be the only way things work themselves out.

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Readers will notice that with this number, we are starting with new publishers, Gordon and Breach, Science Publishers; 41-42 William IV Street, London W.C.2. They will be handling orders and subscriptions from now on.

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We are sorry about the lateness of this number. This is partly due to arranging the change-over of publishers and printers; partly to the printers having had to contend with the three-day week.

Further report on Uri Geller

TED BASTIN

Since our last issue Uri Geller has hit this country in all kinds of society in a way unprecedented for a sensitive. As a result of our past concern with the phenomenon he represents (see *Theoria to Theory*, Vol. 7, No. 1) we have found ourselves in the thick of the fray and being consulted by representatives of the media at all hours. Behind the demand to be perpetually reassured that Geller is not just a conjuror (or the contrary reassurance that after all he still may be) of which the challenge issued by *The New Scientist* is typical, there is a concern that as much as possible should be discovered and made available to seekers after truth. To us it seems that the best way of dealing with the first demand is to pursue the concern for understanding the phenomenon. Suppose a remote tribe find an aeroplane and are clever enough to devote themselves to unravelling some of the details of the way it works, like the nature of the airflow round the wings or what the instruments are for, then the question of whether the strange thing really exists, as a flying machine rather than as a trick planted by a troublesome neighbouring tribe, drops naturally out of the centre of the picture.

As soon as we ask what are the right lines along which to investigate we run into a diversity of opinion, and it is certain that nobody knows very much. It is by no means clear that the chief impact of Geller will be a upon physics or on its possible extensions. It may well be that it is the psychologists who should really take note. However it is to physics that most people look for answers when interference with material objects is in question, and I suppose no one doubts that the more diverse and detailed

Theoria to Theory
1974, Vol. 8, pp. 7-9

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instrumented records we possess of Geller's feats the better off we shall be. In this context the Stanford Research Institute has let us down in being so secretive about their results. They have issued no proper report at all; only a "press hand-out" and a certain amount of information which they have imparted verbally and by showing films to people who have taken the trouble to go to Stanford. In this way they have lent colour to suggestions in the British press that perhaps nothing really happened at Stanford at all.

The reason for the attitude of S.R.I., which seems to come from their top level directorship and not from the investigating team, is of some psychological interest as showing a way of thinking very common among scientists, though very much out of keeping—one would have thought—with good scientific practice. They have seemed reluctant to publish until they think they have a grasp of the nature of the phenomena, and seem also to have assumed that if the phenomena were real, some intellectual grasp would have been forthcoming. Actually what the world wanted was the facts whatever they were, and no one acquainted with paranormal phenomena would have relied on any sudden blinding vision emerging from S.R.I. anyway. Over publication, a great deal of use was made by S.R.I. of the necessity of restricting publication to those phenomena whose testing came up to the most rigorous standards. Of course this stringency is necessary, but it may have been used to filter the information that was allowed out. The idea that experiments fall sharply into two classes—the utterly irreproachable and the dubious—is a will-o-the-wisp; (and how willowy and how wispish we shall probably see in the forthcoming months). There was no reason why Stanford should not have made all their information available, together with very careful statements of the precise conditions under which each item was obtained, so that we all could judge for ourselves the degree of credence to attach to them. There seems a good chance that in Geller's forthcoming visit to this country a freer atmosphere will prevail.

In the press, (*New Reveille* Dec. 9, 1973), commenting on Stanford Research Institute's work, suggests that scientists may be wasting their time with Geller because the phenomena—though real—may be ultimately inscrutable. This is one logically possible

point of view, though of course our line is that to be forced out of our existing framework of thinking is to be forced to try to find a new one. Certainly when you think how much hard swearing the scientific world has done to the effect that the paranormal cannot exist, a very basic revision seems necessary, and we can only hope to pick up a few hints from a thing like the Geller experience that will guide us, for surely we are back in the fumbling stage of science.

Other views have been put forward. John Taylor seems to think that the physical forces which cause distortion of materials are known, and that therefore it must be within our powers to describe how Geller operates in terms of those forces. Taylor has agreed to take part in a dialogue on this question in our next issue.

At another extreme Andrija Puharich, in his forthcoming book *Uri*, claims to know that Geller is the agent of super-intelligences, as a result of experiences he had with Geller in Israel. Puharich described these beliefs to a seminar which we held in Cambridge in June 1973. He has been invited to contribute to a book which we are expecting to publish. The members of the seminar were quite unable to support Puharich's attitude of accepting trance and ecstatic experiences *at face value* (an attitude for which one was unprepared by Puharich's earlier researches and writing). On the other hand it is clear that *something* happened to Puharich in Israel and that it was something into which he had the rare courage to throw himself completely and unquestioningly. Two questions seem to stand out. First, how does one evaluate such experiences without accepting all their imagery at face value, and this is a question which has been familiar from religious experiences of all ages? Secondly, if, as seems likely, there has always to be an uncritical and "taking it at face value" attitude on the part of the prime-mover in any paranormal phenomenon, how would we handle the interplay of the critical and the uncritical in our own personalities if we found ourselves in the rôle of the prime-mover? There seem to be questions of far greater moment that those to which detailed attention is going to be directed when Geller gets here again, even though it would be lovely to know what happens to the dislocations in these spoons.

Double dialogue with Werner Heisenberg

I

This French broadcast conversation between Heisenberg and Vintila Horia was published in *Ecrits de Paris*, February 1971. The translation by Philip Mairet is printed here by permission.

Vintila Horia After reading your works, I've been able to say that Plato played an important part in your philosophic and scientific development. Will you tell me, at what moment of your life, and in what way?

W. Heisenberg It was in the midst of civil war, in 1919. I was then sixteen; and I was preparing for an examination in Greek, while watching from a roof-top the movements of the enemy. In front of me. I had the roofs of the University and, open before my eyes, the *Timaeus* of Plato. It is there that I read the history of the atom, which made a very deep impression on me. That reading marked an important date in my life. I was entering, at the same time, into philosophic and scientific secrets which form a kind of basis in my spiritual development.

V. H. To what extent can one speak, at the present day, of a collaboration between philosophy and science, physics and metaphysics? If one may formulate the question in that way.

W. H. Yes. I believe that, during the last twenty or thirty years, many things have happened that confirm such a collaboration. Some physicists, for example, of the calibre of a Weizsäcker, have gone in for philosophy; and philosophers, on their part, have, many of them, occupied themselves with themes belonging to

Theoria to Theory
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physics or to the natural sciences. May more in the United States than in Germany; and many more, regrettably, on the side of positivism (which, in my view, represents only a restricted aspect of things) than in the realm of philosophy in general. But anyway, in America or Germany, the results have been encouraging.

We spend a few minutes exchanging information from our reading. I mention the name of Jean Charon, as well as a book by which I had been greatly struck lately, on *Modern Physics and Depth Psychology* by Ernst Andrich.

V. H. These exchanges seem to me very interesting for the evolution of both domains. Is not this a kind of return to antiquity when there was not yet so wide a separation between science and philosophy?

W. H. Certainly. But I would like to add something that goes a little beyond your last question. I think that this dialogue is, at this moment taking place also in the world of Marxism. Dialectic materialism, which in Russia constitutes an ideological foundation, brings us to ask ourselves just how far this philosophic basis can be compatible with modern physics. And if we are here putting the problem not only in scientific but also in political terms, we should at once remember that dogmas are in accord with neither the flexibility of science nor the evolution of philosophy. Anyway, even in Russia there are very intelligent persons who claim, from their philosophic point of view, Marxist or materialist, to understand and envisage modern physics—which could lead to some rather interesting results.

V. H. It would be vary fruitful and very up-to-date, I think, if we could establish a relation between physics and abstract art. Between physics and psychology.

W. H. In the first place, I must say that these relations exist, since all science and all art are the expressions of a determinate epoch. On the other hand, the answer is not easy if one wants to know just how far the abstract art of today coincides with the abstract character of modern physics. I myself am dealing in a conference with abstraction in physics and in the natural sciences, and von Karajan has asked me to speak at Salzburg upon the

relations one can observe between physics and abstract music. This is what I think: this abstract character of modern physics has appeared in consequence of the necessity to coordinate vast zones of the natural sciences. It was a case of having no longer to interest oneself only in the mechanical, optical and other phenomena, but to penetrate right to the depth of things—there, where all things find themselves in relation. That is what happens in physics, in our studies of the elementary particles. And when we get to that common, fundamental structure, we cannot do without abstraction. And one is tempted to wonder whether, in the domain of art, a similar tendency is not legitimate and already observable—I mean, the tendency to represent everything synthetically that one cannot represent in a concrete form. I could imagine what follows: there is a kind of external unification of the domains of culture because of the means of communication, of the economy, etc. There is no longer much meaning in talk about an Asiatic area of culture compared with a European or African cultural area. Even where differences of tradition remain, no one can now cast doubt on the fact that these differences compensate and are being merged in one way or another. This means that the process of unification has to be preceded by the work of a kind of general homogenization, enabling everything to be transformed into a mould in which a new substance will be able to “set”. This formlessness, this abstract character of art may very well be ascribed to a desire to shun every anterior form, the whole previous process of change and to create without delay a situational “mould.” When once this phase has passed, when this stage of abstraction has been accomplished over all the world, a new structure will spring into being, which will be the same everywhere. A psychologist, a specialist in the problems of youth, declared some time ago that some young people of today don’t want to accept any pre-established forms, will have no fixed ideals. They prefer to leave things to *define* themselves, and they keep their distances. This tallies perfectly with the very ideal of abstract art. Our psychologist also affirmed that, in music jazz takes up the same position, in which there are no very clear rhythms or harmonies, where everything stays in suspense, as it were. The

harmonies themselves are “dirty”, intentionally impure; the rhythms are muffled and intermittent.

V. H. As in twelve-tone music.

W. H. Yes, but the dodecaphonic is, in its turn, a theoretical elaboration which tries to impose a determinate form.

V. H. But free from any hierarchy.

W. H. That is it. Free from any hierarchy. That idea points in the same direction. No doubt, what seems to me the most characteristic is this indetermination, this dismissal of any well-defined formulation. Which can be understood only on the basis of a fusion of all the forms. When all has been melted down someone will arise and will give a new form to the whole. Considering things from that point of view, one may say that a similar process is developing in the domain of contemporary physics, in which all our previous concepts, the local velocity of particles, etc. are indeterminate—that is to say, they do not grasp reality in an adequate way: meanwhile, at the bottom of all, we meet with an abstract, mathematical structure, thanks to which we are in a position to explain what is happening.

V. H. Don't you think we have there a defeat of determinism, implied in the very principle of indeterminacy; and that this situation will not fail to provoke changes in depth in some domains, even apart from those of physics?

W. H. We come, in the end, to just that aspect of the problem that we touched upon before. I would say, to sum it up, that this evolution of modern physics is the expression of a historic situation and this situation declares itself by a dissatisfaction regarding certain particular aspects of—for instance—classical physics, which means that we are obliged to consider the possibility of widening the grounds of our researches. We must, on the one hand, do everything we can to enable the cultures of the world to put themselves in contact one with another and, on the other hand, envisage the unity of the whole of atomic physics, or indeed, to deduce the whole of biology from a few principles. We

are obliged to penetrate down to the fundamental roots; and that is equivalent to an abstraction, a separation from determinism, in order to be able to adopt some quite new conceptions.

V. H. Some time ago, in one of your lectures you were speaking of faith, and of the spiritual life as of a characteristic of the Occident. What is your attitude, at this time, in regard to the theme of the unity of Christians, and towards the problem of religion in general? Do you think, at this same time, that there is an incompatibility between the language of the man of science and that of the man of religion?

W. H. I have always thought about these questions; but what has preoccupied me above all is this problem: how can we harmonize the need of stability of the faith with the changing rhythm of science? I had a long discussion on this subject with Cardinal Koenig at Lindau. In the end, there is no answer that can satisfy me. But I could state the problem in the following terms: For a community to survive, it must have a language common to all its members; a language they can use in discussions about life and death, destiny and malady, happiness, and good and evil. It is well understood that, up to the present, such language has been provided for us by religion—that of Lao-tze, of Christianity or of Buddhism. All religions, in all ages, have sought to create a common language, by means of which the people could converse upon such subjects. Such a language must be the most stable there can be, such that the simplest man can find firm ground upon it; a scale of values, whereby he is in a position to regulate his life and also, upon that basis to find a meaning in his destiny. Such requirements are hard to bring together with the transformations of knowledge. Naturally, at the epoch in which these languages were formed, they were in perfect harmony with the science of that time. But, since they have to endure throughout time (Christianity is more than two thousand years old) they find it impossible to keep up with the mutations of the centuries. In other words, if our knowledge modifies itself with the passage of time, and if our religious and moral language rejects any such modification, how are we to reconcile these two necessities, these

two so different languages? How do we reconcile the necessity of the dogmas with the transformations or the progress of the knowledge?

V. H. The first dramatic case that comes to my memory, echoing what you say and revealing the often tragic character of this incompatibility, is that of Galileo.

W. H. It was precisely this drama that I cited, in my conversation with Cardinal Koenig. I asked him whether he agreed or not with a theory put forward long ago, according to which the truth moves over two different domains. Following this bifurcation, dogmas ought always to be presented to the people without any variations; but the educated priesthood, the religious elites, might even hold them in doubt; discuss them in a free field of discourse, where it would be possible for them to search for the truth. They would then have to speak in quite a different way. And that does not seem to me to be possible. Cardinal Koenig, too, was of my opinion. What then? The thing is not easy to decide. The ideal would be to have the use of a language firm enough, in a condition to offer to the man in the street the solid basis and the scale of values upon which he will be able to construct his world of everyday and rightly rely upon it. On the other hand, it must be a language flexible enough to accommodate the changes in the secular knowledge of the period. This is what complicates things. How does one speak to an engineer of today about the Assumption of the Virgin Mary. The Latin-American peasant has no difficulty in comprehending this. But the engineer would say at once. What does this mean? An Assumption? I can go up into heaven by using an aeroplane, or a rocket. Here are two types of language in conflict. The symbolic or metaphorical, and the material, or physical; and the two can never be made to coincide.

V. H. There is no third course, no middle way?

W. H. That was, of course, the liberal solution: there are no dogmas, there is no well-defined faith; let us tolerate one another'. That solution strikes me as over-simplified. There is something phoney about it. I often talked about this with Max

Planck. His point of view was this: religion and science are two totally separate realms: science is concerned with the objective and material world. Religion looks to the world of values, and its essential study is to know how each person ought to behave towards himself and towards others. In the former case, I can take decisions in complete accord with my fellow-man, since nature is always the same. In the realm of values, on the other hand, I am obliged to take account of tradition; of the family; of my country; of the cultural ambiance, even if I am free to decide otherwise and—in Europe, for example—to be a convert to Buddhism. What is at issue here, is a system of subjective values, not susceptible of objective considerations.

V. H. And what do you think of this interpretation of Planck's?

W. H. This division has always seemed to me inadequate. Firstly: the man in the street would not be capable of envisaging it with the requisite subtlety; he needs, moreover, a language formed of images and of comparisons, something to render the world of value plausible to him. I would be interested to know what you think of it.

V. H. My point of view is that of a novelist: and I think a novelist must find himself, today more than ever, in a state of "complitude" or over-fullness, as Ferdinand Gonseth would say. He has to be able to understand everything. And perhaps it is in the sphere of literature that this harmonization between the language of values and that of science may, one day, find grounds propitious for an *entente*. I have spoken a lot about this with Bernard Lovell, with Karl Rahner and with Gonseth in the course of my travels. They all think that physics and religion are much nearer together at this moment than they were a hundred years ago.

W. H. I too. I believe so.

V. H. The astronomers speak of "a moment of the creation." What do you think of that?

W. H. Speaking as a physicist, I would say that our present information about cosmic space seems to point to a commencement in time, under very singular conditions, completely unlike those we know, rather than to a conception of a world always equal to itself. The theory of a creational moment is thus more probable, from the standpoint of the natural sciences, than the contrary. But it is not here that we should look for the heart of the dilemma between religion and physical science. This is hidden, rather, in the tension between faith and flexible knowledge as I was saying to you just now. And then, I have always liked the idea that all the religions of the world tend towards the same end, making use of different images and allegories to express the same thing. And, even from the gnoseological point of view, it was a great consolation for me to realize that modern physics is in the same situation: I mean the same unhappy situation; that of not being able to explain or express what it is except by means of comparisons and approximations. In atomic physics, for example, we have to use images such as the “orbit” or “wave” of an electron, knowing clearly that these images are false, or that they can express no more than half the truth. What exists in reality *behind* such descriptions, we can understand with precision only in mathematical fashion.

V. H. Symbolic

W. H. Yes, with the aid of mathematical symbols. In conclusion, I believe that the religions signify the same fundamental realities framed in distinct languages—the Christian, the Buddhist, the Zen—but willing to express the same hidden thing.

II

The conversation between Werner Heisenberg and Vintila Horia was discussed by members of the editorial board of *Theoria to Theory* and they wanted to press some of the questions further. A representative (here called X) took their comments to Professor Heisenberg, and had the following conversation with him.

X We would like to try to continue with these lines of thought. It might be practical if I went through Horia's dialogue first and drew your attention to the sorts of things which we were specially interested in. On page three you discussed abstraction, starting with art. We weren't ourselves very much concerned with abstract art, but more with the abstract character of modern physics in the first place, then of metaphysics, and then of religion, and this is going to be a recurrent theme in our talks.

W. H. It is easy enough for me to say what happens in physics in this way but I should hesitate to speak about art, because I am not an artist, and it seems to be difficult to have an opinion about art, especially since the artists themselves don't know much about what they are doing. Last year there was an exhibition of modern art at Kassel, the most important exhibition of this kind in our country, called "Dokumenta," but the young artists had been so discouraged, that they actually put a big poster outside the huge building where all this was going on, saying "Art is superfluous."

X Later Horia draws you into the question of indeterminism. You rather steer clear of too close a connection between the technical sense of indeterminacy and what he is talking about. You say that Horia is describing the break down of well-defined formulation in general which can be understood only on the basis of the confusion of all the forms. Nevertheless, you think there's a reality to grasp somewhere.

W. H. Yes, we start in natural science from the assumption that there is something like an objective reality, or, rather let me say that there is some part of nature which can be objectified. I very much like a formulation by my old friend, Pauli, who unfortunately died many years ago, who said that in the history of human thought we have two very characteristic limiting pictures to which there is no corresponding reality, but which nevertheless had the greatest influence on human thought. These two limiting ideas are the following: the one idea is of an objective world which goes on in space and time. This idea was obviously the guiding picture of natural science: I mean that natural science had sprung from this idea of an objective world which was there in space and time. This is the one extreme: the other extreme is the mystic unity of the world envisaged by an individual in a mystic way. Man has the idea that the whole world is given as a unity, and this was the extreme idea which guided asiatic mysticism; asiatic philosophy; Buddhism; Hinduism. Pauli emphasized that these two limiting pictures do not correspond to any reality in the world, nevertheless they have strongly influenced philosophical thought in the history of mankind. You can start from these two extremes but you know you have to be in the middle somewhere.

I would say that through the course of the centuries people at one time inclined more to the one side and at other times to the other. Asia for very long inclined to the mystic side, whereas in Europe for the last two or three centuries there was very strong interest in the other extreme. However, in the real world we have to remember that neither of these two extreme pictures corresponds to a reality: neither of them exists, but we are in a situation that as soon as we start speaking or thinking about anything we speak as though poised between the two.

X Later on you speak of dissatisfaction about particular aspects of classical physics which seem to oblige us to consider the possibility of widening the grounds of our researches and you go on to suggest that it may be possible to deduce the whole of biology from a few principles, once you envisage the unity of atomic physics. In other words you are putting forward, at any rate, as an ideal, a complete unification of science.

W. H. Well, this tendency certainly will go on. When the molecular biologists try to combine biology with physics and chemistry they certainly aim for a unification of science.

X Some of the commentators from our Cambridge group whom I shall quote presently do actually suggest that perhaps one has to be content—perhaps even in principle—with a more diversified approach: that the best one can do is to proceed in different directions with incompatible schemes, I myself think they may be taking that too far, but we'll come back to that.

Your discussion then leads on to the possibility that there is incompatibility between the language of the man of science and that of the man of religion, and that is a big theme which we've got to deal with. Then we get to your discussion with Cardinal Koenig.

W. H. You will probably know that in the meantime I gave a talk about this problem at the Catholic Academy of Bavaria. There I tried to go into the details about the relation between scientific truth on the one hand and religious truth on the other hand. The talk is found in a book called *Schritte Über Grenzen*, and it is now being translated into English.

X Now we come on to your main theme which is that for a community to survive it must have a language common to all its members. A language which they can use for discussion about life and death etc., and particularly, that this language has got to be stable.

W. H. Yes, that is an important point. By language in this connection I mean the spiritual form of the society. (I can't really translate *Geistige Form*), so every society will have its own kind of thought about death and the meaning of life and what we should do, and about values, and so on. That language, which describes this side of society must, by its very nature, be a stable language, you cannot change this kind of language (and thereby the whole society) every twenty-five years. So the natural stability of this language which establishes the common attitude of the society is actually confronted with the natural instability of scientific

language; because in science we learn quite a lot in twenty-five years. These two things cannot be easily combined, and in this lecture which I just mentioned, I suggested that it is adequate if the language of religion only uses pictures and metaphors. It is a kind of poetic language in which one knows from the first moment that the words are not carefully defined as the words of natural science, they have their immediate connection with reality. Then what actually happens is that in religion we use the words in a different way from that in natural science, no one says "Let's go up in a rocket to see if Our Lord is to be found there."

X Now some people take what we call a "two worlds view"—two non-interacting worlds. Now, in spite of your last speech, I do not believe that you take a "two worlds view."

W. H. No, I wouldn't, I would rather say that these things have to interact, I would rather say that they are two complementary sides of the same picture. Perhaps I should add a word about the term "complementarity." Bohr thought for a long time about which word to use and we had many discussions about it together and finally he decided on this word "complementary" which I did not find too good, though I could not suggest any better. The objection was that it is such an artificial word, but Bohr emphasized that it was very important to have a word about which people would not say at once they know what it means. It is important for it to be somewhat vague to begin with because only then can you get a feeling for what is meant.

X I gather you take Max Planck as rather a "two worlds" man and you don't feel happy about his view: you suggest it was facile.

W. H. That was actually the world I grew up in when I was a child. My parents were far away from the Christian religion as far as the dogmas were concerned but they would always stick to the Christian ethics. They would accept the rules of how to behave and to live, and say that we can take them from the Christian religion, but we cannot accept verbally all these old stories. However, I still feel that separation is a bit too simple.

X As it was nicely put in your dialogue, it is not here that we should look for the heart of the dilemma: rather that is hidden in the tension between faith and flexible knowledge.

W. H. You get a similar situation in quantum theory, and therefore I take that theory as a kind of epistemological model. There, as in religion, you can't just transform the metaphors into plain language so that everything is all right. That is just not possible. This impossibility can be given a mathematical description by the principle of uncertainty. But the point is that our words, which we must use in order to speak about atoms, do not really get hold of the reality and, in the same way, I would like to emphasize that there is no way of speaking in plain language about religion. That would be nonsense; we can only use poetical language, though poetical language can take many different forms. In the talk I referred to earlier I tried to say that the various religions of this world are just like the various languages. You cannot say that the English language is more correct than the German; that's nonsense. You can just say I was born in a place where people speak the German language, and therefore my whole relation with the world—the basis of my confidence in other beings in the world, all that—is based on this one language, though later in life I can learn other languages. But the point is that in religion we get the same situation. We are born into one cultural area in which, for instance, we have the Christian religion, or the Buddhist religion, or whatever, and in the metaphors of this religion, and in the pictures which I use in speaking about the world—the values especially—we learn to give a meaning to our own existence and so on, and therefore it is not very important whether we are born as Chinese, or as Christians, or as Buddhists. Of course, that is important for the way in which we get our confidence in the world, but it is not that one is correct or the other is incorrect. Therefore if a man thinks that the dogmas of Christianity are correct and those of Buddhism are wrong, that is just foolish of him. In every language you can express roughly the same things, but only roughly. Of course the language gives a kind of colour and atmosphere which is different here and there, but

still you should not say that there necessarily has to be struggle between the different religions, because the different religions mean the same thing finally, only in different languages. A Japanese born and brought up in his country believes slightly differently from the European. This difference in attitudes, this difference in his way of looking upon life, is a real difference caused by the religious language in which he is brought up, but still I cannot see why we should have a struggle about whether the Japanese way of living is better than the American way of living, I can't see the point. Or would you see a point there?

X I think that when you get people who are contemplatives, what they have in common is far more interesting than what separates them.

W. H. That is exactly what I want to say.

X However, don't you think it is important that different religions may place their emphasis differently, or even that one religion may stress something which is almost ignored by another?

W. H. Yes. Such differences in attitude can be seen at many points, e.g. I was surprised that in the history of our science that the Japanese or Chinese pupils I had sometimes found it easier to adapt their thinking to the methods of quantum theory than the Europeans, just because for the European the complete separation of the spiritual world and the material world—expressed, e.g. in the philosophy of Descartes—led to a basis of speaking in which he felt it difficult to get into quantum theory.

X Well, isn't this a point where a certain absolutism does seem to come in? Here's a case where people can get into a wrong metaphysical position and where complete relativism isn't good enough?

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Various people in our group have made notes which I would like to put to you now because they bear on some of the questions we have raised.

We were naturally interested to know what you meant by the

suggestion that physicists could get down to a level where there could be a new abstract structure mathematically expressed, and also that then it might be possible to deduce biology from a few principles. I wondered if you could see forward a little: is there a suggestion that you could make about how that could happen?

W. H. This term that you used from your last sentence “to deduce from a few principles” is a problematic term already: for instance take chemistry. We believe that in principle all chemistry can be calculated from quantum mechanics because since quantum mechanics decides the interactions between atoms, you could in principle calculate all molecules and so on. Still, I think nobody who was a good chemist would ever try to reduce all those chemical phenomena that we see, all these many things, to a few principles. Actually, for the practical chemist, these few principles of quantum theory are not too important because it is too complicated to calculate using them. I would put it this way. We have this enormous variety of experience, and of course if we want to study chemistry or do something in chemistry we must get engaged in all these details. Though all these details are far too complicated to derive from first principles, still it is very important to know that in principle everything can be calculated from quantum theory, and in certain cases where we find it difficult to understand something we may get help from these first principles. Therefore, this reduction to first principles should not be overemphasized, because then people would misunderstand it and say “why should we do chemical experiments because we can always calculate everything?” and that of course would be wrong.

X Do you think there is some sort of tension between your views? On the one hand you take this very strong line on the unity of science, and then on the other hand, for example, you quoted Pauli and his two limiting views or poles—the objective and the mystic unity. You do believe in an interaction between these two spheres: do you see the interaction only one way or do you see the interaction both ways? Just to give a point to the question: I would have thought that there are some very fundamental truths, however dimly we may be able to grasp them, deriving from the

mystical unity, which would interact back into the objective and give us entirely new conceptions.

W. H. I'm convinced that there will be, or has already been, some interaction between the two ways of thinking. Just to mention a few trivial examples which are not meant too seriously. Some of the mathematical descriptions of elementary particle physics were given in the terms of Buddhist religion. When they speak about the eight-fold way, for example, of course this term is taken from Buddhist religion. The man who introduced this term probably had some pleasure in thinking of the Buddhist religion in this connection. Now, of course, if you go into the details you see that the connection there is quite superficial. It is just that as soon as you start ordering things you start from an alternative polarity: either *this* or *that*, then you have two. Then you can double it, and you have four. Again you double it and you have eight and so on, just as you do in that very old *Book of Changes*—the *I Ching*—where they use alternatives between the line and the broken line and double it and finally they get up to 64 possibilities. These powers of two are purely formal and I don't think that they mean very much, but still, there are influences of the one way of thinking on the other.

X Now when you get your abstract structures—your mathematically discernible abstract structures—is it possible that these may enshrine some more fundamental aspects of the world which the religious people have always been drawing attention to? It is not clear to me that these will automatically simply reproduce quantum theory. I envisage a more exciting situation where they will give us other things. My very rigid molecular biological friends will simply say the world is in principle laid down by the equations of quantum theory and therefore there can be no interaction, the interaction can only go one way from the exact to the vague. However, I think there is something deep in what you are saying which would suggest that, on the contrary there can be an interaction via these abstract structures which would incorporate some profound insight and then feed it into science.

W. H. I cannot avoid introducing my word *complementarity* again. Let's think of the nice case of the relation of physics and chemistry and thermodynamics. We can say that all chemistry can be understood by means of quantum theory, but if we only speak about quantum mechanics, then in this type of physics we have no such concept as temperature, for instance, or entropy. Instead we have concepts of wave function and so on. But then we learn through the statistical use of quantum theory that we can somehow attach such concepts as temperature or entropy to the mechanical scheme of quantum mechanics: the two things fit together and so we can build up a theory which contains both concepts—thermodynamics and quantum theory. But one point which Bohr always emphasized was this. If we did not know beforehand that such a term as temperature or entropy was useful, that they have a connection with our immediate experience, then from the mathematical scheme of quantum theory we would never have come to the idea that it was useful to us. So the point is that it may be that for instance such concepts as life or stability of organisms, and so on, can be combined with quantum theory in such a way that they fit together. That is that we can build up a unified science in which also biology belongs: not only physics and chemistry. One may claim that in science everything is given in the quantum mechanical equations, but the whole point is that before we can use these equations we must have understood in what way we can combine our immediate experience, hence also such concepts as life and stability of organism with this mathematical scheme. I am convinced that we shall be approaching a satisfactory solution when we understand that concepts like life are complementary to the concepts of atomic structure. "Complementary" in the sense that we may be able to define the word "life" in relation to the quantum mechanical system, but certainly not in the sense that we could say that if a thing has one sort of wave-function we have a living body, whereas if it has a different kind of wave-function then it's a dead body. The connection would certainly not be trivial in that way. You see we can't really define the wave-function for temperature, though we can define a statistical matrix in which we know that the concept of tempera-

ture is implicit. The case with concepts like *life* is similar, though the connection is more remote. The point is that we can actually form concepts which we take from ordinary life which in a very refined way—a very subtle way—fit together with the quantum mechanical concepts without getting into conflict. Thus in biology and in medicine everybody works with concepts which were formed long before quantum theory. I mean, if the physician says that now the organism will heal, he will certainly not give a quantum mechanical description saying why or how the body is responding or how it will heal the damage, so he starts from a description which of course empirically is definitely correct; but nobody knows as yet how it goes together with quantum theory. The point is that the biologist or the physician attach without hesitation new concepts like healing, life, and so on, to the old concepts of physics and chemistry.

X Let me press you a bit on your concept of abstraction. May I first say my personal effort in physics is entirely to separate out certain structures within the quantum theoretical framework itself and say some things are more primitive than the other things. If *you* could give us any vague intuition you have about these very primitive aspects, which can on the one hand throw off quantum mechanics as one special case and on the other hand these more commonsense ideas it would be fine. How would you describe these abstract aspects? Would they be combinatorial for example—what would they be like? You see, you talked about abstract forms, and now I am asking if you can relate them to the possibility of an interaction between the scientific framework and the ordinary life concepts and so get it working both ways.

W. H. I can at least refer to the development in physics over the last thirty years. Quantum mechanics was founded over thirty years ago, but since that time we had all these more recent experiments on elementary particles going on and we have had to combine quantum mechanics with relativity in order to understand them. We have done a lot of this work already but we have not finished; and what has been happening has been interesting. Some important terms that we had used uncritically have turned

out to be wrong, and to imply wrong conceptions. For instance we have been used to asking what a given molecule consists of or what the atom consists of. You could say that the atom consists of a nucleus and electrons, and this description could be expressed in the quantum mechanical language by setting up a Hamiltonian and so on. But in this formulation the simple terms we started with have not a perfectly well defined meaning. Thus when we try to ask what the proton consists of, then we try and see how it will break into pieces in a collision. But there is a difficulty here. When we let two particles collide with high energy, we do get as a result many pieces. But the pieces are not smaller than the particles that collided. What actually has happened is that energy has been transmuted into matter, new particles have been created. But the term "dividing" has lost its meaning. So therefore we cannot say that a proton consists of kaon and lambda particles or indeed that it consists of not more than two parts of any sort. "Consists" is not a well-defined term any more. I had a controversy with a friend in the United States about the use of the term "quark." I think that some Americans love to look at the quarks in the hope that these will be the final units of matter which cannot be divided further. But that's a wrong idea because even if the quarks could be found—I don't think they will be found—even then you could say that one quark consists of two quarks and one anti-quark and a proton consists of three quarks or four quarks and one anti-quark, etc. So the whole idea of something *consisting* of something else has started to fail. I think that quite generally the development of physics and natural science will have to follow this road of abstraction, where old concepts can no longer be applied. When we speak of the boundary of physics and of biology the problems are very different. In biology we are not primarily concerned with the problem of division of the constituents of a biological object, though we do use those words when we say that the objects consist of molecules. When we can say of some object that it is a living cell, then this is information of a highly different kind from the information which we give when we say that an object consists of just so many molecules. Obviously a living cell does not consist of a well-defined number of molecules; it is rather

a process than an object. In this way I would say again and again, that whatever way science progresses we will not always use the old terms to work with. We will have to use new terms as well, which have not been used in science hitherto. Then the greater problem is whether we can, in a way consistent with our theoretical foundations, manage to fit these complementary—or even seemingly contradictory—concepts together. Very often one will think that the task is impossible and contradictions are inevitable. But here the history of quantum theory, especially the history of our ideas of waves and particles (which can't be fitted together at that level) is very instructive, because you do get a synthesis when you go into a more abstract mathematical scheme. In the same way when we say that the body tries to heal itself and when at the same time we want to know about the detailed mechanical and chemical processes, those two aspects will have to be combined in a very subtle manner, considering the two complementary sides of the same process.

X That leads me on beautifully to the question of language, because in the first place it shows we can't do without our language, but we can't live with it either—it is eternally changing. Some of us wanted to say that perhaps science is moving away from the idea of a unitary single scheme describing the whole universe. You wanted the single scheme but nevertheless you are coming closer to this in a way. You can't say you have a simple basic reality, if that simple basic reality is shifting all the time as you discover new metaphors and new terms which you have to incorporate. One might question the notion of an artificial unified science and argue that one had to be modest in conceiving that there might be separable areas of excellence. Such a conception would require us to recognize the shifting frontier of metaphysics and science, and would require that one try to find ways of widening science so that some of the investigations hitherto only done by metaphysics, could be done within science. This requires firstly acknowledging that science is subject to discontinuous revolutions, following on Kant and also on Kuhn (Kant put it in terms of a Copernican revolution) and ceasing to try for a unified self-consistent scheme. On this view we should

allow the existence of many more stages of thinking, going from full-blooded metaphysics, to fugitive metaphysics—including in that metaphysical pre-science. As a matter of fact I think that is not far from being much more in accordance with your last speech.

W. H. I would roughly agree with that.

X Now I want to turn for a bit to thinking more about religious language and scientific language, and we wondered how far you think the question of *truth* is slurred over if you talk too much about the different languages? People tend to say we have *this* way about talking about reality, and we have *that* way of talking about reality, and that these are different languages and they complement each other. But sometimes this can be used as an excuse for evading the question of truth. If there need be no interaction between them—“let’s live and let live”—then the truth doesn’t get pursued. I wonder how you feel about this.

W. H. I have a difficulty here and I should like to start with it. Since Plato, it has been a commonplace with philosophers and scientists that it has been mathematical truth which we really understand as truth. But in some way, mathematical truth never happens in our relation to the real world. Wittgenstein, of course, stressed this point of clarity very strongly, when he started saying everything which you can say, you can also say clearly and if you can’t say it clearly then you’d better say nothing at all. This prescription would of course, mean that everybody is to keep silent, and they are not going to do that. It is correct to point to mathematical truth as an ideal of very clear connections, but this is an ideal to which no reality corresponds. Our relation to nature or to the world is of such a nature that we never know exactly what we mean, and therefore this fact should not be hidden or spoiled by always looking for a mathematical ideal in which everything is completely defined from beginning to end. What we can do in science is, of course, to formulate pictures of parts of science. Then we see the picture describes only a part of nature or of parts of nature: we never know how many parts or how far it reaches. The trouble in fact is that our concepts have only a limited range of applicability. Consider, for example, the concepts

of temperature and entropy. As soon as we have to deal with non-equilibrium (in this case) then we have no way of using the concepts. I think that from the fundamental point of view of this discussion there has been a wrong emphasis traceable to Wittgenstein, because this ideal of perfect clarity does not exist. I don't know whether I have answered your question but we have got a bit away from our starting point.

X I don't think my question was very clear really. I suppose it brings us back to this question of the symbolic nature of language where one seems to be eternally in this confrontation of religion and science. One seems forever to be saying "language can only symbolize," but at the same time saying "what is it that it symbolizes?" because you can't say a thing symbolizes something without saying to some extent what it symbolizes.

W. H. Which of course, means that you are applying the method of objectivation and you think that when we use a symbolic language that we mean something objective, but that is again so difficult; why should that be objective? Why should we not symbolize something which concerns a relation between the world and ourselves? Such a thing is objective and subjective at the same time and that means there is a part of reality that cannot be objective in the way the objects of natural science can. I use this term "objectivation" to describe the principle which we use in natural science. We always think that those things that we describe, (which we can separate) are objective, but the very fact that we can speak about them also means that we are the subject.

Even in physics the quantum theory shows we cannot really separate ourselves off.

X Have you been much acquainted with Lévi-Strauss?

W. H. Not really acquainted, I know the name, that's all.

X He has provided one of the ways one could proceed when it comes to comparing the languages of science and religion. They are so very different as to be non-comparable. Religious language keeps its permanence by using what Lévi-Strauss calls wild thought forms (*la pensée sauvage*) that is to say, concrete forms of

language that only deal with very crude contrasts because they are being poetical, mystical, metaphysical and metaphorical all at the same time, and it's the rich set of allusions contained in the simple phraseology that is characteristic of religion. For example, you might have a religious sect which persisted in talking of the universe as "The Primaeval Soap Bubble blown up by the Father," in which the metaphors have come to permeate their whole language and thought, so as not to be felt as metaphors.

W. H. I should like to draw your attention to a book by Konrad Lorenz; it is called *The Other Side of the Mirror (Die Rückseite des Spiegels)*. It tries to explain how in the history of the world the human mind was created. In this connection he always compares our thought with the thinking of animals, if that may be called thinking. He is especially interested in the question at which stage the concept of values actually starts playing a rôle. You can, of course, say that all the animals have values, because they get hungry and they want to eat and therefore to trap something and that to eat is a value, but he discusses these problems in a very interesting way from the idea of the history of the development of all the organisms in this world. So far this is a discussion always with the idea of objectivation. Lorenz however tries to describe the world as somebody who looks at the world from the outside would describe it, while yet recognizing that his attitude is limited because the subjective side is left out. I found in what he says that there are very many ideas which fit well together with the ideas that atomic physicists have on these matters. So for the general problem of science and religion I think you ought to have a look at that book. *Die Rückseite des Spiegels* suggests of course that the human mind is the mirror of the world, and then he wants to look at "the other side" of this mirror.



Faith healing

BRIAN INGLIS

The first faith healer was the medicine man—the witch doctor; and it surprised anthropologists who began to study them to find that they often appeared to be mad. The reason, it seems likely, is that they *were* mad—out of their normal minds; but that there was method in the madness. What had happened—the hypothesis runs—was that animals eat the right food, and migrate at the right time, by some instinct; but when man achieved consciousness, and began to use reason and memory, instinct was lost—or actually censored. This was very necessary, because—for example—when an animal receives a sudden alarm signal, reflexes dictate its reaction—whether to run away, or to “freeze.” With his newly acquired consciousness, man could judge for himself which was the better course; but it was not much use to him if his judgement was overridden by his reflexes. Whatever the explanation, instinct ceased to perform its old function for man; and the need arose to find and exploit the talents of anybody who could throw off consciousness, and let instinct come through. Often such a state had to be induced, by fasting, rhythm, drugs, and other such aids; and in the process, the witch doctor commonly behaved in ways which would have led, in civilized countries, to a mental hospital.

Among the witch doctor’s cares was the health of his tribe, and individual members of it; and the standard technique was to work them up into a trance condition, too, as if to let nature have her way for a time. In the process, patients went into convulsions, losing control of their limbs; they dissociated, talking in voices, and sometime in languages, not their own; and they went into

Theoria to Theory
1974, Vol. 8, pp. 35–41

Published by
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deep comas, after which they would feel better—psychically purged. But the “possession” which this involved came to be identified with control of the patient by the spirits—and eventually, in monotheistic communities, by evil spirits. The techniques which Jesus used were still basically the techniques of the witch doctor; and the people who came to him for cures still sometimes went into convulsions, or dissociated, or fell into comas. But the convulsions and voices were assumed to be the work of demons, who were being cast out. They had ceased to be regarded as part of the therapeutic process.

Jesus also used the power of suggestion. Instead of giving treatment, he would say “Take up thy bed and walk” or “Thy faith hath made thee whole”—a gentler and more civilized way of dealing with illness than that of the witch doctor. He also assumed the existence of a healing force, which could be tapped by the healer and transmitted to the sick, even at a distance. This force, under a variety of names—such as *mana*—is fundamental to much primitive medicine, being thought of as a kind of current flowing from the spirit world. To Jesus, it came from God, and could be felt going through him—as when the woman touched the hem of his garment.

This notion survived the gradual erosion of Christian healing during the middle ages, when war and pestilence sapped people’s confidence in such ministrations; and when “scientific” medicine began to take over after the renaissance, and the Christian churches threw in their lot with the new orthodoxy, the few individuals who continued to believe in the healing force, came to identify it with magnetism. The priest’s laying on of hands became hardly more than a ritual, supplicatory gesture; the magnetizer, on the other hand, sought to stroke away disorders by making passes, often with actual magnets, over the patient’s body.

This was the technique Mesmer adopted, and adapted. The force, he decided, came from the stars; and he called it animal magnetism (had he called it radiations, he might now be in orthodoxy’s Pantheon). His patients reacted much as the witch doctor’s had; they went into convulsions, and dissociated, and sank into comas and enough of them felt sufficiently the better

for the treatment for Mesmer to become the Paris fashion of his day. When a distinguished group of scientists, including Lavoisier, Pinel, Ben Franklin and Dr. Guillotin, investigated his methods and pronounced that what results he had were in the patients' imagination (they were more right than they realized), it would probably have made no difference to his practice; but with the Revolution, he realized that his Court connections rendered it risky to stay, and he retired to Switzerland, there to live out the remainder of his life in obscurity. And that, it seemed, was the end of mesmerism.

It turned out to be only the beginning. A great deal not merely of unorthodox medicine, but of orthodoxy today, can be traced back to him, and through him to the medicine man.

The first contribution was what we now call hypnotism. Mesmer himself did not use it, in the form it is used today. He knew all about the importance of getting people into a suggestible state, but it was his protégé de Puysegur who discovered just how suggestible individuals could be, when *in* the trance state. Among those who followed up this discovery was Surgeon Esdaile, who mesmerized scores of patients to spare them pain when he was operating, at a time when there were still no anesthetics available. His reward was the rejection of his articles on the subject by the medical journals, and the ridicule of his colleagues.

There was also Liebeault, a French country doctor who told his patients they would have to pay for his drugs, but he would treat them free with mesmerism. Professor Bernheim from nearby Nancy was irritated when one of his patients whom he had treated unsuccessfully returned to report that Liebeault had cured him; but Bernheim abandoned his plan to expose the country doctor as a quack when he found that mesmerism really gave results. For a time it looked as if it might catch on; among many doctors and scientists who went to Nancy to investigate was Freud, who "received the profoundest impression of the possibility that there could be powerful mental processes which nevertheless remained hidden from the consciousness of man." But at the same time, Charcot's investigations at the Salpêtrière was leading him to believe that the mesmeric trance was simply induced hysteria; so

although medical science was at last convinced that what came to be known as hypnosis was a reality and not an occult fancy, there was little inducement to investigate it further. Of all patients, the ones doctors like least are hysterics; so who needed induced hysteria?

For the next half century, hypnotism was something ordinarily encountered only in music halls; it was not until 1950 that a carefully controlled experiment in a London hospital, by which a boy was systematically relieved of the ugly symptoms of congenital ichthyosis by suggestion while he was hypnotized, that it came back into the reckoning.

In the 1920s a kind of secular Mary Baker Eddy, Emile Coué achieved a worldwide reputation. Coué had observed Liebeault, and Charcot; and he had come to the conclusion that what counted was not hetero-suggestion (as he called hypnosis) but *auto*-suggestion. He, too, thought of illness as being in the mind; but he argued that what was needed to banish it was an act not of the will, but of the imagination. The distinction becomes clear if you consider how easy it is to make your mouth water by imagining some delicacy—and how difficult it is to “will” the saliva to flow. Coué’s formula, “every day, in every way, I get better and better” was not meant to be regarded as an injunction, so much as a ritual, to be performed at any time of day, in the bath or at the bus stop, to assist the imagination; but unfortunately for his reputation it became a music hall joke, and he never won the reputation which his theory deserved.

It has, in fact, since been abundantly vindicated in experiments on the placebo effect. In 1933 two doctors in a London hospital gave bicarbonate of soda to patients suffering from the pain of angina, instead of the usual opium derivative; and a third of them were satisfactorily relieved. Since then, hundreds of experiments all over the world have show that between a quarter and a half of any group of people suffering from a wide range of everyday disorders—aches and pains, coughs and colds, asthma, seasickness—are relieved as effectively by a dummy pill as by the standard drug. There could be no question of hypnosis here; in controlled experiments the doctors and nurses did not know which patients

were getting the drug, and which the placebo. Auto-suggestion it must be.

The third development from mesmerism was towards what is now known as spiritual, or spirit, healing. This came in a curiously roundabout fashion. In the early nineteenth century, mesmerism was closely linked with other occult practices, like clairvoyance (as in the case of Quimby); and demonstrations were often given. Among those who were convinced was John Elliotson, of University College Hospital; a brilliant man, who numbered Dickens and Thackeray among his friends. But he was unlucky. He believed that magnetism, or animal magnetism, was involved, and he used a "magnetized" coin to induce the trance; when a non-magnetized coin, craftily substituted during one of the demonstrations, was just as effective, it appeared to prove that he had been cheating, and his reputation never quite recovered. But he continued to work in the field of what is now called psychical research; and when spiritualism began to spread, along with seances, and evenings of planchette, interest in the occult was revived.

For many years, most attention was concentrated on the attempt to communicate with the dead; but recently the notion that there is a healing force—animal magnetism, *mana*, God's grace, the vital force, or whatever—has been returning, leading to a spread of spiritualist churches where people try to go back to Jesus' concept of the Church as a healing ministry. Usually the procedure involves no more than prayer and the laying of hands, but occasionally the tremors, convulsions and dissociation are observed. And there are many individuals in the same field, linked to no particular church or belief—as Sally Hammond describes in her *We Are All Healers*.

The fourth development through mesmerism has been to divination; entry into the trance state—or at least, temporary suspension, as far as possible, of ordinary awareness—in order to tap the vital force. This, again, is a technique commonly used by shamans, using various aids like divining horns; or "bones"—elaborate dice; or bowls of water—the progenitors of the crystal ball. In France, in the last century, the Abbé Mermet experimented with a pendulum on patients in hospital, his cloth protecting him from the wrath of

the doctors, and found his diagnoses much more accurate than theirs. And later, Abrams developed what he hoped would be a mechanical device, the “black box,” which could diagnose what was the matter with somebody from a spot of his blood.

A variant, Boyd’s “emanometer,” was tested by some very high-powered medical scientists in 1924, Horder among them. In the first run, it—or its manipulator—got 32 answers correct out of 32; in its second, it made one mistake, which the scientists had to admit might have been *their* mistake. The committee in its report conceded that “no more convincing exposition of the reality of the phenomena could reasonably be desired.” But the phenomena, it has since become clear, were related to the black box only in the sense that they are related to the water diviner’s forked hazel twig. Neither twig nor box will perform on its own; a human “medium” is required. And medical science, though it is now just about prepared to concede that mediums exist, has been in no hurry to test them.

In addition, of course, Mesmer lives on in orthodox psychiatric practice, though you will not be thanked if you mention this to the average psychiatrist. He uses ECT—which is nothing more than a mechanically induced convulsion; or he uses analysis, which is a protracted way of getting the results of dissociation without having to put the patient into a trance. As for comas, psychiatrists are forever trying to find new ways of inducing them by drugs without irreparably damaging the patient in the process. And the reason, I feel sure, why the results are on balance so disappointing is that, although the search for ways to adopt and improve on the witch doctors’ techniques is sensible, few psychiatrists can use the intuitive—let alone the clairvoyant—faculty to make the correct diagnosis, and the right selection of treatment.

Still less are they likely to have any appreciation of the possible influence of paranormal forces on health and illness. This has been the subject of some books by Dr. Arthur Guirdham, in which he discusses the consequences of messages from the unconscious breaking through the mind’s censorship and reaching consciousness; they can make people feel they are going mad—or induce physical symptoms which operate as a kind of defence mechanism.

Waugh's *Ordeal of Gilbert Pinfold* is a good example of how this can happen; how the superego's laboriously constructed defences may be broken down, and the unruly Id allowed access to mock its master.

To sum up: there are two separate though linked fields which require renewed investigation. One is suggestion and auto-suggestion. Take the case of warts. It has now been shown in many tests that warts can be removed by suggestion or auto-suggestion more effectively than by any other known method. A wart is a tumour—and a virus-induced tumour, at that. Naturally you would think that the realization of how simple it is to get rid of a virus-induced tumour would have prompted energetic research into the possibility that other forms of cancer might be dealt with in the same way—as well as into the possibility that viruses may also be responsive. A virus is, after all, only the agent of disease. The looter who comes out when order has broken down. If suggestion could be tapped to spread the word, the police were back on duty. . . .

The other field for inquiry is extrasensory perception. It now seems probable that almost all of us have it, to some extent; that most of us, for example, could use a divining rod or pendulum quite effectively, with a little practice. And it is easy enough to experiment, asking a pendulum questions which you cannot yourself answer—or, often even more useful, questions your unconscious mind has the answer to, like “Where did I leave my keys?” There is no reason why this faculty, too, would not be developed for medical purposes, to treat ourselves or our friends for their headaches, or other common disorders. A doctor will say, “Ah, but you are not getting at the cause of the disorder!” Indeed no; but how many doctors do?

The Dalai Lama in Cambridge

ATO RINPOCHE

In the autumn of 1973 the Dalai Lama visited Europe for the first time, and ten days of his trip were spent in England. On 26th October His Holiness came to Cambridge and gave a public address at the Senate House. Most of the time he spoke in Tibetan through an interpreter, and the substance of his lecture was as follows:

Due to the ease and rapidity of modern communications the world seems to have shrunk. Peoples of different cultures can no longer disregard one another; on the contrary, they must get to know, and should try to understand each other, for their problems are interdependent. Moreover, men should follow a way of thinking that is based on love, respect and concern for the suffering of others and then the problems would be fewer. For many world problems arise from a wrong attitude towards our fellow men and are in this sense man-made.

In the world there are many religions, but each one is a true instrument with which to develop a good heart in man and good human qualities. Bearing this in mind, in all religions there should be emphasis on brotherhood and respect for others. Such mutual respect and harmony between the adherents of different religions can be fostered by knowledge and understanding, and so His Holiness proposed to speak about his religion, namely Buddhism.

Briefly he reviewed the history and development of Buddhism in India (c. 6 B.C. onwards) and its subsequent spread across the Himalayas to Tibet (c. 7-11 A.D.). The Buddhist scriptures are divided into two parts: the *Kangyur*, in one hundred volumes, which is the Word of the Buddha, and the *Tengyur*, in more than

Theoria to Theory
1974, Vol. 8, pp. 43-46

Published by
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two hundred volumes, which consists of commentaries on the former by Indian scholars.

He touched thereafter on various technical aspects of the Mahayana Buddhist tradition and dwelt at some length on the Six Perfections, *Skt. Paramitas*, which he described as the most important teachings of Mahayana Buddhism. They are: the Perfection of Charity, the Perfection of Moral Conduct, the Perfection of Patience, the Perfection of Strength, the Perfection of Contemplation and the Perfection of Wisdom. The principal motivation to practise the Perfections is the wish to eliminate the suffering of all sentient beings and without this, spiritual progress cannot be made.†

While on the subject of meditation His Holiness was at pains to point out that “deeper consciousness” or “enlightenment” is not easily achieved. “Many Westerners,” he said, “try to find short cuts, but trying to attain it without a great deal of study and preparation is dangerous.”

On Saturday morning after a brief tour of a few colleges His Holiness was taken to see the radio telescope at Lord’s Bridge. As he is known to be keenly interested in science it was hoped that an explanation of the work being done there in astronomy would prove congenial to him, and indeed it seemed to be so.

Then over a buffet lunch given by the Dean of Trinity, Bishop John Robinson, there was an informal discussion between the Dalai Lama and about a dozen Senior Members of the University, drawn from the departments of Philosophy, Theology and Oriental Studies. His Holiness reiterated his threefold object in coming to Europe which was: to thank in person the voluntary agencies who have been helping Tibetans since the exodus in 1959; to meet and renew contact with Tibetans who are living or studying in Europe; and thirdly to meet people in the West who are thinking deeply about the problems of mankind. He declined

† We have been supplied with the following reference for the Six Paramitas: (Ed.): Santideva, *The Bodhicaryavatara*, transl. with an introduction by Marion L. Matrics, and published under the title, *Entering the Path of Enlightenment*. (London: Macmillan, 1970. Available in paperback at £1.50).

to discuss comparative religion, on the ground that though interesting it was unprofitable. Rather he wanted to consider how existing religions should be used to maximum benefit to induce genuine brotherhood in the world. This was admittedly difficult to achieve, and would perhaps take generations. But, even though it is too late for our generation, it is still our responsibility to prepare for those who will follow us.

The East, he said, though rich in philosophy was materially not developed and politically unstable. Judging simply from that quarter it might be supposed that material prosperity would be the panacea for human ills, but, turning to the West, it can be seen that it is not. For there is wide dissatisfaction there, particularly among the young, with the affluent society in which they find themselves. Material possessions help, but are not in themselves the true answer for life.

The Dalai Lama's last engagement in Cambridge was at a tea-party given by the Crown Prince of Sikkim. The purpose of this was to enable young western people, most of them professing Buddhists, to meet His Holiness and ask him questions. Most of the questions related to the practice of meditation, and he stressed that the two as it were foundations of meditation are Compassion and Realization of the Void, *Skt. Sunyata*. He laid the greatest emphasis on compassion, which is to be developed and practised towards all sentient beings.

In a short article I can only give this rough outline of what was said by the Dalai Lama during his visit to Cambridge. He has however written some pamphlets in English and a book, entitled *The Opening of the Wisdom Eye*, and in these he expounds some other aspects of Mahayana Buddhism. He has also written an autobiography, *My Land and My People*, in which he gives an account of his early childhood in a peasant family, living far to the east of Lhasa in the Tibetan borderland with China. He describes his recognition as the fourteenth incarnation of the Dalai Lama (when he was only two years old), his coming to Lhasa, the capital of Tibet, and the long years of study to educate him to his high calling. Circumstances compelled him to assume the full responsibilities of government in 1950, before he had completed his

monastic studies and when he was only sixteen. During the next eight years, as he tried to reach a workable agreement with the Chinese Communists as to the status and government of Tibet, he travelled to both India and China. But despite his efforts to achieve a peaceful settlement the situation steadily deteriorated in Tibet, and in March 1959 came the Lhasa Uprising. This crisis precipitated the Dalai Lama's flight to India. Within the next few months some eighty thousand Tibetans succeeded in making the same difficult journey, and followed him into exile. It is in India, and the neighbouring countries of Sikkim, Bhutan and Nepal, that the majority of these refugees are still living.

Destination Crisis

STEWART BRAND

[This paper was written for the POINT Foundation board of directors. This foundation, based on San Francisco, California was endowed through the financial success of "The Whole Earth Catalog" for which Stewart Brand himself was the person most centrally responsible. POINT carries on the orientation of "The Whole Earth Catalog" in its generalized concern with the environment through the intelligent use of technological expertise. "Generalized" is meant to suggest a widening into the thought of the counter-culture, though POINT does not stand for "counter-culture for the sake of counter-culture" so much as a desire to complement the establishment thinking (the establishment of California in the first place) with live alternative presuppositions. By comparison with the average informal community POINT is wealthy, and the searching question "What would one do with \$1,000,000?" does not oppress everyone. We intend Stewart Brand's paper as the first of a series in which other people, with other problems, describe how "alternative imagination" may result in experiments in new ways of living.

As the paper was given to the POINT Board of Directors there is a certain in-group atmosphere in its use of names, but we do not think this limits its interest. Ed.]

"What is most worth doing now?" is how I interpret the subject of Destination Crisis. The contractor for this paper and the target for recommendations is the nascent foundation POINT. Therefore: "What is most worth doing now with POINT's resources, namely the founding directors and staff, the cash surplus from *Whole Earth Catalog* sales, our non-profit foundation status, and, um, the world?"

The destination question also bugs our nation these days, and many an individual. (The prospect of planetary projects should be dragged in here too, but so far planetary consciousness is incoherent.)

Theoria to Theory
1974, Vol. 8, pp. 47-55

Published by
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René Dubos says that things always get nervous before a millennium. General panic in the years before 1000 A.D. was not so different from what we have now as 2000 A.D. approaches. What I wonder is, how were things in, say, 1002? Did people finally sigh, look around, and realize that nothing special was going to happen, that they were stuck with this world?

I suspect it was a healthy time, and I expect a taste of it shortly for America, who is only now—with Vietnam—waking up from the Victory Dream of World War II. We can't save (control) the world, and so we are obliged to notice it.

My hope is that America will become curmudgeonly, as Wendell Berry or Steve Baer are curmudgeons. A nation skeptical, husbanding of resources, bitter defender of individual rights, impolite self-critic, with the mad gleam in the eye of the inventor. Slow to laugh, and slow to stop laughing.

In this way, maybe, America can grow larger than its power and teach it to be useful.

In the individual a reliable indicator of power larger than the person is good old Tremor of Intent. The poor soul wants to do everything Good and do it Right, and is defeated by overwhelming possibility. He is an easy mark for reformers, for abandonment to the single all-embracing Cause.

Yas, yas.

So much to know, so little time.

So much to do, so little time.

So much breath, so much whine.

To make the connection: "What should I do with \$1,000,000?" is not very different from "What should I do with my life?" (If you could deal with only one question, which would you take?) We are blessed/cursed with the leisure, money, and access to try damn near anything we can conceive. Naturally this brings down enormous guilt—we see everywhere pain that we could buy the healing of. But—ah, but—experience shows us that external healing is usually temporary, and external help often hinders, and the false promise of cure is pure cruelty. So, idealists become pragmatists. (Some become cynics and depart from usefulness.)

Most pragmatists in time lose their joy amid the machinations of purpose, and their sense of value amid tangles of partial compromise. They abandon themselves to their projects until eventually there is nobody home.

Projects succeed or fail. Any observer of showbiz must note that fulfilled ambition is occasionally fatal. So is total frustration. What they have in common is the loss of the seeking self. Some projects are no doubt healthier than others—scientific research better than treasure-hunting maybe. But more central and determining is the conduct of the seeker.

Scanning a quick array of useful current heroes sung and unsung, I notice that the quality they have most in common is integrity. Or, as the Hog Farm mottoes it, “Play Hard But Play Fair.” These are the players who seem most capable of transcending win/lose while preserving their self *and* improving the game.

The only real fault I would find with most of the heroes is that they are over-worked. Partly this is their own doing (more on leisure in a moment), partly it’s simply due to the shortage of heroes. (Heroism is in scary repute these days because some who stood charismatically tall have been shot down. I believe they asked for it, some of them. They came to rely too completely on audience and visibility, until the vainglory showed and drew a bullet. If you sell your soul to the crowd, by and by they’ll collect.)

It seems to me the best solution to dead heroes and over-worked heroes is not no heroes but more heroes. Spread the load. Spread the consciousness and skills of responsibility. (And, as they told us infantrymen, don’t bunch up all the time, you’re too tempting a target.)

The genesis and employment of heroes might be feasible. Damn near everyone, in this society anyhow, wants purpose, plot, and at least the possibility of audience. People will go along with almost anything that provides these for them, and eventually scuttle any scheme that denies them their own personal dramatic story. (I notice that I’m going along with Robert Ardrey’s proposition that the three main human drives are for identity, stimulation, and

security—in that order. The desire to live a story comes under identity.)

Dick Raymond favors fostering effective new traditions. In the hero department we have had for years the tradition of the hero-from-ranks, the Establishment darling. This was the unlikely but plucky lad or unlikely but crafty old guy who rose to the occasion when circumstances and a desperate nation said “You! Handle it!” And we’ve had the tradition of the rebel hero who stood firm through the crowd’s insults and bosses’ deceits to finally *beat* city hall, and then quietly left the victory celebration to catch a ride on the evening freight. And sundry others.

Among the storied heroes I can’t recall one who studied up and carefully selected his crisis. Yet most of our real-life heroes do precisely this.

To blurt out the “agency” scheme early on here, I wonder if we can nurture a demanding tradition for the subtle heroes.

Imagine, please, that POINT sets in motion a, hm, Peripheral Intelligence Agency (PIA), which employs Free Agents, at, say, \$10,000/year with \$5000 working budget. The Agents are hired for their resourcefulness at doing maximum good with minimum expenditure. That’s minimum expenditure not only of money but of external influence generally—of personal pain, of entangling obligations, of extraneous meddling, of all the baggage that commonly clutters and defeats good-doing.

The Agents select their own missions and carry them out in their own way. Besides gainful employment and a modest budget, PIA offers only evaluation and information. Evaluation, through the full-time Board of Review in the form of comment and satirically pompous awards. Information, about potential missions, nuances of Agent technique, and whatever else proves useful.

What Agents owe the PIA is: to do elegant good (not suave or polished good, but *spare* good, fuckin austere good), and to report on everything they attempt.

Clearly the most significant managerial matter for PIA is deciding *who* shall be Agents. The hiring process might be sophisticated by putting prospective Agents through a one-month-\$1000 trial period. Some persons with independent income may

wish to be Agents-without-salary, and they should be provided for. In general I would expect most of the Free Agents to be in their thirties or forties, with a few younger and a few older. Employment should be for one year at a time, with only very exceptional Agents retained for a second or third year.

Elitist hiring like this can only be explained by the near impossibility of really doing good, and only justified by actual undeniable good done. If PIA does nothing special, then it had better melt back into the pot. (There should be formal provision for this.)

A major reason for structuring the Agency this way is to avoid or offset the tendency of most foundations to become wishful and sloppy, tightass in the world and loose-ass internally, and finally detrimental. (Glide Foundation appears to be a warming exception; are there others?) I believe that POINT should avoid the whole jivey hustle of grantsmanship and simply award no grants. All projects are internally initiated. A group that asks for help might well get help, but not money; an agent they get, if he's interested (or if *she's* interested) and they want him (*her*).

(No doubt POINT will do some half-assed granting, and no doubt Agents will spend much time jivey hustling other foundations. All we can do is deplore it, discourage it, and try to keep it human. Who the hell wants a crew of very well funded cynics?)

I've thought about the proposal of searching out effective do-gooders in the world and rewarding them where they stand. What seems to happen then is they start doing reward instead of doing good. I think they're better off left to their local rewards. Or, if they and we really want to get together, Free Agent employment could be a clean way to do it.

Here's some speculation on how an Agent might work. Free Agent Pete Bog is onto solar energy conversion. His Agent's report for November might include:

An insulting letter to Steve Baer to egg him on past Harold Hay's clunky insulation barrier apparatus;

A luncheon for Day Charoudi and Don Aitken to see if John Muir Institute could fund Day's solar biosphere research;

A phone call to Nowels' Printing to score free roll-ends for Day's heat-storage soup;

Forwarding a little-known report on the wastage of solar energy in urban environments to columnist Nicholas Von Hoffman;

Four-day visit to Adelaide to encourage Australian contestants to enter MIT's solar energy contest (good chance that Aussie sophistication will humiliate the U.S. engineers and thus stimulate federal support solar research);

Phone call to George Young at Ballantine Books suggesting he pick up paper-back rights on *Direct Use of the Sun's Energy*;

Two days with Steve Burkee urging that his next book be a pure celebration of the sun;

Letter arranging for *Consumer Reports* to test a new commercial solar water heater and compare its costs with standard equipment;

Two-day visit in Utah dickering with a mining company to get free use of old mine shafts for heat storage research;

Three phone calls arranging for an underground video crew to record next spring's Solar Energy Conference;

And, as usual, a critique of research material that Agent Bog used during the month.

(Making up a list like this is heavy motivation; now I want to do all the stuff listed, even the fictional items.)

I notice that most of the moves I have the solar Agent make are brokering moves, catalyst action between otherwise inert reagents, social bisociation. But that must be only one member of a very large set of subtle Agent tactics. Some might involve right timing, knowing *when* a situation is vulnerable to change. All certainly would require some clairvoyant (whole-seeing) sense of consequences—the horseshoe nail that would stop the war, *the* troubling question for the research. One general strategy that I whole-

heartedly buy from Fuller takes note of the folly of trying vainly to remove something when all you have to do is introduce something which obsolesces it. (Incidentally, I have no commitment to change as panacea. In fact the real goal is continuity, which is a kind of stability. The splendid evolutionary paradox is that continuity requires constant sensitive readjustment—not only change but precise change.)

I think that POINT, like the *Catalog*, should be as transparent as any guppy—report fully on all its doings. One, it's nicer; it opens and warms many a channel of trust and communication, and it discourages the entire spectrum of blackmail. Two, it obliges us formally to notice what we are doing and how badly we are doing it. Three, we have a shot at informing and encouraging change-agents far beyond our poor gallery.

I just read in a film proposal by Ben Van Meter that “valor, honesty, integrity and patience for the basis of Bushido (the code of ethical rules which the samurai followed).” If the Free Agents could develop and live up to such an ethical code, it could be POINT's most seductive contribution.

Ken Kesey last night advised me to use the POINT money to buy corn (which is cheap this year) and a ship to carry it directly from here to the hungry and cut through for once all the obstructing bullshit, or at least spotlight it for what it is. Ken pointed with admiration at the present karmic state of UNICEF's Danny Kaye. He quoted Don Juan's observation that all roads are the same but some roads have heart. Ken noted that the few times he had given profound oracular advice was when he was in a state of wanting nothing from the person asking.

The difference between compassion and guilt must be the most important difference there is in the do-good business. Guilt shrivels, it wants something; compassion expands far beyond the gift. I don't think we're ready to handle the corn-ship right. But a year or so of ethical and operational practice on the heart roads might get us in shape for big league plays like that.

Learning heart technique requires a balance of work and leisure, I'm convinced. Witness the Demise Party. (\$20,000 surprise giveaway led to no original ideas and no decision: \$15,000

announced giveaway six months later led to good ideas and good decision: people had taken thought.)

In crisis we fall back on simplistic notions and old contingency plans. With leisure comes some return of the whole, some chance to build different perspective, new contingency ideas, some reservoir of energy to dance with crises instead of just survive them. Freedom, reverence, and creativity come together.

Therefore I suggest that whatever form POINT takes, we see to it that all employees get three months of paid vacation a year. Also that nobody can remain continuously employed by POINT for longer than three years without taking at least a year off (unpaid) doing something else.

And I think we should fire people, maybe a lot. This can only be useful if there is a clear shared sense of what constitutes good work. Again, this is to avoid standard foundation behavior which encourages in-house dependents, Peter Principle heaven, where every position is occupied by a fully ripe incompetent. Firing is a good deal more honest than the usual pressuring-out system, and is commonly good experience for the firee (cliché but true). The Greeks made ostracism work very well; they'd kick out their faltering professionals and hire them back a few years later reinvigorated. No position in POINT should be exempt from swift kick-out accessibility.

I've tried to imagine what characteristics the most effective Free Agents would have, and haven't got far with it. I think we'll have to find out.

I have tentatively catalogued some elegance measures for evaluating missions and tactics. A good mission might be:

Regenerative—effects live on self-sustainingly;

Expanding—cascading benefits, increasing sophistication;

Adaptable—locally in time; exportable;

Independent—not personality-bound or external-support-bound;

Stable—self-correcting;

Reality-based—e.g., in real self-interest of all involved;

Locale-fitted—uses local resources, avoids local hazards, not threateningly exotic;

Self-fitted—elements are mutually enhancing;

Cheap/funky—satisfying rather than optimizing;

Soft—or, if hard, then fast, or internal;

Brilliant—unobvious solution;

Original—our bit for state-of-the-art;

Otherwise unlikely—If we don't lend a hand it probably won't happen (this eliminates many good ideas, which turn out to be happening anyway);

Successful—it worked.

Obviously our Board of Review has some work ahead of it devising an explicit and evolving set of criteria for judgement. The “success” gradient is not too hard; evaluating “goodness” will be considerably more tricky.

The way I reviewed the success of the Demise Party Money Thing was by output levels. (1) If the game was well-enough wrought that it would go on a long time and yield hard lessons; (2) If good ideas and a good decision came out; (3) If the form were adopted by others, and (4) If it worked for them; (5) If the form developed a life of its own. Demise only reached level one, an interesting failure. Fuller's domes occupy level four and threaten to five. LSD is pure five (“goodness” still in question).

What POINT will eventually be good at and good for requires foreknowledge of evolution, which is exactly impossible. What we may know is where to begin. I suggest we use POINT to explore the humanitarian uses of applied laziness, independence, rigor, humor, and transparency.

“Applied laziness” means that the amount of work doesn't matter. The amount of effect does. And the quality of effect is mystery aplenty to keep us hungry and foolish.

Review Discussion

***Supernature* by Lyall Watson[†]**

I

It is difficult to find the correct level for a review of *Supernature*. Is it a popular science book or is it something more? Certainly its influence has been greater than is usual for the former category. It is a best seller and has been used as a basis for several proposals for research grants. Most of all it has given a great deal of publicity to some scientific work in the field of parascience. On the whole, though, it is not a profound book and much of its effect has been the result of its publication at a time when the general public are finding refutations of existing science and technology comforting.

At whatever level the book is to be judged there is the problem of finding a consistent definition of Supernature itself. From the introduction.

All the best science has soft edges, limits that are still obscure and extend without interruption into areas that are wholly inexplicable. On the fringe, between those things that we understand as normal occurrences and those that are completely paranormal and defy explanation, are a cluster of semi-normal phenomena. Between nature and the supernatural are a host of happenings that I choose to describe as supernature.

In other words a set of observations that have not been well explained by conventional science. It is a fair definition of most of the items in the book (except perhaps some of the biological cycles that are described in the early chapters—these are now generally accepted as “hard” science) and would perhaps place the book as a survey of paranormal phenomena. However, as the book progresses, supernature changes, it becomes not just a set of events

[†] Published by Hodder and Stoughton, pp. x + 347, £3.25.

but a mystical guiding principle tying together all of science and parascience. From the conclusion:

...inorganic matter got together in the right way to create a self-perpetuating organism that started a system of elaboration that has now produced a pattern with several million pieces. This is Supernature, and man sits at the centre of its web, tugging at the strands that interest him, following some through to useful conclusions and snapping others in his impatience. Man is the spearhead of evolution, vital creative and immensely talented, but still young enough to wreak havoc in his first flush of enthusiasm. Hopefully this period of awkward adolescence is coming to an end as he begins to realize that he cannot possibly survive alone, that the web of Supernature is supported by the combined strength of a vast number of individually fragile fragments, that life on earth is united into a single superorganism, and that this in turn is only part of the cosmic community. (p. 313)

And the last words in the book:

... Our greatest strength lies in unity with all of Supernature here on earth, and this unity could give us the impetus we need to transcend the system altogether.

Supernature could become something really supernatural.

If the book is to be judged as an attempt at describing the kind of synthesis implied in the last two quotes then it is not very successful. For example, in the first chapter, having discussed animal biological rhythms—and provided a good conventional explanation for most of them—Dr. Watson mentions some research that implies that the speed of chemical reactions in water and some of the properties of water itself depend on magnetic fields and solar activity. He also mentions in the same chapter the connection between sunspots and the alignments of planets discovered by Nelson in 1951. However it is too big a logical jump to claim:

Life arose by order out of chaos and maintains this order by collecting information from the cosmos. Cosmic forces bombard earth all the time, but the movement of celestial bodies and the movement of earth in relation to these bodies produces a pattern that provides useful information. Life is sensitive to this pattern because it contains water, which is unstable and easily influenced.

This almost mystical aspect of *Supernature* contributes very little to the book except, perhaps, to add a sense of mystery which has no doubt contributed to its success. It seems then, that much

of the value of *Supernature* must lie in its function as a "popular guide to parascience".

In keeping with his biological background, the author draws many of his examples from the life sciences, including: strange terrestrial and extraterrestrial (astrobiological) influences on a wide variety of living organisms; unusual "senses" possessed by certain animals; electromagnetic fields associated with living bodies of all kinds; "eyeless sight"; exobiology (the possibilities of life, including intelligent beings, outside our planet).

Further examples are taken from psychology, including: suggestion, autosuggestion, hypnotism, dreams, hallucinations, and other altered states of consciousness, all of which also have their physiological correlates. Most of the above-mentioned examples are still within the frontiers of science, and only the more "extreme" are still parascientific. The remaining examples considered by the author are at least partly outside the reach of contemporary science. One grouping consists of topics that seem to have both scientific aspects and parascientific aspects; these include: the "aura" of the human being and other organisms; dowsing and radiesthesia (the use of human sensitives to prospect for underground water and minerals, and to perform a variety of analyses of the quality of water and food, etc.); acupuncture (the most ancient of the techniques of unorthodox medicine); "witchcraft"; intuition. One of the most important groupings contains examples that are definitely parascientific, being concerned with alleged phenomena that are unexplainable by contemporary science and not yet accepted by all scientists though a considerable minority believe in at least some of them. Most of these examples are drawn from the field of psychical research and include several types of ESP (including telepathy and precognition) and also a variety of psychokinetic (PK) phenomena (displaying the apparent influence of mind over matter and physical events). A final collection of examples is taken from some really "unorthodox" areas, such as astrology, alchemy, palmistry, phrenology, and other methods of divination. Here, the author rightly points out that some aspects of claims of this sort can be related to recent scientific discoveries (even if only foreshadowing

them in a rather crude way), other aspects seem to arise from instances of certain parascientific phenomena, while the remainder can either be dismissed as outdated or superstitious nonsense or point to deeper aspects of "Supernature", in other words to the transcendental; it is quite an intricate problem to disentangle all these aspects!

The author's survey is extensive but, as seems almost inevitable for a single moderate-sized book, it is not comprehensive. We were surprised that he omitted to mention some potentially important parascientific categories, such as psychical and spiritual healing, and "unidentified flying objects" (UFOs), and that he gives only the briefest treatment of parascientific medicine (no consideration of homeopathy and radionics, for example) and of mediumship and the question of possible human survival and communication after bodily death.

As a review the book also has some weaknesses. Sometimes, as in the case of ESP and PK, for example, there is very little discussion of the evidence for the claims and inadequate reference to where authoritative presentations of the cases for and against are presented systematically and in detail; for example, one such work, *Extra-Sensory Perception After Sixty Years*, written by Dr. J. B. Rhine and his colleagues, and published by Bruce Humphries Publishers (Boston) in 1940, has been omitted from his list of literature references. Though his bibliography is extensive and has many items of excellent quality, too often the author has referred only to other references to original researches, rather than to the sources themselves, and too often these other references are themselves only "popular," uncritical and sometimes doubtful presentations. Thus the reader is quite often left in the dark about the scientific or evidential status of a topic that is being discussed.

The book does not convey strongly enough the very real difficulties and challenges that the more staggering parascientific claims (such as precognition) present to those who are attempting to extend the conceptual framework of science into parascience without at the same time sacrificing the high accuracy and predictive power of the best existing scientific theories. It should be noted that the book is predominantly empirical in its approach,

and says little about attempted scientific theorizing and methodology in its subject matter.

What then is the overall value of *Supernature*?

It has established in many people's minds that there is a case to be made for parascience at a scientific level and this is no bad thing. However it could mislead the general reader into believing that the scientific evidence for the various phenomena is conclusive. It is only time, not a reviewer, who can tell whether this approach will cloud both expert and lay judgement in a field which is trying hard to gain scientific respectability.

ALAN MAYNE
BERNARD WIGNALL

II

In this book Dr. Lyall Watson, described as a professional life scientist, writes a "natural history of the supernatural." He considers the "soft edges" of conventional scientific knowledge and scrutinizes them with clarity and skill.

How far does he succeed in this aim? On the credit side, *Supernature* is deservedly and not surprisingly becoming something of a best-seller. Dr. Watson has collected together a great range of unexplained phenomena, from astrology and acupuncture to phrenology and psychokinesis. In fact all the main areas of the paranormal are covered. Further, this great range of material is considered in a very readable and often entertaining manner. Each phenomenon is described, the obviously misleading aspects are disposed of and the evidence for and against the remainder is generally fairly and accurately displayed.

After that hymn of praise, what about the debit side? Obviously too large a field is attempted, but the field is infinite and subdivisions of an infinite field are still infinite and anyway, throwing in everything is just what the book is. However, all unexplained phenomena are put in, in the hope that a basic pattern for the book will emerge. This inevitably leads to a considerable superficiality in some areas. Thus in Chapter Seven.

entitled "Transcendence," hypnosis, autosuggestion, dreams and hallucinations are all polished off in 33 pages and in Chapter Five we get through Thoughtography, eyeless sight, psychometry and alchemy in 23! This degree of superficiality means that many fascinating topics are treated with less attention than they deserve and there is no space for sufficient explanation of the evidence nor for suggesting ways by which further information could be obtained. It is in this context that we come across the basic problem of the whole field. This unconventional science lacks respectability which has resulted in surprisingly little work being done on it. A book of this nature could go a long way towards improving this image but by covering an excessive field it largely fails to do so. Consider the work of Eugen Jones who has seemingly been able to predict the sex of children by astrological tables, provided he knows the exact time of the relevant sexual intercourse. This fascinating aspect of astrology is dealt with in less than a page and concludes with the following two sentences. "At a clinic in Bratislava, he made the necessary calculations for eight thousand women who wanted to have boys, and 95 per cent of them were successful. When tested by a committee of gynaecologists, who gave him only the time of intercourse, he was able to tell the sex of the child with 98 per cent accuracy" (p. 70). There is a whole range of possible discussion thrown up by this work which is not pursued. Was the fact that the women in the first case "wanted" boys significant or can there be connections between this work and the attempts at obtaining the desired sex of a baby by linking intercourse time with ovulation? There is a general need for greater depth and often for suggesting suitable experiments which would help clear up particular points.

My second main criticism lies in the use of extrapolation. Consider the following sentence. "If Light affects the chemistry of *Hydra* sufficiently to move it into a favourable environment, it does not seem unreasonable to assume that the body fluids of man could have some similar sensitivity" (p. 168). That is quite a big jump to take, without any intervening evidence. It is similar to the well known suggestion that if aphids reproduce parthenogenetically—that is without fertilization—then why not the Virgin

Mary in a similar way? In a slightly different vein, consider the following which refers to Gauquelin's work relating times of birth to particular professions in later life. "There was a strong statistical correlation between the rise of these two planets at a child's moment of birth and his future success as a doctor." Fine, but what comes a little later? "For the first time in history a scientist has produced evidence that the planets actually influence, or indicate an influence, on our lives" (p. 55). A strong statistical correlation is not the same as causal evidence. For example, there is undoubtedly a strong correlation between eating fish on Friday and smelling incense on Sunday, but one does not cause the other.

There could have been a case for this book if it left one with a general insight. One would not expect a background theory—we couldn't ask for the moon. A general picture would have resulted in a remarkable book; but there isn't even a way of working that emerges.

In conclusion, this is a book in the same genre as the *Naked Ape* by Desmond Morris (which is not surprising in that Lyall Watson was at one time apprentice to Morris at London Zoo). It is readable but by casting its net so wide, to include a vast array of unexplained happenings, it becomes a compendium of all things odd.

ROGER BERTRAM

Editor's Note This review discussion is being sent to Lyall Watson, and he has said that he will reply in the next number.

Comment

Transcendental meditation ; some implications for psychology

HUGH LOVESY

Anthony Compbell's comment,† that TM can be talked about in purely physiological terms, is most interesting since it seems likely that the study of the mechanisms that are operative during meditation may throw a great deal of light on the way that the human nervous system functions. Until recently it was believed that the nervous system was composed of two main and almost discrete components. These were the voluntary nervous system which controls the voluntary or skeletal muscles and the involuntary or autonomic nervous system which controls such functions as heart rate, blood pressure, pupil size and so on. The main criterion for separating these two aspects of the nervous system, despite anatomical differences, was the belief that the involuntary nervous system was only capable of an inferior type of learning while the voluntary nervous system, which is under direct control of the cerebral cortex, is capable of a higher type of learning. During the learning process in the involuntary nervous system, reinforcement or reward must be an unconditional stimulus which elicits *exactly the same* type of response that is to be learned (Classical conditioning). During the learning process in the voluntary nervous system the opportunities for reinforcement are much greater since reinforcement is due to a reward which can

† See the discussion on Transcendental Meditation in *Theoria to Theory*, Vol. 7, No. 4.

Theoria to Theory
1974, Vol. 8, pp. 65-70

Published by
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strengthen *any* preceding response (Instrumental or Operant conditioning).

A fascinating series of studies in the late 1960's, by Miller¹ and his associates, showed that it was possible to alter various involuntary functions such as heart rate, blood pressure, rate of formation of urine and so on, using instrumental learning techniques. Miller used rats whose skeletal muscles were paralysed with curare, to avoid any learning taking place through the voluntary nervous system. One very interesting fact that he noted was that, even though curare tends to diminish the variability of the heart rate, that rats who had been paralysed with curare learnt to vary their heart rates far more effectively than rats who had not been paralysed with curare. Why? Also why have human subjects only been able to produce very small changes when attempting to control their heart rates?

It seems likely that the administration of curare results in a large decrease in the number of signals reaching the brain from the skeletal muscles. Normally when we try to pick up input signals from the involuntary nervous system, the "noise" from the input signals of the skeletal muscles and the sense organs will make the "signal" from the involuntary nervous system undetectable. In the case of Miller's rats it seems that the dampening effect of curare upon the variability of the heart rate was well overcompensated for by the reduction of input signals from the skeletal muscles to the brain, so that in the absence of this "noise" the rats were better able to attend to the relevant cues from their involuntary nervous systems.

The experiments which have been done on TM suggest that it produces a state of deep relaxation during which the cortex remains highly alert and the skeletal muscles relax to a marked degree, while sensory input is greatly reduced.² In such a state of alertness, which is accompanied by marked reduction of inputs to the cortex from the skeletal muscles and the sense organs, inputs from the involuntary nervous system would be more easily recognizable. It would be most interesting to set up a series of experiments to find out whether meditators are better able to learn to control their autonomic functions than non-meditators

and whether such an ability increases with the length of practice of meditation. If marked control of the involuntary nervous system could be shown, then such instances would have profound implications for any psychological framework that emphasized the prime importance of external events or stimuli. On a practical level the advantages of being able to control the involuntary nervous system are immense.³

When talking about stress (p. 11) in the context of meditation it is important to define it clearly. For instance is psychological stress to be considered as separate from physiological stress? The word stress in the context of TM is often used to describe far more than is meant by the term stress as used in psychology today. If we consider the term "stress" in the context of psychology there seem to be two main aspects to any "stress response":

- 1) That this response will be qualitatively the same regardless of the nature of the stimulus.
- 2) The individual's response to a stressful stimulus or event is unique in the sense that it is largely dependent on that individual's previous response repertoire or experience.

If TM does remove the effects of stress or is in some sense a response which has similar, although opposite (parasympathetic) characteristics to stress, then two very interesting corollaries follow:

- 1) That investigations of the physiology and psychology of meditation will need to be focused primarily on variables within the subject rather than on environmental variables. The internal state of the individual will be the primary factor that determines how he will respond to (i) the technique of meditation (ii) stressful stimuli. Such an approach may be used alongside the traditional behaviourist S-R approach which places complete emphasis on environmental factors and the nature of the stimulus impinging on the individual (Note the use of the passive here!).
- 2) Although a meditation response may be delineated by general parameters it will be overlaid with large individual components which may sometimes be great enough to mask the

general aspects of the response. The observable effects of meditation may well depend on the previous response repertoire and it will be important to develop means to investigate these differences, which would complement the general (nomothetic) approach that is the dominant mode of psychological investigation at the moment.

During TM there is no attempt at controlling the thought processes or directing the meditation towards any specific end. Perhaps this is where such a passive manner of altering the attention during TM is most crucial. Such a passive way of altering the attention may automatically allow for these individual components. Any attempts to reach some specific state, especially by active concentration, could possibly ignore or override these individual differences to the detriment of the efficiency of the technique. It is interesting to note that meditation which involves active concentration may result in an increase of sympathetic tone during meditation.⁴

PHILOSOPHICAL AND MORAL ASPECTS

The central point of contention between Una Kroll on the one hand, and Anthony Campbell and John Windsor on the other, is that TM appears to be a technique of increasing one's effectiveness and awareness, but without (as Una Kroll points out) any accompanying philosophy of action or moral code to direct these increased abilities.

Such a disagreement, seems to me to be due to a misunderstanding. The emphasis of Maharishi's teachings is that the essential foundation, upon which all his other ideas rest, is the practice of meditation. Although Maharishi emphasizes this point most strongly, there is no logical reason why such an emphasis should preclude Maharishi from commenting on any other areas which might have relevance to meditation. For those people who might be interested in moral and spiritual values, and feel that TM is a technique with a significant moral outcome, then a perusal of Maharishi's writings would indicate that there are aspects of his writings which are most instructive in such areas. However this is

not a *necessary* ingredient of TM for those who are interested in meditation as a method of relaxation or improvement in mental efficiency. If one accepts that the concept of stress, in the context of TM, means anything that stands in the way of action that is maximally good or “nature supporting”, then anything that removes stress cannot result in actions which are less “nature supporting”. However the essential question here is whether one can accept such a concept in the first place, since it rather begs the question and certainly is not what is meant by the psychological concept of stress!

APPLICATIONS

The fact that TM can be practised (p. 13) independently of any philosophical system or set of beliefs gives rise to two important implications.

1) The scientist can begin to examine the effects of the technique itself, while trying to control for peripheral variables which might confound such measurements (i.e. the philosophy surrounding the technique, group support effects, expectation effects, the personality of the teacher and so on).

2) The educationalist, the therapist and the industrial psychologist can use the technique to good effect in many situations in which less universal procedures would be unacceptable.

The most striking aspect of the research under way on meditation is the immensely wide range of these studies: biochemical, physiological, psychophysiological, psychological, educational and sociological. Clearly meditation is a very fundamental procedure with a wide range of outcomes. Even though several studies have shown definite psychological and physiological patterns to be associated with TM, research work is only just beginning to touch this immense field. Many of the effects of meditation can be studied perfectly well within the framework of psychology as “the study of human behaviour,” but *if* we want to study the more far-reaching claims of meditation then a re-evaluation of psychological premises is essential. One interesting definition, given by Robert

Ornstein,⁵ is that "Psychology is, primarily, the science of consciousness. Its researchers deal with consciousness directly when possible, and indirectly, through the study of physiology and behaviour, when necessary. Psychologists are now returning to the essential questions of our discipline; how does the mind work? What are the main dimensions of human consciousness? Is consciousness individual or cosmic? What means are there to extend human consciousness? These questions have not yet had a full treatment within academic science, having being ruled out of enquiry by the dominant paradigm of the past 60 years or so" (p. ix). Science is concerned with events in an objective world. Psychology is concerned with human behaviour. It has been assumed that behaviour is an event, with the corollary that psychology can study events using similar methods that are used for studying other events. However human behaviour does not consist of events but of actions, which are a logically distinct class of "happenings" from events. It would not make sense to ask "why," or "what for" when one stone hits another, but if someone had thrown the stone then such a question would certainly be meaningful. If psychology is to be the study of actions (rather than events) then while it remains based on event concepts any attempts to investigate actions will run into difficulty at some time or another. Clearly certain types of action will appear nonsensical when delineated in event-type language. The concept of action is difficult to pin down satisfactorily and it will be most interesting to see whether research into the effects of meditation will clarify this issue.

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Elementary Christianity from an advanced point of view

I

Some things in the April number of *Theoria to Theory* has prepared me (though I cannot say exactly *what*) for what Margaret Masterman says about the Resurrection—namely, that it *ought* not, and very likely will not ultimately, be regarded as so incredible to persons educated in this age of science as it is very often assumed to be. (Actually Pharisaic Judaism regarded death as a fact of life fully as final and irreversible as people do in these days of scientific rationalism; and the early Christians were particularly careful to adduce the utmost of evidence from eye-witnesses of the resurrected Christ.) The fact is, surely, that the idea of surviving death *always* took a lot of believing, and that the Christians' absolute conviction that the Resurrection was a *fact* always was a challenge to credulity of the kind that Tertullian had to answer with a *Credo quia impossibile* . . . The fact remains that in the present climate of opinion people do demand more apparent proofs for what they will believe. Our public is now tremendously sophisticated—it tends to accept or reject beliefs according as the publicists approve or disapprove them: and the majority of the publicists' opinions are shaped largely by what they believe (rightly or wrongly) to be scientifically approvable judgment. Thus, a change in the premisses of science, as believed and acted upon by competent scientists, would effect changes in the state of public opinion as to what is or not *possible*. But it would effect this change rather slowly. Bertrand Russell once wrote an interesting article on the time it takes, for an advance in scientific knowledge to effect a modification in popular belief as to what science can tell us about this or that. The public opinion on such a point is usually at least a generation out-of-date.

Personally, I am (of course) prejudiced in favour of the case she presents. For a time—some years since—I myself tended to “mythologize” the dogmas of the Resurrection and the Virgin Birth, though I never frankly rejected them and always found the Ascension more difficult to believe than either. I also found that, in practice, some of the Christians who were most exemplary in spirit and behaviour “sat rather lightly” to the miraculous element in orthodox doctrine. This I could never really do: to me it seemed *necessary* that the primordial *mythic* understanding of God, Nature and Man, must in at least *one* religious revelation become also “*the fact of the matter*”. Once, only once, and for the one Saviour who was also the truth.

So although, not being a scientific mind, I could never, I think, be *dependent* on the revision of scientific cosmology that she is seeking—I mean, I doubt if I could join in that quest with a conviction that my salvation depended upon doing so—still, at every advance she makes, at every inch of her successful approach, to this goal of “revision”, I raise a hearty cheer from the side-lines!

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II

It's comforting to find someone saying, out of a vast range of knowledge what some of us have been thinking for a long time. And I like Margaret Masterman's panache—not for her the apologetic trimming we've got used to in so many of our trying-to-be-with-it theologians.

One remark, however, seemed to be incongruous—though she probably deals with it in her book. She says “The other thing that . . . is conceptually unique to Christianity is that through it have emerged both modern science and democracy”. This, simply, is not true—though it should have been. The Bible thought of creation as static. The pattern of the world and of everything in it was made and fixed for all time. There was no room for evolution,

i.e. for creation as a continuing process, in which God was still at work. This is why churchmen usually treated the scientists as atheists or heretics, though later accepting their insights and adapting their own theology accordingly. And the point is that not only was their cosmology wrong, but also that by tying themselves to it they had seriously distorted their theology. Christ became an afterthought, a *deus ex machina*, and not the manifestation pin-pointing the meaning and nature of the whole creative process. St. Paul seems to put the record straight in Romans.

This point appears to be crucial to a fruitful understanding of the doctrine of the Trinity, and to the Passionistic theology of Margaret Masterman.

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III

Margaret Masterman is all mixed up. Her recurring metaphors do not fit the size of her subject. One cannot think the Creator needs his planning genius to be explained in mythological exercises. The Jesus story, and indeed the whole of what she terms "Christianity" is but a tiny pimple on the surface of the eternal universe. The real key, I feel, must be found in Man himself as a component part of a greater whole, and man is so new and as yet so underdeveloped that, however much we wishfully speculate, no clues have so far emerged, except possibly in mystical experience interpreted in a completely non-mythological way.

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IV

I shall call this comment "Some Elementary Considerations of Advanced Thinking". In her article, Margaret Masterman gives into

the hand of even the most elementary thinker the end of Blake's golden string with some forcible directives for winding it into the ball of whole Christianity. I was excited and exhilarated, wishing to share at once with advanced friends this original and provocative presentation of old beliefs of truths in which we know ourselves to be "fast inscalped" but which are all too prevalently avoided by orthodox religious teachers. The immediate response from my literary bookseller of Burford, Katherine Watson, was the acknowledgement that "this is first class." I feel in the sphere of a first class mind which will shirk nothing but knows its directions... this is one of the most stimulating of recent experiences.

I once wrote that "some have to argue, others have to adore": the writer of this arresting chapter appears to do both and to provide stimulation for both sorts of people. The elementary, anyhow, are grateful, and we look forward to a speedy publication of the book which will make explicit its author's references to death (that all-important part of life) and its attendant stages. Please, Margaret Masterman, write more.

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V

The Russians, with typical unconscious patronage to the rest of humanity, have only one expression of praise to any foreigner, and it is to declare, whether he likes it or not: You have a Russian soul! They can go no further in praise. Without emulating such impertinence, may I tell Margaret Masterman how struck I was by the familiarity of her approach, to an Eastern Orthodox *attitude* of thinking. I find it exhilarating how she expresses the Western image, and within the circumference of Western problems, an approach so closely akin to ours. And, yet, what she says cannot be considered in any way inherently alien to the West. Somehow.

of course, we seem alien because we are limited to our own image.
When our images cross, it is exciting.

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Living with leukaemia

When I read "Living with Leukaemia" in *Theoria to Theory* for July 1973, my first thought was, "How good that one should accept the sudden shortening of life, and by that acceptance be stimulated to live fully the years that might remain." My second thought was surprise that it should seem rare and notable that a person should so accept and be happy with the verdict that life is short. For, of course, life is short. The matter of surprise is that the machinery of body and mind go on working as long as they do.

Then I reflected about the modern attitude to life and death, which our society has produced, and in which we live. The human animal must be kept from dying at almost any cost; forgetting that it is marching to death anyhow. We are educated by the organs of publicity to think that to die is improper and unnatural. It seemed to me that Pamela Ravensdale's first response to the verdict belonged to this artificial world of Social Security in which we, in England, grow and live. Death is shocking, and ought not to be thought nor talked about.

Fourteen years ago, when I was seventy, my wife died. A coronary thrombosis had come two or three years earlier in the night. I rang the doctor (though she said "don't"); and he came at once, and injected something to bring her round. In the remaining years she never recovered her proper vitality. I ask myself now, "would it have been better, in the light of eternity, if she had died that night?" Both the doctor and I reacted in the way that we were conditioned to act by the civilization in which we live: we could do no other. Was our response good with an eternal goodness?

When she died, I was seventy. I said to myself, "I guess I have five more years to live." The past was past; with its high lights, when I could feel, "Now I am alive"; with its regrets, its senses of

shame, when I had behaved meanly. This was all past. Now every day must be lived for itself. Out of my Christian religion I formulated the elements in which I believed with a real belief. One was, To be True—true to what?—in the last analysis, true to myself. Another was, To love—to love what? the earth, and what grows out of it, chiefly the strange race of mankind: not mankind in the lump: I cannot feel compassionate to multitudes who I have not seen; but to every individual with whom I converse; enjoying in myself their delights, and grieving with their infinite sorrows, which none can be without. My pleasure in reading of Pamela Ravensdale was that she had found in her late years that which I had been seeking for. She had broken the crust of the civilization in which we live, and had found the values which make life real.

We were talking lately about a person giving his life to save another. We, older, said that we should be ready to die to save another, and should feel satisfied in doing so. The very young man said, “No”; he had not yet lived—his first duty was himself to live. When I reflected about this, it seemed that both were right. For myself, I have lived. To give my life now for another would be fulfilment of living. Though it ended my life, it would be the most vital, the liveliest act of all. It would be a completion of living. Of course, when the time came, I might fail: that would be a failure to *live*. The young man had not yet lived; he was entering mature life. How could he rightly consider his own death to be good? His first duty was to be, to life. Of course, when the time came, he might by a kind of instinct make the great sacrifice of his immature life. But he could not consciously see it so now. To die voluntarily before he had lived was beyond thought.

What makes a person know that he has lived? Where is the boundary between “I have not yet lived” and “I have lived”? Some may find it in having made a decision, at a risk, in a crisis. Some perhaps even in pleasure, may feel that a risk taken is a vital act; and having come through it, say, “I lived in that moment.” I read that there is a waterfall in Japan, where lovers throw themselves to death. Why? Because the climax of love between two persons is a height of living, a summit, from which the next moment can only be descent. So, why not end life at this height?

Why use time to drop to a lower level? Such times as these are moments of full vitality.

Is it possible to live continually at the full height of living? He who lives always completely truly, and completely lovingly, may have found completeness of vitality which lasts. Patricia Ravensdale seems to have found this in her last years. It was eternal life, because its values were beyond time and space.

HERBERT BELL
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On Justifying "Double Conversion"

Hugo Meynell, in his article on "On Justifying 'Double Conversion'" (*Theoria to Theory* October, 1973, p. 82) says:

"... The pronouncements of the *magisterium* are precisely analogous to crucial experiments in science ..."

I don't see the analogy. Where are the experiments?

MARGARET MASTERMAN

Review

The Alexander Principle by Wilfred Barlow†

ELIZABETH DUPRÉ

F. Matthias Alexander came to England from Sydney in 1904, aged 34, and for more than fifty years applied his principle, helping people “to change and improve the use of themselves.” Dr. Barlow is a specialist in rheumatism and his concern as a doctor has been to discover by what bodily means the Alexander Principle works. It seems to be clear that it does work in a great number of cases, that is to say, people who have been in pain from various degrees and kinds of distortion of their bodies have learnt how to change their habits of use. This has resulted in alleviating or curing the pain. The kind of people who have been helped by Dr. Barlow include a chest physician worried by increasing depression and a pain in his neck, a nineteen-year-old student in a state diagnosed as “reactive depression,” a woman journalist of forty-five with a whole range of psychosomatic symptoms and problems of frigidity, a schoolboy of eleven who had a curious “thumping” at the back of his head and developed nervous twitchings. *The Alexander Principle* is based on thirty years’ work, in the course of which Dr. Barlow has been trying to build up acceptance and comprehension of the technique in the educational and medical establishment.

Alexander himself published four books (which ran through several editions) one of which, *The Use of the Self* (Methuen, 1932) particularly interested many doctors and teachers. Dr.

† Published by Gollancz Ltd., at £3.00 (223 pp).

Theoria to Theory
1974, Vol. 8, pp. 79-85

Published by
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Barlow, in writing a new account, is aiming to reach a new generation of medical specialists and general readers. The reaction of the *British Medical Journal*, Nov. 22, shows some part of his success. The greatest handicap the book has to contend with is the same that Alexander himself recognized and made explicit in his preface to a new edition of *The Use of the Self* (1946). It is just not possible to convey in words the internal knowledge involved in a skill—it cannot be described and many people are not able to teach themselves to drive, for example, in spite of all the textbooks without the aid of a teacher. Alexander pushed this even further: taking the example of golf he claimed that it is impossible for the ordinary learner to obey his teacher's instructions, "keep your eye on the ball," etc. because of basic lack of co-ordination and physical awareness. Taking his eye off the ball is an effect not a cause. The great value of the Alexander Principle is that it reaches the athletically under-privileged and physically unaware people and alerts them to ways of using their bodies better, though Alexander explicitly welcomed people without serious difficulties as well, and he was particularly interested in teaching children.

Dr. Barlow's book is a means of spreading knowledge of the availability of the Alexander technique but the reader should not hope to learn from it what to do. As Alexander never tired of saying, we judge the correctness of our movements and positions by whether they feel right, but our kinaesthetic awareness is precisely what needs re-educating so that we have no uncontaminated sense of rightness by which to judge. The very first lesson we have to learn, emphasized Alexander, is to give up our own judgement, inhibit our instinctive reaction to a stimulus, so as to clear the way for the right movement. Dr. Barlow does not give this directive the prominence that Alexander did, partly because (as he says on p. 161) it can be misunderstood or have undesirable results. Any question of rightness and wrongness, criteria and judgement, is in fact a deep personal threat, but we cannot escape it by trying not to look at it, or pretending it is not important. Dr. Barlow supports the rightness of the Alexander use by pointing to the improved functioning of the whole person that comes with it,

and yet the really powerful drive seems to come from what has been called the “witchdoctory” element that carries the patient through.

There are many things the Alexander Technique is not. It is not a method of manipulation where the patient is passive, even though there is a stage in his re-education where he might seem to be. On the contrary, he must learn to act. It is not a form of relaxation therapy, even though from Dr. Barlow’s book some readers have taken the impression that the method is aimed at achieving a state of static non-tension. Perhaps this sort of sentence lends itself to misinterpretation: “It is explained again and again to the patient that what he is learning is a neutral ‘resting position’ of balance of the various parts of his body—rather like the ‘neutral’ of a car to which one can return after one has been in gear.” It does not really help comprehension that it goes straight on: “And it is stressed throughout that for any given position or activity there is a due amount of muscle tension needed . . . but that the increase in muscular activity should be undertaken on a general and not a local basis.”

As Dr. Barlow describes it, Alexander’s theory was that habits of use left their mark on the body so that when the muscles were at rest they automatically aligned it out of true. This then led to strain, more distortion and malfunction of other parts of the body. As a paradigm case Dr. Barlow describes the positioning of the head in the action of sitting down and in the common state of slump that the body assumes once it has sat. “What follows from this collapse of the neck and upper back? It means the gradual development of a persistent HUMP at the base of the neck, and it means that the rest of the body, if it is to balance itself, has to be wrongly compensated elsewhere” (p. 26). He has two photographs to illustrate this theme of deterioration, one is of a young child, erect, alert, no hump (or HUMP), the other of an adolescent sitting typically slouched. Dr. Barlow accepts that “we cannot alter our habitual way of doing things simply by deciding to do them some other way”, and he also admits that certain postures enable certain people to make contact with each other—the adolescent rejects reform because it takes away from him a kind of body-

language he and his friends know each other by. An alien posture makes communication difficult. It also threatens our sense of self—"our preferred self-picture is usually sustained by USING ourselves in a habitual way." Dr. Barlow's reply to the objection, that we would be blocking, or rather obliterating, a useful communication channel by rationalizing our postures, would probably be that the technique is aimed at removing irrelevant and superfluous movements, habits that are no longer useful and could in fact be misleading about our genuine present attitude. This is certainly part of his argument in his chapter, "The psychomechanics of sex."

Alexander was, says Dr. Barlow, "concerned with the types of muscular usage which arise when people react to a stimulus," and his Principle was "rooted in stimulus-response psychology and Behaviourism." Proper muscular control is only possible in his view, if we can start from a properly balanced state of rest. (p. 51). Dr. Barlow relates a conscious awareness of such a steady state to the physiological structure of muscles, particularly the muscle spindle and its connections not only with the cerebral cortex but also the reticular formation in the brain which is responsible for our conscious awareness of the world about us (p. 57). In his chapter on the physiology of the muscular and nervous system, significantly entitled "Rest", he describes the structure of muscles but does not analyse the quality of "tone" that athletes recognize as essential to proper muscular control. He gestures in the direction of athletic achievement but says that for most people "the 'courageous' use of muscle has tended recently to fall into disrepute," and he himself commends the less violent use of muscle with which Alexander was concerned—"a use which will permit and not preclude clarity of thought and emotion" (p. 102). Perhaps he did not intend the implication that athletes are muddled thinkers and emotionally mixed up.

Alexander's emphasis was continually on conscious awareness of the body-use, but he was very specifically against conscious direct movement of the body into the right posture. It is interesting to compare his training with the philosophy of Steve Fairbairn, a controversial but dominant figure in Cambridge

rowing and coaching in the first decades of the century. It was assumed in his day that good rowing consisted in moving the body through a succession of “correct” postures, “coaching for ‘body-form’.” Fairbairn maintained that this cultivates a “slave-mentality” instead of the master-mind that the finished oarsman must possess. To develop that master-mind, one must coach for brain-and-blade work from the start. (*Rowing Notes*, p. 62) In Fairbairn’s view, the “unconscious mind,”

if not interfered with, acts automatically and works the muscles in the way it has found, by experience, to be best for the job. The conscious mind will cause friction if it tries to interfere with unconscious actions by placing restrictions on how the body is to be held and moved. In the best-oiled human machine the conscious mind can direct its whole attention to the object to be attained and let the unconscious mind control the body . . . in the most efficient manner (p. 3).

Alexander, however, would not trust the body to know how to move. Fairbairn’s practice might come under Alexander’s general condemnation of “end-gaining”—“the habit of working for ends, targets, goals, results, without considering the means” (*Alexander Principle* p. 160). Fairbairn’s coaching, of course, concentrated on correcting faulty body-use, often by exaggeration, always by subtle direction of the attention of the ‘unconscious mind.’ The misgivings he expressed at writing about coaching sum up very well the disadvantages under which Dr. Barlow is writing:

I have always had grave doubts as to the possibility of expressing in print what one has at the back of the mind as the store of experience. The actions of the human body in rowing are mostly unconscious, and to explain them in words requires a conscious act—something different. To frame words which will convey the ideas in print is even less satisfactory, because one is deprived of the assistance of visual bodily actions illustrating the words, and one cannot test the effect of one’s words on the reader and vary the metaphor accordingly (*Rowing Notes* p. xiii).

Dr Barlow pays lip service to psychosomatic interaction but what his book finally presents is a playing down of the psychic element in physical use, so that the explanations he offers are all in terms of electrical impulses juxtaposed with unexplained assertions such as, “We can accordingly learn consciously to lengthen tense muscles” (p. 57). Fairbairn and Dr. Barlow are sometimes

saying the same thing, but Fairbairn explains his method in terms of the unconscious mind—an obviously mysterious and provocative concept which makes it clear that a whole world of exploratory effort is needed. Dr. Barlow's exposition of the Principle strongly suggests that all that is needed has been done. This is the basic shortcoming of the book, because he seems to want to close off the Alexander case at the physiological level of body-function. Alexander himself did not close doors onto further research into the relationship between consciousness and action, as it comes up for instance in yoga.

Dr. Barlow has an interesting chapter on muscle-mechanics, but his account leaves the non-physiologist thinking that muscle mechanics can be treated in a static manner. A reading of A. V. Hill's classic *First and Last Experiments in Muscle Mechanics* will dispel this over-simple though natural preconception, and bring us nearer to Fairbairn's intuitive grasp of the true complexity. A muscle hardly behaves as a spring on a jointed framework at all. Its ability to do mechanical work depends on such things as whether it has already been drawn into motion at the time when its automotive force is stimulated and so on.

The Alexander Principle barely recognizes the kind of problem raised by one reader, my friend Kathleen Russell, a teacher of ballet.

If I go to an Alexander teacher complaining of a bad back will he, by altering my back, alter my mental state? And if so, how can I know in advance that I want the new state? How specific is the relation between "use" and emotional state? How can it be communicated? Can the Alexander person explain the mental state in the normal way, or doesn't he rather have to explain the postural and movement structures that will give it? He may at times only be able to explain by putting my body into certain postures and then saying "See what I mean." But if I can only know the new mental and physical state by experiencing it, I cannot choose before and know what I am choosing. And if I don't want to change my mental state, can I alter my back and leave my mind alone?

The same reader also raises the question whether there is really only one right kind of tension and balanced muscle tone. Dr. Barlow's criterion of what constitutes good posture is the effect on biological functioning: good use is economical and "easeful"

(p. 48), reliable and predictable (p. 50). Mis-use patterns, faulty muscular tensions, he refers to without further definition as “dystonic” patterns which, he says, are particularly obvious in the postures we adopt when we are keeping still. It is easy to mis-read this as arbitrary advocacy for being permanently in a relaxed restful state, though Alexander’s own books never give this impression. The ballet teacher asks,

When I feel energetic, very awake, do I want my body in a relaxed and restful state? Might this not tend to diminish the necessary energy and drive? Might it not even create some split?

The Alexander Principle makes very high and even sometimes exclusive claims for a particular technique. It seems too narrow to allow for meaningfulness and efficiency in dancing and athletics unless the performers are in effect “believers.” Those of us who have not been re-educated are still interested in the question, “What does a given posture do and what is the function of its specific state of tension?” Posture, dance, using bodily power as well as the “static” postures are all means of expressing things for which there is no other form of expression, things which by-pass the intellect and communicate through the senses. Conscious awareness of function and use may be a beginning but is not the end.

Kinds of retreat

DAMARIS PARKER-RHODES

In the *Journal of Trans-Personal Psychology*, Number 1 (1973), there is the first part of a taped lecture from the Maryland Psychiatric Research Center by Ram Dass, in which he explores kinds of retreat which he undertook in India. Ram Dass is better known by his earlier name of Dr. Richard Alpert of Harvard. He did pioneering work with LSD with Timothy Leary in the early 1960s and then spent a number of years living in India, practising and studying Eastern disciplines under guidance from several famous *gurus*. This led on directly from his work as a “motivational psychologist” in which he sought a method of studying other states of consciousness than the normal, some of which he had previously glimpsed under LSD. His account illustrates experiences in meditation undertaken by someone able to give all his time, and having the money to live and travel to *ashrams* following his own profession with highly professional teachers. This is one way of doing it.

By contrast in *Theoria to Theory* editorial, April 1973, there was a brief description of the centre at Marion Close where people can drop in for quiet and their own kind of retreat. As our Sentences following this piece, we are publishing an account by Kathleen Russell of one such retreat. She is a choreographer, teaching and developing a special form of ballet notation (*Benesh*) and has to travel a distance between her husband in the north and her work in London, as well as to visit a sick father in the south. So time and money in her case are short, and her Do It Yourself kind of retreat was not watched over by professionals.

Theoria to Theory
1974, Vol. 8, pp. 87-91

Published by
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Ram Dass spent 6 years in discipleship in India because it seemed to him illogical for men today to spend millions of dollars creating complex computers and filling their minds with knowledge, when the tool of consciousness itself is very little trained. It is alleged in India that if you are able to keep your consciousness on one point for twelve consecutive seconds, then you will find yourself in one of the highest forms of *samadhi*, and be one of the most enlightened beings.

Ram Dass's account of his own efforts to achieve one-pointedness illustrates the *Vipassana* method. He used to go into 10 day courses where for 16 hours a day he focused on the tip of his nose, noting his breath going in and out, with a break every forty minutes to walk round the room a couple of times. At first he used to start in with his meditation with "Ah, this feels good" and then realize that this was a thought and not part of the game. "Gee, my knee hurts" followed, but after a day or two of meditation he was not allowed to move his position. "Oh, I'm hungry" was another thought. Then there was "Was it for this I got a Ph.D?" That was a great one, like "What am I doing here? After all this training, here I am sitting watching my breath. I mean I ought to be in a mental hospital. Who sits around all day long watching the breath of their nose? I mean, it's obviously some totally compulsive individual who's afraid he's going to stop breathing or something. And to take that on as a chosen discipline—sixteen hours a day, day after day?"

Sometimes there arose sexual rushes and fantasies, and his ordinary pattern kept asserting itself, telling him who he was, that the world outside was going by, or that he needed to go to the bathroom (in the worst way!) He found he would run through old tapes of experience, and go through all his theoretical models of what he thought was happening. Every day at 4 o'clock the Delhi bus would go by, and he could just see it out of his window, and from 3.30 onwards he would be aware that he could catch it and get the aeroplane for America before nightfall.

He believed from his LSD experience that there were indeed other modes of awareness than his common one, and by steadily

watching his breath he hoped to break up the pattern of the usual way his mind worked, as the existing programme in a computer can be overridden, and in fact finally he was able to do this, but his experience taught him that if he had supposed he had a disciplined mind, meditation proved to him the opposite.

The last time he was in India he went into seclusion in a place where one is locked in and food is supplied through a double window, so that no human being is seen and there is no view. As it was very hot he went naked all the time, and his *guru* who could not see him, mentioned this fact to him as soon as he came out, making him realize that though he had felt utterly alone, this had not really been so.

This aloneness encouraged him to try to bring down his mind and quieten it, but even so his thoughts often became highly dramatic, telling him that the whole thing was not going to work. Even worse was the thought that it was working, when he got rushes of ecstatic feeling and deep calm. But at last the mind really began to grow calmer and calmer until he found himself just sitting quietly and approaching what the buddhists call "pure mind." The thoughts became like floating clouds without attachment to desire. From this he realized from firsthand experience that the western tradition where motives are seen as *who we are* (sex drive, power drive, dependency motivation, achievement, fear, love, hate etc.) is not necessarily correct. We can be separated from our motivation.

Another exercise he used to do was *pranayam*, which is a technique for raising energy up the spine, or raising the *Kundalini*. He used to fast 9 days on the new moon, and do hatha yoga for a long time, and then undertake the series of exercises called *pranayam*. Some of these are like oxygenation, going on for some minutes. Then there is another in which the air is taken in one nostril, while the muscles halfway between the genitals and the anus are tightened in a special way, and then the breath is held for longer and longer periods over the months, and the attention is forced to the bottom tip of the spine (or first *chakra*). It is necessary to learn to focus in imagination on a triangle of flame in which there is a serpent wound with its head down three and a

half times around a lingam or phallus, instead of focusing on the fact of holding the breath. Finally a point comes when a state is reached where breathing ceases, and usually the awareness that this is so, brings the experimenter back. This leads on to attaining this condition in perfect calm, and then the energy pours up the spine and into the head. Ram Dass was able himself to learn this.

Attachment to ordinary consciousness has to be broken before it is possible to experience other forms of consciousness, in the same way that a television channel can be tuned from one channel to another. So in India Ram Dass sat with people who were looking at him with their eyes open, and in fact they were talking to somebody he could not see, and this made him reconsider the nature of hallucinating.

The lowest level of the game is where the physical body is loosened from the astral. He had an example of this on a pilgrimage in Southern India, when Muktananda, a well known *swami*, took him by the hand at 3 a.m. up to a little temple on the top of the town and whispered a *mantra* into his ear, and did a ceremony over him. He lost consciousness and a few hours later he was brought back and he asked the *swami* the meaning of the happening. He was told that the *mantra* would give him vast power and vast wealth. He replied that he did not want this unless he was also promised equal amounts of love and compassion. However, he was ordered (the *guru* was fierce!) just to do the *mantra* (a repetition in Sanscrit which has a mental effect) and he found he could not cease doing it—first because really he did desire vast power and wealth, and secondly because it had been put in so deep that he was not able to get rid of it. Finally he came back to the *guru's ashram* near Bombay and was put into a locked meditation room alone, and around 2.30 in the morning, as he lay flat on the floor doing his *mantra*, he was taken out of his body and brought into another place where there was a room, with the walls made of a substance like light, and there he found his *swami* looking as he normally did. It seemed like a dream. He walked in and he looked directly at the teacher, and then started to levitate or fly. This frightened him, and immediately he felt fear he found himself back in his own room back to normal. He got up and

walked out of the meditation room, where he was greeted by Muktananda who asked him if he had enjoyed flying! This made him realize that he was indeed beginning to gain the wealth and power he coveted—power to fly in the astral.

In fact he tells us that he had many experiences of leaving his body in the lotus position, by pulling back from his senses and thinking mind, and then just in the subtle form of his thinking mind going out and travelling in bodiless awareness. It was possible to look back and see the blue cord of light that linked up with his physical body, and to see within that body other bodies existing, these getting more and more subtle as he turned in to different planes.

RAM DASS SUMS UP

In five years of being with my *guru* (Maharaj-ji), and thinking about practically nothing but 'Who is it?' and 'What is it?' I can't yet find anybody home. There's nobody there! There's a personality, but it's not who that person is. I can feel it. You can sense it. You can feel it as you work with it. You think he's the most exquisite mind in the world, and for the next week he is the most stupid old man—bungling, repetitive, dull. You think, 'Ufff. Groan. Oh, have I been taken! I'm glad I see the light.' Just as you are about to say 'To hell with him, I'm leaving,' he does something incredibly mind blowing. You know, when somebody's got a subtle humour that sneaks up on you—you thought you saw the joke and then suddenly—Oh! You see that you didn't see the joke at all. It was another joke. But with him you get to that place and then you know that there are about ten more layers out there, and at every one he's right there saying, 'Ah, see the joke.' . . .

Now and then when we see a catatonic and we work with him enough we say 'Jesus, maybe there's nobody in there. It's just his body vegetating.' Unfortunately, that is a locked-in place on another plane. That isn't the final bag, either. But the predicament is that the consciousness becomes The Consciousness, which is All of It—although at that point you don't know you know anything. Because you *are* it, you don't *know* it. It's the nature of being versus knowing.

Ram Dass went to India to learn more about expansion of consciousness following his experiences of this under LSD, and this he accomplished. Certainly also the motivational psychologist came to a deeper knowledge of his own motives, and began to gain wealth and power of an inward kind. Did he also gain in compassion?

Sentences

I

Four days in Marion Close

I did not know what to do.

The first day I spent sleeping. Perhaps necessary, as I was tired.

The second day I spent cleaning:

feeling I owed it to the group to do a share of physical upkeep.

feeling I owed it to the group to do uncongenial work.

feeling I owed it to the group (I pretended to myself) to neglect what I really wanted to do.

but really using housework as an escape from the much harder work of thinking.

but really using thinking as an escape from the much harder work of praying.

At tea on the third day I was assured of complete backing for the attempt to pray. They, if not I, were at least prepared to act as if prayer mattered more than anything else.

Suddenly after two days I know I must begin.

Suddenly after two days I am alone and know how to begin.

There is time and space to begin: do I know how to begin?

The chapel is dim and very little noise. How do I begin?

Into Thy

whose?

Theoria to Theory
1974, Vol. 8, pp. 92-98

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hands I commend my spirit

my what?

But it leads like music:

*A small boat
swishing through rushes.*

*Suddenly,
on a clear lake,
silence.*

*A small sound
wafting through meaning.*

*Suddenly,
with a clear mind,
silence.*

*A tough boat
forcing through rushes.*

*Suddenly,
on a clear lake,
silence.*

*A hard prayer
cracking through words.*

*Suddenly,
with a clear mind,
silence.*

Ted brings supper and lights a wood fire for me. He fills the room with courtesy; but I am sullen and cannot respond with courtesy.

I want to be alone; I don't like meat.

I do like the fire; I don't like this mug.

I want to be alone; I am afraid to be alone.

My wants and likes are distractions. I am nowhere yet. Clear-minded silence is only a beginning.

After supper I sleep in front of the fire until about eleven o'clock, then wash up and go into the chapel until about two o'clock.

I am afraid.

*That doesn't matter.
Fear is not important.
You came here to learn compassion.
Get on with what you came for.*

I am afraid.

*If gods are real, so are demons.
If God is real, so is devil.*

*That doesn't matter.
What has real or unreal to do with
compassion?
Get on with what you came for.*

*Give me understanding,
then I shall have compassion.*

*Of whom do you ask help?
With whom do you strike bargains?*

Give me understanding.

*You did not come here to receive
understanding.
Get on with what you came for.*

*Give me understanding,
then I shall have compassion.*

*Become compassionate
and you will have understanding.*

Who is my teacher?

*You know what to do.
Don't shirk the responsibility of
hard practice.*

*My sins O Lord are stuck fast in me like arrows,
But before they can engender wounds heal me with the
remedies of penitence.*

*That is not important.
Your sins and your repentance are not
important.
You came here to learn compassion.
Don't shirk the responsibility of
hard practice.
Get on with what you came for.*

Am I alone?

The answer is not important.

Say Compline. Go to hut, carrying office book for an illusion of security. In bed say Compline again to drown the fear.

*Next morning wake at nine o'clock.
Spend an hour*

*slowly drinking tea
slowly waking up
watching the leaves and the light
slowly writing and thinking.*

Then into chapel.

*I need to pray for many people.
How do I begin?
I need to pray for many people
but think it nonsense.
I need to pray for many people.
How do I begin?*

*Help me to be a channel of Your
Whose? It doesn't matter.*

love towards them.

Help me to be a channel of love.

Your love? My love? It is not important.

Help me to be a channel of love.

Ted came round while I was washing and dressing, said an office with me.

At this time of day reassurance less essential.

Between that office and evensong two walks in the orchard. First in circles and figures of eight, walking very slowly without altering posture or looking around. Second picking blackberries and apples.

The slow walking is relief from praying, without losing what so far gained. Picking blackberries and apples much harder.

Between that office and evensong two meals of crispbread, peanut butter, milky drink and apple.

When had been sitting too long in chapel, I found lying flat on back an excellent posture for prayer. To my surprise I did not go to sleep.

I was glad of the chance of leaving tea things ready, and clearing away afterwards: it allowed me a simple means of expressing care for the rest of you.

How far should this go?

Should I paint the kitchen cupboard, clean the windows, to express my care?

It would be possible to walk through the small door, across the orchard and up the steps to the chapel without seeing the rotting apples on the ground or the dirt in the kitchen, or smelling the dead bird under the roof. Should I pray in ignorance of these things? Will prayer unstop my smelling, remind me of the rotting apples I had walked past without seeing, show the dirt in the kitchen I hadn't even ignored? Why should I put such a responsibility on prayer: I have nose and eyes and hands and feet and brain. No: I must look at my surroundings, then go to pray carrying that awareness with me.

When love makes me glide to a task, then that task is right. How hard not to pretend love, when there is only wish to appear or feel loving. (But love is not lack of joy in the action, only the joy is irrelevant.)

But that task is so hard I should never clean the kitchen or clear the orchard of rotting apples.

But that task is so hard, I shall never learn it by pretence.

And I am here to learn.

Supper of crispbread, peanut butter, scrambled eggs, salad, apple and lots of weak black coffee. Reading over supper.

No need to sleep after supper.

I washed up, then danced a saraband. Not a genuine French eighteenth century saraband but one composed by Belinda Quirey who knows more of dances from this period than does anyone else. It is a very poised and calm dance.

Then into chapel, where I could not pray. Said Compline, but still could not pray; feebly gave up the attempt at about quarter past eleven. I think I should have persevered. But perhaps the retreat had ended.

The last morning there was a starling in the chapel. I wondered if thirty-six hours of retreat would have enabled me to approach the bird without frightening it. It was afraid. What vanity, I was not there to flaunt any possible power. All that was necessary was to open the window, and the bird flew out.

KATHLEEN RUSSELL

II

From *The Jesus Prayer* by Mother Maria of the Greek Orthodox Monastery of the Assumption (*Library of Orthodox Thinking*)

Philosophers

People sometimes imagine that philosophers are extremely proud of this faculty of discursive reasoning, and that they expect almost any wonders from their thinking capacities. But, in this, they show that they have never come near a true philosopher at all. Those, who suffer most keenly under the limitations of reason, are naturally those who use it most. The truly humble minds are not those who give up thinking altogether because of the limitation of reason, but, rather, those who go on working humbly and patiently with the imperfect means, which God has given, awaiting the time when he will grant a more adequate comprehension of Truth.

Yet, however inadequate our comprehension of Truth, because there is truth in it, it is necessarily a participation in God.

Notes on contributors

ROGER BERTRAM read Agriculture at St. John's college Cambridge, followed by a postgraduate certificate and an academic diploma in Education at London University. Now biologist and Housemaster at Sudbury Upper School and a scientific advisor for the Educational Foundation for Visual Films.

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The Ven. **ATO RINPOCHE** is an incarnate lama from Eastern Tibet. He left Lhasa in 1959 and went as a refugee to India. For three years he worked in the Religious Office of H. H. Dalai Lama. Soon after his marriage in 1967 he came to England, and settled in Cambridge, where he works at Fulbourn Psychiatric Hospital and also teaches meditation privately.

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Published by
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THEORIA to theory

VOLUME 8, NUMBER 1 (1974)

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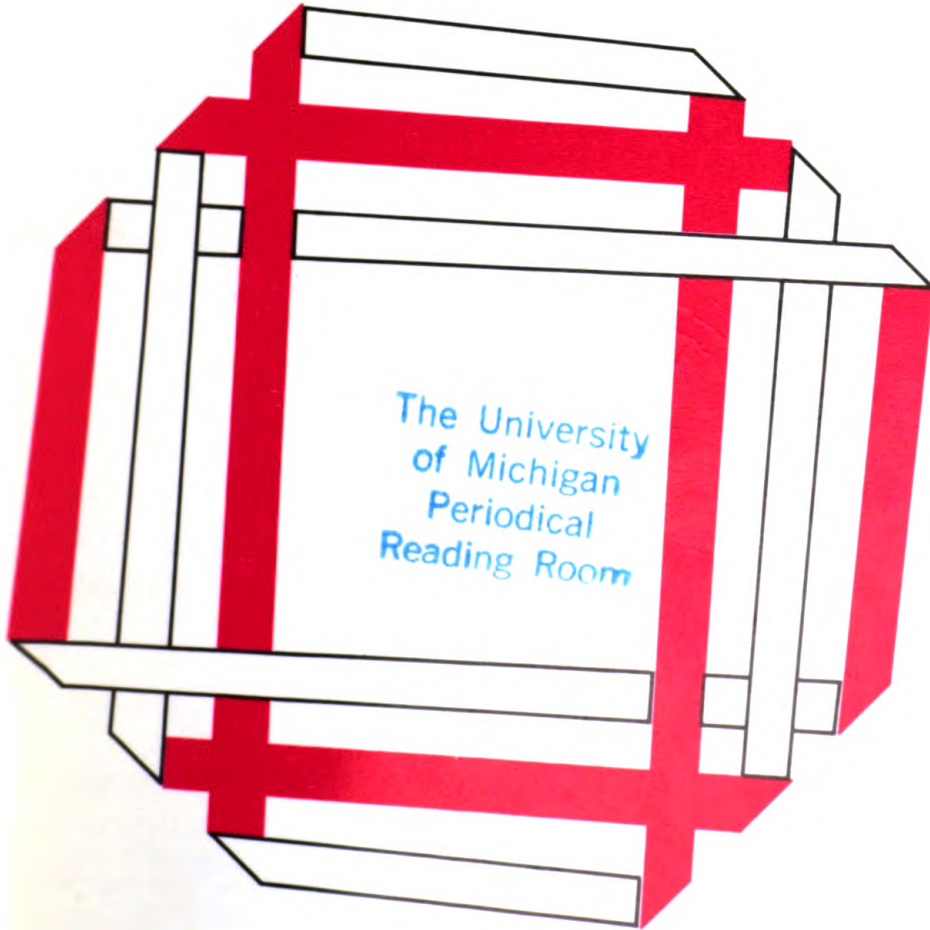
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THEORIA to theory

An International Journal of Science, Philosophy and
Contemplative Religion

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DEC 6 1974

Volume 8, Number 2 (1974)

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THEORIA to theory

An International Journal of Science, Philosophy and Contemplative Religion

Editors

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Explorations in the sciences and technology that affect our understanding of religious and philosophical questions—these are the basis of this quarterly journal. *Theoria to Theory* holds that traditional religion has been primarily, and at best, concerned with mystical and contemplative experience; therefore it is important to a widened science in providing a source of insight. *Theoria* was the old Greek name for this insight; *Theory* here stands for an enlarged and revised scientific understanding. The journal represents an effort to keep the two terms with each other.

The journal was started in 1966, when this approach was outside current theological, philosophical and religious fashion, but times have changed, and the interests of *Theoria to Theory* have become those of an influential avant-garde. However, implementing this approach is not so easy. Real understanding proceeds at its own rate, and demands precisely the "waiting on God" that contemplatives should but do not always manage. Any other approach leads, on the one hand, to occultism, and, on the other, away from the spirit of adventure within science.

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Subscription Rates *four issues per volume*

In Great Britain

Individuals who warrant the journal is for their own personal use, per volume, postpaid: £39
Libraries, research institutions and others, per volume, postpaid: £11.50.

U.S.A./Elsewhere

Individuals who warrant the journal is for their own personal use, per volume, postpaid: \$12.50/£5.4
Libraries, research institutions and others, per volume, postpaid: \$30.00/£13.00.

The subscription rates include a distributing charge of \$7.75 for postage and handling or airfreight to the U.S.A. and Canada.

Subscriptions may be sent to Gordon and Breach Science Publishers Ltd., 42 William IV Street, London WC2, England *or to* Gordon and Breach Science Publishers, Inc., One Park Avenue, New York, N.Y. 10016, U.S.A.

Subscription inquiries should be addressed to the London office.

APRIL 1974 issue

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Editorial

In this number, we publish the first of two articles by Peter Harper on “soft technology”. He shows how “soft” (also, using a key word in the counter-culture, sometimes called “alternative” technology) covers a wide spectrum, and he has collected references to a considerable body of literature. The articles bring out at least two underlying motifs. One is a reaction against advanced technology as such, since this is said to mechanize our lives, pollute the environment, and in any case may soon be ground down by an energy crisis. The other (not the same, but allied to it) is the social objection to large scale centralized units of production. More or less all the people and groups Peter Harper mentions want small-scale, self-managed units. Some want to see these as self-sufficient communes, though most realize that at any rate materials, and indeed some products, will have to be brought in from the outside world.

Our main contribution to this kind of discussion in *Theoria to Theory* has been through the series “Enhancing Life through Technology” initiated by Lewis Braithwaite in Vol. 3, No. 4. We are not Luddites, who would smash the machines in the cause of humanity. We believe that our society needs advanced technology, some of which can only be done in large scale units; and indeed that our applied scientists need to stretch themselves in *some* very high-powered projects, if they are to produce the incidental discoveries which can benefit the small-scale projects. “Soft” technology, and the less ideologically charged “intermediate” technology so important for developing countries, need a background of large technology—an efficient system of communications, for instance, which can require the launching of satellites.

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Published by
Gordon and Breach Science Publishers Ltd.

Peter Harper would not, we think, disagree, though this does not come out in these articles.

An illustration of the differences in approach is in Ivan Illich's *Energy and Equity* (Open Forum). This is a short book mainly about traffic and democratic living. The internal combustion engine, which allows some people to travel at far higher speeds than others, is of the devil, while the bicycle is the acme of technological progress in the cause of democracy. Yes, indeed we had better use our bicycles more, and cease to depend so much on cars. And let us press for cycle tracks, or the right to ride on one pavement, so that we don't get mown down. But if we follow Illich in thinking the proper speed limit for traffic 15 m.p.h. (though trains could be allowed to go at 25 m.p.h.) we shall probably end in an equity of rage against those who would certainly not keep to these limits and of exasperation at the jams produced by those who did.

In *Theoria to Theory* we have asked technologists, and especially engineers, to come up with imaginative ideas which both draw on technical skill and can enhance the quality of life in the environment. The article in *Theoria to Theory*, Vol. 4, No. 1 by John Walker, the Chief Engineer of Rugby Cement, on how certain materials could be transported by underground pipes, was an example. (This incidentally got mentioned in a debate in the House of Lords.) Some of these enterprises—John Walker's, for instance—would need to be on a large scale, and pretty hard technology at that. But such large and hard technology can provide a framework within which small, ingenious, locally based enterprises can grow. And if indeed an energy crisis develops on a large scale and cuts down our mobility, it will be all the more important that we should enjoy small-scale local enterprises. This will depend both on the ideas that go into them being interesting and on people being able to stick together over the rough stretches as well as over the smooth ones.

This connects with the other side of the "soft technologists' " concern—their opposition to large centralized units as such. The objection here is social rather than technological; they would be prepared to forego technological benefits for those of living and

working in smaller and more personal groupings. The power of large corporate groups certainly needs a long hard look, and this has been given it by John Kenneth Galbraith. His *Economics and the Public Purpose* (André Deutsch) has just come out, and completes the trilogy started in *The Affluent Society* and continued in *The New Industrial State*. He sees large corporations (which in this country can include the big Trade Unions) as the dominant feature of our society, concerned not so much with individual profit (the classical idea of the market) as with ensuring their own security, including that of all their members, and planning for the growth they believe necessary for this. They become islands of organized and privileged sections of the community, living in what he calls “bureaucratic symbiosis” with government on its executive side. So we seem to be moving towards a new syndicalism of a non-socialist kind. And the members of the legislature, the small firms or entrepreneurs working in the market system, and above all the ordinary citizens have little power against what Galbraith calls this “planning system”.

Here our present economic and political troubles, at any rate in England, may be producing a situation in which in fact we can take hope. Whatever else the recent election showed or did not show, the high polls (80% in some cases) did not show inertia. And the extraordinary cross-cutting balance of power between parties means we have now a situation in which the legislature—Parliament—indeed the vote of every backbencher, counts. There is also a general feeling that, what with the political situation, the economic situation, the energy situation, we shall have to re-think the ways in which we have got into the habit of living. One thing we are surely coming to see is that politics, economics and technology exist in a context of man and nature. This is how they were seen in the older traditions. Politics, following Aristotle, had to do with “the good life”; economics, again following Aristotle, had to do with household management, and this later became the management of the extended household of the state; applied science, which included technology (here following Francis Bacon) was “for the glory of God and the relief of man’s estate”.

Academic studies of these as “subjects” have gone away from all this. Politics becomes the study of power and “manipulation” (a favourite word in the literature); economics is tied to economic man (Galbraith shows that he is no longer a realistic image, though the teaching of economics goes on as if he were); and science is said to be value-free. The radicals of the counter-culture are saying that the use of these abstractions in effect supports the existing power structure, and they are right. But now the power structure (never perhaps as monolithic as they think) is showing cracks, and there is a wide feeling that politics, economics and applied science have to be brought back into a human context. To talk about “the good life” may have become embarrassing. Can anyone suggest a better name? And would any readers like to suggest ways of “enhancing life through technology” which need not assume rising standards of living and economic growth? (The series, initiated under that title, may be being turned into a book.)

* * * * *

In the Discussion that follows two members of the Editorial Board talk to John Taylor, Professor of Mathematics at King’s College, London. Ted Bastin has previously reported on how he has seen ways in which Uri Geller affects various objects. He was present along with John Taylor and Brendan O’Regan at Geller’s hotel last winter when some of the phenomena described in the Discussion took place.

Discussion

Uri Geller and After

JOHN TAYLOR (J.T.), TED BASTIN (E.W.B.), and BEN WINT (B.W.)

E.W.B. I gathered from seeing you on David Dimbleby's TV show, and from talking to you before that, that you were convinced by the phenomena of Uri Geller—that a genuine psychokinetic effect took place there.

J.T. Yes, except of course I didn't have complete control over what was going on, and I did not know what the past history was of the specimens that were involved, so I had to take at face value what I was seeing; but I could see no evidence of obvious fraud, and it was quite remarkable what was achieved.

E.W.B. And experience since then has built up your confidence in the phenomena?

J.T. Oh yes, both Uri Geller and working with children.

E.W.B. I'd very much like to hear a little more about the children if that's all right, perhaps a little later on. I remember on the David Dimbleby show, you made a remark which I recall because it leads us into the more theoretical part of our discussion; you said "here is matter being altered in its shape, and possibly in other ways; and since we know what the physical forces are which influence material objects, these forces must be in action in some way, and the problem is only to find them". I have thought about these remarks since then. Would you still say that, or would you wish to modify it in the light of what has happened since then?

Theoria to Theory
1974, Vol. 8, pp. 107-122

Published by
Gordon and Breach Science Publishers Ltd.

J.T. I can't see how I can modify it. Since metal is being deformed, then there must at some stage be a breaking of the bonds which hold the metal together in its normal form; so at some point there must be energy coming into the bonds between the metallic ions, and the metallic bonding of the electron gas flowing through the ions. In other words there must be a physical interaction going on. There must be a handing over of energy in some form into a form we know about. Somewhere along the track, it must end up in known energy, because known effects result.

B.W. Your use of the word "track" there suggests a kind of causality which may not be the most easy way to approach this.

J.T. Well, it's the only way a scientist like myself *can* approach it: through a causal chain, a sequence of events in which somebody starts to give energy out, or causes energy to be given out from something, and this energy then finally, after being transmitted through various media of various forms, ends up in a piece of metal or whatever it is. If I'm trying to do a scientific investigation, I myself could only work in that framework.

E.W.B. I think I'm on your side in expecting, in some sense, mechanisms—in expecting processes that take place one after the other. Where perhaps we differ is in the degree to which we should expect to have to look for quite other kinds of mechanisms than the ones we are so far familiar with.

J.T. Well, I'm not sure about that, because I think it's first a question of knowing how well, or how poorly, our present understanding of energy transference mechanisms will fit the data; and the actual data are not very clear—at least to me. You may have other experiences I don't know of which you can't fit using the types of energy transfer we have.

E.W.B. Let me deliberately parody: you might have been saying "since there's Geller here, and since we know that it is the presence of Geller, or somebody like him, that produces these phenomena, therefore there is something from Geller, possibly

from his head or from some other part of him, which is transmitted through the intervening space, and which you ought—to start with—to think of as electromagnetic or as ultrasonic vibration, or something like that”. That is a fairly crude form of the way in which a physicist ought to start thinking, until he is pushed out of it.

J.T. Yes, one has to go through that exercise pretty rigorously, because if one claims from the beginning that there isn't such a mechanism in action—that such a model will never work—one has to be able to justify that, because one is doing something very, very big.

B.W. If one starts like this, the question is, how could it focus on one particular bit of metal?

E.W.B. Could you leave that till a bit later—I wanted to take a slightly different tack? Physicists for donkey's years—certainly for a century—have been confronted in one way or another with alleged ESP phenomena, and, more or less with one accord, they have simply said these things cannot take place, and that we should not accept them unless the evidence was overwhelmingly strong, because they conflict radically with our concept of physical law. I think their insight into the situation was probably valid, but I don't go along with them in thinking of this “army of unalterable law” in quite the way they do; I think all sorts of other things are there as well, which we have got to fit in somehow. But I suppose the difference you refer to in my approach arises because I have been thinking about extra-sensory phenomena for a long time and trying to get a feel for the sort of things that do happen and the sort of things that don't happen. So, when I was first told about the Geller phenomena, although I didn't believe that they would be as reproducible as they turned out to be, still, that was about the limit of my incredulity. There was a background of thinking about these matters, which led me not to have the same approach as you described when you said that first we have to go through a very rigorous sequence of experiments to exclude the obvious kinds of effects using known

forces. Things like, for example, precognition, which seem to give very much the same *feel* as the Geller phenomena, and put us in a different universe altogether.

J.T. What do you mean by “feel”? Surely this is a non-scientific way of looking at things?

E.W.B. What I mean is that if you are trying to precognize something, it feels very much as though you can’t really distinguish it from what you are doing if you are telepathizing something, but I was deliberately alluding to personal experience or descriptions of other people’s personal experience, and I don’t want to make that point very strongly.

J.T. But there is a point here which you do raise, and which is one that I am very concerned about, and that is that you might divide the set of extra-sensory phenomena into two classes: those which obviously would contradict the known physical laws, if we accept that they do really exist, and those which don’t necessarily do so at this present stage. Now precognition I would regard as one that does contradict what we know today about physics. Its existence—its real proof—would be very very bad indeed for physics. The fact that I accept the Geller phenomena, the power of bending metal even at a distance, doesn’t necessarily mean that I stop being a scientist in the way that I am at present. But if I believed in precognition I would find it very hard indeed to be able to make predictions, and to set up the normal scientific method, in any sense that I can understand it at present. Similarly with a number of other things, for example immortality, though I think precognition is the hardest case. Even though we do know that scientific laws are not immutable, and certainly scientists now are working very hard on changing them all, there are certain things that are almost immutable, and one of the basic ones is causality; and causality is, I think, violated by precognition.

E.W.B. Yes, if you accept a background time or a block universe of any kind.

J.T. Of course; and the whole situation of travelling backwards in time, for example; I mean, time travel is a thing that

would destroy scientific method—for me; provided one can have any interaction with the environment one travels back to. And so science fiction stories which involve this are—to me—very dicey.

E.W.B. Yes, they are very dicey to me also.

J.T. But you have been talking about precognition as if you accept it, and surely that must itself strike very hard at the roots of any predictive process; because you are interacting, surely, with what will occur in the future if you can ever recognize anything in the future.

E.W.B. Well, I don't think it is relevant to go into my views about this.

J.T. I'm not sure; you see, you raised the question earlier about how we would differ as to how much we should keep to modern science or not—how much I go through the trappings of modern science to see if I can explain these things whereas you don't; but now it seems to me that even at the outset we may differ as to whether science can explain these phenomena at all, if you take precognition seriously; and I don't, or I am very much more cautious about it.

E.W.B. I take precognition very seriously, and I have to do some wild things to incorporate it into any scientific picture, but I am still absolutely certain that there has got to be an attempt at getting scientific pictures, not necessarily a unified scientific picture—that may be too difficult.

J.T. Well, I suppose we would have to be at completely opposite poles of the universe in this, because I can't even see how I can have a scientific picture if I can have closed acausal loops, or if I can send messages into the past which do affect it, or can predict the future by some method of interacting with it. If I can see it, then I cause small changes in it.

E.W.B. That's really making the impossibility of precognition a tautology then, isn't it? I mean, that if you insist that a thing is past and therefore laid down, then by definition it's immutable. If then you say that A being in B's past requires B being in A's future

and therefore “laid-downness” is reversible in time, then you get the logical impossibility of precognition. However, if you had partial systems which had, with however great difficulty to be reconciled, which is a lot more the view I take right from the atomic structures on up, then each could define its own time—to some extent. Then if you say to me ‘isn’t the Nautical Almanac an astonishingly predictive document?’ then I have simply to say “yes, it is”.

J.T. I think I would be more basic than that. I would say that even the very constructs that physicists have been building up including the whole of the explanation of the world from the elementary particles upwards to the nucleus, then to the atom, molecule and so on—that whole programme—would fall flat on its face. You’re negating that, and that is something I would be very loth to do.

E.W.B. I would want to do it nevertheless, but by having a different kind of build-up from the elementary particles. That programme might be *way-out*, but I don’t think it would be less *scientific* than yours. But could we return to Ben’s point?

B.W. Could you say which Geller phenomena you accept as be worth investigating? The metal bending?

J.T. Oh yes! The work I’ve been doing with little children has shown me that for the first time paranormal effects can be observed and investigated with normal equipment.

B.W. What about the teleportation? That is to say the moving of objects.

J.T. If you mean the movement of objects over short distances then I think that is possible to accept, though naturally difficult. But the more extreme form of movement through walls? I don’t know of any evidence that would make me really believe in that. I hesitate to accept this evidence because it would need so much energy in breaking down material and then building it up again. You’d need an enormous amount of energy; to move, say,

my watch through that wall to re-emerge in its present shape; a hydrogen bomb is minute in comparison.

E.W.B. Surely that last remark must suggest to you that perhaps you are pushing our usual way of thinking beyond its proper area of application. Let me put it this way—using a very general argument. You discuss the Geller phenomena in terms of energy; you may discuss them in terms of macroscopic fields and so on; but all these concepts were formulated because of certain regularities in the behaviour of material objects which were given a very elegant formulation in terms of the classical concepts which you were using. Indeed that is what the classical laws were: elegantly economical specifications of these regularities. Now in the case of the Geller phenomena the regularities have gone for a Burton, and therefore, it seems to me, the use of the concepts must be regarded as at best provisional and at worst possibly misleading. Certainly they should not be made the basis of elaborate deductions as you were doing.

J.T. If you are saying that we can't use the concepts of energy or of the conservation of certain types of particles, well, it is an attitude you can take, but you throw away so much that I would be loth to follow you. And then I don't know what the concepts you would be working with would be like, so I find it very difficult to make any scientific analysis of the situation. I prefer to use what I know about the world—concepts which have been proved and tested under careful gaze and probing in the laboratory, and see how far it will go. If we find out, using current concepts, that *in the end* we cannot understand the various phenomena of Geller, then I'll accept that we have to extend our concepts. I'm prepared to do that, but I don't yet see how these very recalcitrant phenomena which Geller is producing and which other people can now produce are to be matched and meshed in with the rest of science. In the past the recalcitrant phenomena of science have usually arisen from inside science itself, through the standard procedure of prediction and of finding predictions *being* violated. Now here is something coming in from outside with no predictions being clearly violated, and I would feel one had to do a

lot more work before throwing away the concepts that have been so successful.

E.W.B. I don't see that that is an answer to my argument about the sphere of applicability of the conventional concepts.

J.T. You asked earlier about how far we go with Geller and I don't think I fully answered you. There are the Stanford experiments on telepathy which I don't believe to have been linked with any fraudulent practices, so the telepathic powers of Geller are quite strong. Tests with Ingo Swann also show that he has certain powers with regard to energy fields. Then Russian work on abilities of this sort support this. Teleportation, however, I do have difficulties about. The ability of Geller himself, moreover, to go to a South American country and come back with a note, having left his body in the same room, as Geller mentioned in the Israeli charity concert, is the sort of thing that I would treat with great caution unless I had first hand evidence.

B.W. With regard, though, to the phenomena that you do accept you certainly *hope* that science as we now know it will explain it. Do you *expect* that it will?

J.T. I do not know whether it will yet. In a way I hope it doesn't because it's more interesting. Let me explain a similar situation over gravity where we can't in fact marry gravity with the theory of the elementary particles, and we are now having to change gravity. It is very exciting to be in a situation where you have to change a theory. You get a new one, and you get a better understanding of the world then because you go a bit further. So I'd be delighted if the Geller phenomena would shed new light on present science, it might involve all sorts of new forces which would explain a lot in the rest of the world. But I've got to go through the standard types of explanation first to see if they will work, and if not how best to modify them.

E.W.B. I'd like to pursue that question of explanation a bit. I wonder what an explanation of some of these things would really look like. Thus, suppose you found that there was some field which one was able to produce of some sort—any sort—which was

capable of influencing metal at a distance, in the right way to fit the Geller phenomena. Then the mere fact that one had found the *modus operandi* would not be equivalent to having explained the phenomena. You see, I am taking any original argument much further. For example, if Geller picks out one screwdriver from a set of screwdrivers and one of them whizzes across the room, or one of them bends and the others don't, or one of your specimens in a glass tube is bent and the other left unaltered, this is surely very unexpected isn't it. Ben may want to take over at this point because he thinks there are spirits about in a way that I would not like to have to postulate. But even I think you must have parts of a personality that are in some way spatially detachable and capable of acting—as you might say—as an extended body.

B.W. Isn't this focusing ability inconsistent with the whole idea of a *field*?

J.T. No, that's not true: it's very naive. A field is not a homogeneous extension of energy or homogeneous distribution of energy.

E.W.B. But now from the point of view of explanation, you are going to have to say that the field was a bit distorted so that it did these funny things at that particular point, then that is putting the answer in, isn't it, instead of deducing anything?

J.T. No, not necessarily. I think that the problem of explanation here is a very delicate and complicated one in that if it is a function of brain activity, then the nature of brain function must be heavily involved and we don't know enough about the brain as yet to get far on this question. But I would still feel that the brain constitutes such a complicated antenna, as an electrical system, that it is still possible that it can produce such distortions in field effects near it so that such phenomena as bending metal could occur. If one looks at what happens near microwave generators one sees very strange distortions. The field-effects can be very very inhomogeneous: there is not a homogeneous field. It is not as if everything was nice and smooth in the field. If you get bits of

iron—especially curved bits—then there can be very strange strong fields that can cause strange distorting effects.

E.W.B. Lightning strikes can burn out corners in metallic conductors: do you mean that sort of thing in a much more complicated way?

J.T. Much more complicated. If you take, for example, a mesh of wire and curl it up, and apply an electromagnetic field to it, then the field inside that object or nearby it, is very different from what you would get just with a plane sheet of wire. So distortions can easily occur in fields. And if you take what is coming from our brains with their very complicated interconnected array of nerve cells . . .

E.W.B. Well, sometimes there is almost what you might call an “intelligence effect”. For example in Arthur Young’s house we had the bowl of a silver spoon which Geller had already broken off from its handle lying on a tray of specimens in the far corner of the room. A moment later I found it lying by itself on a coffee table just by me. None of us knew how it got there. Now the curious thing was that it had been pinched together, for all the world as though by powerful fingers. (I don’t think anyone could have done it with a pinch between finger and thumb because it was a strong spoon and anyway the edges were rather sharp and could have cut into you. However, it was difficult to resist the conclusion that the distortion was one which a person might have thought of causing in a simple manual way. I would feel impelled to say that there was some detachable part or extendable part of Geller or someone else which was capable of doing this. Such a description would make clear how little I knew whereas to say that it was done by a field which had the right distribution to produce the effect of a finger pinch would be rather like asserting that you had solved the problem when you had written in the answer.

J.T. We may be using different words for the same thing at the level of explanation we are using now, but I trust that sooner or later this explanation through field effects can be given some

teeth in that one can measure the distorting couples on metal or plastic or whatever it is; one can find out the mechanism which allows the energy to be fed in; and why it causes distortions in the way it does. One could perhaps make reproducible experiments with antennae that emit similar radiation, and which would reproduce at will these phenomena that human beings are producing now with much more difficulty because they don't have such control. I would take personality out of it, and why shouldn't I, because the personality is eliminated in just the same way when computers are programmed to play games and take decisions. It takes the thought, or the soul, out. So I wouldn't agree with you when you say that the field effect is ducking the issue.

E.W.B. Have you ever been able to detect the fields which you are postulating?

J.T. To a certain extent, though that part of my investigation is still under very rapid development.

E.W.B. I think there are two steps you have to take. The first is providing the *modus operandi*: that's a very important thing to do and I'm with you in wanting to do it. The second, though, is something over and above that which is explaining the apparent extension of personal action which seems to take place.

J.T. I'm not sure how to quantify that.

E.W.B. Nor am I, but that's not a reason for pretending it is not there. I don't like it any more than you do.

J.T. I don't really see that as a problem. The things I've *seen*—spoons being bent and distortions to various objects—are not necessarily controllable. In any case what is a personality effect? When you get down to quantifying that, to me it comes down to activity patterns in the brain. We have to ask how these activity patterns can emit radiations in various forms that will cause distortions.

B.W. It seems that the more striking personality effects are outside the phenomena that you, personally, accept. The spoon being pinched up is a case in point.

J.T. Did you see it being picked up and moved?

E.W.B. No. Some people have seen things take off. I didn't even see the spoon land but I was quoting it as an example of seemingly intelligent activity. (Not very intelligent you may say.)

J.T. Kulagina wills things to move: what's that to do with personality?

B.W. We seem to need to speak of personality when they seem to move in the sort of way that a person would cause an object to move.

J.T. I still don't see the problem.

B.W. If a teapot is lifted three inches off the ground one may think there is some field at work: if a teapot pours out three cups of tea one after another, then that is more like a personality at work.

J.T. You could build a machine to do that. I still don't see the problem.

B.W. In the case of Geller's effects such machines weren't there; if you say there may have been fields of force having the same effect we might hope you were right, but I don't know whether it helps much to postulate "personality shaped" fields of force.

E.W.B. Machines in general, as distinct from specially designed machines which presuppose the answer, do not produce these effects indicative of personalities; they affect things either uniformly or in a random way.

J.T. I'm afraid I certainly cannot agree on that, unless games playing and decision making are to be called either homogeneous or random.

* * * * *

B.W. Did your investigations with other subjects—the children and older people who found they could do what Geller did—extend the range of phenomena at all?

J.T. Only in certain details. Geller seems to be about the most effective so far.

E.W.B. One of your little girls bent an object inside a glass tube didn't she?

J.T. She has apparently bent it back since then, so it's not in the most interesting shape as you might say. I didn't see it in its bent shape.

E.W.B. Geller hasn't done that—to my knowledge.

J.T. Geller did bend a strip of wire inside a wire mesh tube—indeed you were there in that hotel room

E.W.B. Yes. Then there was that extraordinary incident when you had brought a geiger counter to try to detect energetic things going from Geller. What in fact happened was that Geller held the tube of the counter and by a prodigious and quite extraordinary physiological effort made the instrument record something like 200 times the background radiation. The thing was going click, click-click . . . from the odd cosmic ray, and he made it fairly roar. Since then I've done another experiment with Uri using a Schmidt apparatus. You have a ring of lights—one of them illuminated—and atomic events are made to trigger its movement one way or the other. Some subjects can get it to go predominantly in one direction or the other. When Geller tried to do this he slowed it right down—a thing that this machine is not meant to do, and that I have never seen it do. Later on it stopped altogether, and he started it again by concentrating on one of the lamps.

J.T. I'd like to use that apparatus on one of the girls I've been working with.

E.W.B. It was lent to me by John Randall. I expect you could use it but I'd like to see what the girl does too. Both these experiments seem to suggest that the atomic level of phenomena are more accessible, even to Geller, than more macroscopic things. We know Geller deals with watches and clocks but his effects with them are sporadic and wayward. The atomic things do seem to be more

susceptible. There was also the case of the remarkable flashing of the phosphor in the dark room, you remember, which is perhaps an even stronger piece of evidence suggesting the same thing. To me, and I think to David Bohm; this is a happy kind of thought. I wonder how you'd react?

J.T. I would have expected this in a way, because it would require less energy.

B.W. That's if you can concentrate the energy.

J.T. That's true, but again, I go back to the brain as a remarkable area.

E.W.B. You put a lot in there. You expect a lot of rabbits to come out of that hat.

J.T. There are a lot of rabbits in there already.

E.W.B. I get almost Taylorish when I get to the atomic level because I hope that is where the regularities are to be sought. I think we are going to have an uphill task finding them at the macroscopic level.

J.T. Regularities of what?

E.W.B. Regularities of any sort upon which we can build physical theory—the regularities upon which the physicists originally did build physical theory. I put this argument in general terms earlier on and its particular relevance here is that unless we find that Geller does things reproducibly then we are on weak grounds in using any picture—including the established one. I was a bit worried on those lines when you talked about the energy conservation conditions under the assumption that they would apply as usual in the case of the Geller phenomena. Now if we find that—say—there is always a loss of mass of 10% when something is broken or anything regular like that then we are in business, but we need such regularities before we can start.

B.W. Would you, John, be expecting to find some connexion especially between the head of the subject (Geller, for example) and the apparatus? Have you noticed anything like that?

J.T. Nothing startling, no.

B.W. Have people tried while being juggled around?

J.T. It's difficult enough when they are not being juggled.

B.W. I think that it might be easier to think of something emanating from the whole body than from the brain. The larger the base area, the more singularities you can get in the field.

J.T. I am glad to see you thinking of causal chains here.

B.W. This goes against physiology though. You'd expect hidden nerves to emerge.

J.T. I was thinking of the brain as commanding the energy release: whether it is the true source of it I don't know. The reports of Karger on the Phillipine healers—if one accepts that—suggest strong electric fields, and I wouldn't put them completely out of bounds for normal explanation.

B.W. A fair amount of clairvoyance might be involved too, to "see" the precise location of the bits of metal one wants to work on. In that case it would not be a one-way field; the brain would be getting information as well as putting out energy.

J.T. I assume that that is what is happening in telepathy.

B.W. I think it's a pity that what you have seen doesn't force you out of a relatively conventional explanation.

J.T. Why?

B.W. Because what I've been told of does force me out of it. Teleportation over the length of a room for example, or from one room to another. S.R.I. have a film of a watch falling onto a table which is alleged to have been teleported.

J.T. I have seen that film, but it's very difficult to say precisely where the watch came from. I wouldn't regard that as good evidence. But I could come to grips with things that move about in a single room. I'll have to see objects go through walls, myself, with decent film of it, before I face up to that one.

E.W.B. I could describe to you three or four incidents where I believe objects passed through doors or cases of one kind or another, but none of these things took place under conditions of the sort of rigour that they imposed at Stanford Research Institute. I accept this evidence as showing that some more fundamental relationships exist than spatial position and possibly temporal position. I understand that this is a big step to take and it is interesting that you draw the line where you do. However, you certainly realize that there are going to be a lot of scientists who will draw their lines so as to exclude what you now accept as factual.

Transforming activity

JOAN MILLER

Mankind as a whole seems to be awakening to a new consciousness of itself. This is a gradual process, and every advance in the expansion of consciousness in general must depend on the activity of individual human beings. The reason for this is that any genuine widening of consciousness has to start with reflection by an individual on his experience, "experience" here being taken in its widest sense to represent the interaction of the individual with his environment. Thus the expansion of consciousness is an activity which can only be carried out by self-conscious beings, people, not computers or other machines. While several people may join together and assist each other to widen their consciousness, and often co-operation between people is essential for any advance in consciousness for any individual one of them, in the final event no real advance can be made without people as individuals, each taking the next step forward. When they do this they find themselves engaged in transforming activity, and this is another activity which can only be carried out by self-conscious beings, because only they are capable of practising, what I intend to call, "self-abandonment". Self-abandonment is the factor upon which transformation hinges, and it distinguishes the activity as being creative, and not merely building or manufacturing.

I wish to proceed by examining the relationship between self-consciousness and self-abandonment, and in doing so I hope to show that it is an energy generating relationship, which in fact is the source of all creativity. Biological energy is derived from the physical organism as interaction takes place between its parts, and

Theoria to Theory
1974, Vol. 8, pp. 123-142

Published by
Gordon and Breach Science Publishers Ltd.

between the organism and its environment. Similarly on the psychological level energy may be released by mental interaction, particularly by the mental activity involved in the conscious dialectical relationship which may be formed when a self-conscious individual voluntarily performs an act of self-abandonment. In physical life it is accepted that dying is a condition of life; so also in the mental life of a human being there must be dying for life to emerge, and this is represented here by what I am calling "self-abandonment". Physically, the kind of dialectic I am referring to is observed as an interaction between tension and relaxation in the organism, for example, muscles contract and relax and give rise to energy. Mentally, self-consciousness and self-abandonment represent a contraction and relaxation of the self, and their interaction also gives rise to energy. Although I cannot specify exactly what this energy is, I think it is something which can be transferred from one thing to another, and that the presence of such a thing can be detected by its effects. One of these effects, as far as an individual is concerned, is that he is able to move to a deeper level of experience, by which I mean, he is able to interpret a wider range of experience.

The relationship which forms the basis of the activity demands first that the self should be developed, and then that it should be abandoned, and an important element is the degree of consciousness of the individual concerned. This is so because the more conscious the individual is of himself and what he is doing, the greater is the amount of power available to be released. When an individual freely and consciously surrenders himself for the sake of something outside himself, the opportunity presents itself for self-consciousness and self-abandonment to act as the two terms of a relationship which may release power which can be used to transform the individual, and to transform his environment. It is not suggested that the forming of such a relationship is a common experience. An experience of this kind requires certain necessary conditions to be fulfilled before it can take place. For one thing, it depends on a real degree of integration having been achieved by the individual concerned, and many people do not have the ability to do this because of inherent incapacities of a physical or mental

nature. Also lack of training in a disciplined way of life, and ignorance of the issues involved in living creatively, prevent others from entering into the experience which may be being presented to them.

There is another factor which restricts the number of people likely to be engaged in transforming activity. It is the natural reluctance of human beings to act unless they consider the outcome, ultimately at least, will be in their own interest, and a genuine act of self-abandonment cannot guarantee this. If an individual is to perform an act of self-abandonment in a responsible manner, the decision to do so cannot rest solely on his own inclinations but must serve interests outside himself. Obviously, if self-abandonment is to be genuine, the impetus for the act in any particular case should not come from the individual himself. If it does so come, in some way, the act is in his own interest, and it is clearly contradictory for a self to choose to deny itself for its own reasons. A quotation from Teilhard de Chardin might serve to illustrate this point. In *Le Milieu Divin* when talking about diminishment, Teilhard says it is important that the initiative for the practice of the forces of diminishment should not come from the individual himself. He says

Man can and should make use of penances of some kind to organise the hierarchy of, and liberate, the lower powers within him. He can and should sacrifice himself when a greater interest claims him. But he has not the right to diminish himself for the sake of diminishing himself. Voluntary mutilation, even when conceived as a method of inward liberation, is a crime against being, and Christianity has always explicitly condemned it.

It is often said that a man must lose himself, in order to find himself, but almost as often it is overlooked that in order to carry out this procedure he must have a self to lose. This fact is the subject of another remark made by Teilhard,

You must develop yourself and take possession of the world in order to be. Once this has been accomplished, then is the time to think about renunciation; then is the time to accept diminishment for the sake of being in another.

Each individual has a responsibility to develop his own ego, as far as he is able, and in doing so he discovers his personal identity.

This is not an easy task and when some measure of success has been achieved, the hard-won "self" is never relinquished without a struggle. This process is referred to sometimes as "dying" because, indeed, it does involve death, usually many deaths, for the self, and it is a painful process.

The process of self-abandonment is akin to dying in that inherent tensions can only be overcome by a genuine giving up of things held precious, and this is the ingredient which enables the activity to have creative possibilities. Being creative is not the same as building or constructing, it is more like growing something, and a law of life seems to be that things have to die in order that things may grow. The creative element in the development of the self is sometimes marked by a phrase like "the old self dies, and a new self is born", and while it may be true that the actual significance and meaning of such a phrase is obscure, or at any rate difficult to ascertain, its common use in ordinary language at least indicates a recognizable phenomenon. What is more, it is a phenomenon seen as a change, and the change can be likened to dying. However, while the "dying" is important, it is necessary to note that "dying" in this context does not refer to every kind, and all, dying; some can be constructive, and some just destructive. Here, the Psalmist's observations about those who "going through the vale of misery, use it for a well", are relevant; it is not all in the vale, but those who use it, who are creative.

The conclusion may be drawn, therefore, that a characteristic of the relationship between self-consciousness and self-abandonment is that the abandonment should be a conscious giving up of a self, and not just a passive acceptance of something which cannot be avoided, or unconscious involvement in such an event. The insistence on self-consciousness is sometimes questioned because, it is maintained, persons may perform acts of self-abandonment unconsciously or unknowingly. This view is often expressed by those who confuse the concept of self-abandonment with what is commonly called "innocent suffering". It cannot be denied that persons may be forced by circumstances into acts of self-abandonment, or into what may seem to be such acts, against their will, but involuntary acts of any kind whatsoever are not the subject of

the present discussion. The emphasis on deliberate, conscious acts, may appear to contradict a point previously made that the invitation to perform an act of self-abandonment should not be sought, nor should it be self-initiated. But there is no contradiction here, as the invitation and the act itself are two separate events. The position is that having been confronted with a situation in which an act of self-abandonment is appropriate, the individual then chooses freely and voluntarily to participate in it.

In these pages the sense in which "self-consciousness" is being used, would perhaps be better expressed by the term "self-awareness". At the outset, self-awareness has to be distinguished from self-centredness, and it has to be pointed out that the latter, in fact, effectively prevents self-awareness because it obscures and distorts the external factors which are essential ingredients in any true self appraisal. Self-awareness involves the establishment of relationships with the external world, or to put it another way, the individual finds himself in relation to others, and the quality of the self found actually depends on what the individual concerned does with his relationships. This is to say, the person which emerges from this complex of relationships, the kind of person an individual is, depends on how he interacts with his total environment. In its initial stages the human organism reacts blindly to its environment, it is "determined" by it, and by the time the individual starts to become aware he is already in the grip of a host of pre-conceptions. These pre-conceptions are due to a number of factors. First, the human condition, i.e. the composition of the physical body, determines the sense data and other stimuli the human being receives. Then, his social status, his immediate environment, his family, determine his initial assumptions. These assumptions are later affected by the kind of education the individual receives, by the type of work he does, and by the culture pattern in which he lives.

Thus the individual is involved in pre-conceptions of one sort or another whether he likes it or not, or whether he recognizes them or not. He cannot escape this condition, and the task of becoming self-aware begins when he starts to train himself, by a disciplined use of his intellect, to recognize and appraise the pre-conceptions

which he is in fact holding. Becoming free, responsible individuals is the process of making conscious the unconsciously adopted assumptions which envelop unthinking man, and exercising the will about them, instead of being determined by them. This is to say that becoming free requires that the individual should become aware of the *a priori*'s which he is in fact adopting towards his environment, so that he may reject them if they are unsatisfactory, integrate them if they are satisfactory, and, if possible, extend their range over ever increasing fields, so that experience may be more fruitful.

No individual can carry out this programme without the expenditure of much time and effort, and often it is unpleasant as it includes the bringing into consciousness of all sorts of suppressed elements in the unconscious. Unless this is done, no individual can hope to integrate the many "selves" he comes upon when he begins to be self-conscious, and the measure of his success is how far he is regarded as an integrated person by other people. The process of making conscious the unconscious includes a requirement that the individual should check his own ideas against the environment, in its widest sense. If he does not do this the individual is in danger of living in a private world of the imagination, instead of the real world. It seems likely that few individuals, if any, can do this thoroughly, so the important thing is that each individual should recognize that his *a priori*'s are what they are, and allow for the fact that they might be wrong. Furthermore, he should choose them, if possible, and not have them thrust upon him; some he must have, and must act on, if he is to operate at all, but unless he becomes aware of them, the individual has no real opportunity for choosing what value-judgements he will make, and what qualitative values he will recognize.

The value-judgements he makes, fundamentally influence the kind of attitude an individual takes up in any given situation, and the attitude defines the type of relationship he will engage in, with people and things, in that situation. Sometimes it is difficult for an individual to decide what attitude he should adopt, either because he cannot recognize the situation he is faced with, or because he

cannot resolve the tensions and conflicts which are inherent in the decision. For instance, tensions often occur because an individual wishes to treat other people in exactly the same way as he treats physical objects. In the physical world he can manipulate objects, he can use them, bend them to his purposes, but if he tries to deal with people in this manner, it is not unusual to find something has gone wrong.

The rise of consciousness, on which the development of self-consciousness and self-awareness depends, involves the separation of subject and object, and this brings with it a sense of separation, alienation, for the individual. The state of separation is a fact of human existence, and it is in becoming aware of this state that the individual self begins to be born, and it grows as it tries to overcome the problems raised by "separateness". The problems are usually most acute in the field of personal relationships. Separation of the individual from the physical world is commonly recognized in the phrase often used to describe it, "the external world", and individual human beings are clearly distinguished from each other by the fact that they occupy separate bodies. However, the fact of physical separation is less important where personal relationships are concerned than the fact that individuals are often separated from each other by their ideas, about themselves, about other people, and about the world. Every individual has to seek to overcome his separated conditions by establishing right relationships with what is outside him. If he does not do so, he lives in a private world, from which it is very difficult, and sometimes impossible, to communicate with what is outside.

If he is to build up a true picture of himself, and to become self-aware as opposed to self-centred, the individual has to fix his attention on external "objects". These may be persons or things, or goals or purposes, and it is in relation to the objects he chooses that the individual develops his self, partly by measuring himself against them. Obviously some "objects" are more important than others in this respect. It may not matter much whether an individual focuses his attention on this or that physical object, any number of which might serve his immediate interest (e.g. there is little significance in the actual item of food chosen from among

several to satisfy hunger, if any one would do), but the type of goal or purpose chosen to direct his conduct is always important. Goals and purposes affect the quality of each individual self, and determine its character.

Although the actual fixing of attention to an object is an act of will, it is the intellect which directs the will towards the object. The intellect is the means whereby the individual can consciously fix his will on, attend to, concentrate on, an object, because it is the means whereby he isolates it from himself, and identifies it. In performing this function the intellect acts as a kind of "censor" at the threshold of consciousness, its purpose being to exclude any consideration which does not serve the individual's immediate interest. As it were, it puts the individual in "blinkers" so that he can concentrate his attention on a single goal or object, and by doing this it prevents a diffusion of energy, and increases the ability of the individual to learn and know about the object. This use of the intellect enables the individual to discipline his mind, and to prevent it from wandering aimlessly, a habit which seriously hinders the acquisition of knowledge. The restrictions imposed in selecting and concentrating on a goal help the individual to control his experience, by channelling his energies into defined directions and not allowing them to be dissipated. The inhibiting action of the intellect permits the individual to stand apart, and to look at, and think about, himself and what is outside himself, and in doing so, he finds himself, and increases his capacity for understanding his environment.

Yet, while the restricting activity of the intellect is invaluable in enabling the individual to learn about himself and the world, sometimes it can be an obstacle to further progress in learning. At a certain stage the restriction becomes prison-like. The process of the development of the ego and the individual self is such that, inevitably, the individual turns in on himself, and becomes blind to many features of his environment. The individual can only rectify this by abandoning the self he has so arduously contrived, a process which requires him to remove himself from the centre of the picture in his relationships with the world in general, and other people in particular. In practice this means that the individual has

to lay himself open to be acted upon by others, instead of taking the initiative, and to be prepared to consider ideas and actions which he would not, anyway in the first instance, allow into his experience. Almost always such activity involves conflict with the individual's own desires, and it produces tensions because it requires him to respond to stimuli which he has previously rejected. The activity is inclined to be painful and terrifying also, because the individual does not know, for the time being, how to respond to the new stimuli, he has to form a new "self" in order to do so.

Abandonment really means that an individual in certain circumstances gives up his own will, and is prepared to follow a course which is not his own. This is described as a giving up of the self, as it is through his will that the individual expresses himself, but, in fact, the self has a positive part to play in the procedure, as the pattern of the self formed by any individual, somehow moulds and directs the energy released when it is abandoned. If an individual does not allow his energies to be dissipated, but encourages them to converge towards a centre, when the centre is cracked, like the atom, power is released. In an individual human being the ego holds the ring of interior power, and the ego has to be shattered to release the power. This process is experienced as an act of abandonment because it involves a movement away from the withdrawn, jealously guarded self, towards participation in the world and with others. Such a movement balances the withdrawal and detachment required for the formation of the interior self, and seems to oppose it, which is why the operation can be described as a "dying to self".

Self-abandonment has to be distinguished from self-abnegation, with which it is sometimes confused. The latter is to be deplored and, because it stems from a form of pride, is very self-centred. Self-abandonment is an act freely performed by an individual, conscious of himself, but not self-centred. It is difficult, if not impossible, to identify this act objectively, but it is a self-authenticating experience, in that the individual concerned knows that it has taken place and realizes at least some of its consequences. Although the external manifestations of the experience

may be slight, and the individual concerned may not be able to describe his experience adequately, he knows nevertheless that something has happened, and he is changed, or things are changed, because of this happening. The individual is aware that there has been a re-orientation of his previous pattern of life, and he is not quite the same as before. Generally, he notices also that the change is not the result of a continuous development of his past experience, but rather involves a leap or a jump, and not a step, to the new stage. It is not surprising, therefore, that when the individual tries to analyse his situation, he becomes aware of radical discontinuities in his experience. There is no apparent connection between his states. Yet despite the difficulties of explanation, the individual knows a change has taken place and things can never be quite the same again for him. It is true that any claim to have changed must be reflected empirically in the individual's behaviour if it is to have any validity, and that other people may well ascribe any behavioural changes they observe to a variety of causes, which may not include the one specified by the individual concerned. However, empirical observations are not of first importance here. Basically the experience must be a subjective one, and the responsibility for identifying it must lie with the individual; the fact that the possibility of error is so great, only increases the responsibility.

An illustration of this kind of event is to be found in *The Glass Bead Game* by Herman Hesse. During a discussion with the President about the spiritual experience called "awakening", Knecht says,

What gives these experiences their weight and persuasiveness is not their truth, their sublime origin, their divinity or anything of the sort, but their reality. They are tremendously real, somewhat the way a violent physical pain or a surprising natural event, a storm or earthquake, seem to us charged with an entirely different sort of reality, presence, inexorability, from ordinary times and conditions. The gust of wind that precedes a thunderstorm, sending us into the house and almost wrenching the front door away from our hands—or a bad toothache which seems to concentrate all the tensions, sufferings, and conflicts of the world in our jaw—these are such realities. Later on we may start to question them or examine their significance, if that is our bent; but at the moment they happen they admit no doubts and are brimful of reality. My "awakening" has a similar kind of intensified reality

and consequently the individual experiences, if only temporarily, a loss of personal identity. However, if the act of abandonment is to be creative, it is necessary to distinguish between what might be called "conscious" and "unconscious" oblivion. This might seem to be a peculiar distinction to make, but some way has to be sought for distinguishing between the oblivion resulting from a voluntary giving up of self, and a primitive type of unconscious merging with the herd. Oblivion may provide a sure identification that self-abandonment has taken place, but it should not be regarded as an end in itself, a sort of Nirvana, a blissful, passionless, unmoving state, which is to be desired. Such a state is less than human, because it diminishes individual responsibility, and lays the way open to magic.

By definition, if "oblivion" is to be conscious, the individual will be aware of something. Far from sinking into a deep oblivious sleep, conscious oblivion seems to involve the individual in agony and passion, often in an extreme form. Suffering in one form or another is the inevitable outcome when an individual deliberately undertakes to give up his self, fully aware of his responsibilities, and allows himself to be acted upon, moved by, others. When he abandons himself in this manner, the individual voluntarily puts himself into a situation which he cannot control, and this is not an act which he can undertake lightly; he has become only too well aware of the benefits to be obtained from being able to control, at least in some measure, himself and his environment, and of the price he has had to pay to achieve some degree of control. The surrender of himself in this sort of context will seem a form of death, and the act will be accompanied by agony and desolation. Insofar as what has to be given up is something highly prized, it is inevitable that the surrender will be painful. When the individual experiences it primarily through his emotions, intense agony, with a physical base, is usually the result of the tearing away of something to which he is attached, and perhaps clinging to; when the awareness is primarily experienced through the intellect, then mental anguish derived from being bereft of all that was previously understood and known is the result, and the individual feels stripped, alone, desolate.

To the extent that he is conscious in this sort of situation, the individual tends to find himself wandering in "a barren and dry land where no water is", and in this uncharted country his natural reaction is to try and relieve the desolation and suffering. But if his surrender is to be real and bear fruit, the individual has to try and restrain himself from taking the initiative in pursuing courses of action which may afford him some relief. Inevitably he will attempt to make his situation less painful, and such attempts may reduce the intensity of the suffering, but they will also spoil any act of self-abandonment because they divert energies, which should be concentrated on that act, to acts of self interest.

It is apparent that suffering of some sort is inescapable when the full significance of the type of activity under discussion is appreciated. The emphasis in self-abandonment is not so much on the individual giving himself, as on the individual eliminating his self, so that it may be used by others. This activity seems to the self to be negative and not active, as the individual has to act "against the grain" and restrain himself from trying to interfere with events. Awareness of this factor in the situation is one of the characteristics of a state of conscious oblivion. An aspect of consciousness is present in so far as the individual knows what he must not do, while the fact that he does not know why, or what is being achieved, is an aspect of oblivion. Other parts of the overall activity which may be called "conscious" are, (a) the responsible, voluntary acceptance by the individual of an act of self-abandonment; (b) awareness of the general situation, and (c) knowledge of the self to be abandoned, i.e. consciousness of what one was. Oblivion enters the picture with a loss of the sense of self, i.e. one does not know what one is, or will be.

Any actual act of self-abandonment, from an intellectual point of view, must be non-cognitive. This is so because at the moment of performing such an act the two separate movements, self-consciousness and self-abandonment, have to be held together and to fuse into one event. When this happens, there can be no "knowledge" in an intellectual sense, because intellectual knowledge requires the self as subject to be removed from the object of its knowledge, and in this case the self is acting as one whole, in a

manner which is not self-directed. The individual becomes aware of the act from an intellectual, cognitive, point of view, as one movement or the other, and the tension between these two movements is a source of energy. One reason why the individual cannot experience cognitively both movements together, at one time, is because cognitive time is linear and as soon as he starts to think about his act the movements are sorted out discretely, first one, and then the other. In such a situation the individual experiences his life as a series of discontinuous events, in which he becomes aware of, what might be called, "gaps" in his experience.

Gaps reveal themselves in the self-conscious life of an human being when life appears to him as a series of seemingly irreconcilable states. This is to say that when reflecting, the individual experiences his life not as a continuous whole, but rather as the playing of a variety of roles in different contexts, which often appear irreconcilable with each other. This is a strange, disquieting experience which gives rise to tensions, but it stretches the individual, and the tensions involved may engender energy and life. By contrast, the more untroubled existence of adopting one role and sticking to it, or perhaps of confining oneself to a set of compatible minor roles, results in life becoming dull and routine and unproductive, and the individual tends to sink into inertia—a form of death. The mere fact that an individual becomes dissatisfied with his uneventful, uninteresting life, and kicks against it, is no guarantee that it will be improved. Unless the individual has accepted challenges to participate in varying experiences on previous occasions, his reaction against his present existence may be destructive only, because he will have no alternative experience on which to build a new pattern of life. By restricting his experience the individual restricts his growth. Consequently, if he wants to grow, an individual should not refuse experiences that life offers him, because he cannot reconcile them with what he thinks is his pattern of life. He should accept them and use them to develop a wider pattern. It is by allowing outside events into his inner experience, and by trying to integrate them into his pattern of life, that the individual grows into maturity.

It is not surprising that when the individual becomes aware of

discontinuities in his experience, he is bewildered by these discontinuities, and the lack of knowledge of himself that they reveal. As a consequence, the individual is faced with the necessity of undertaking a radical re-appraisal of his life, and this is especially difficult because, when in these situations, the individual concerned generally experiences life as being unstructured, formless. It is essential that the individual should find some way to maintain his individuality, if he is to be enriched by his experience, and not overwhelmed by it. He has to find something to replace his loss of ego, a "centre" around which his activities may revolve. Jung has remarked on the importance of the possession of a "secret" for the formation of individuality. By its nature, a secret could well fulfil the function required in the present context because it cannot, and must not, be communicated, and so it isolates the possessor of the secret.

Jung says,

It may be that for sufficient reasons a man feels he must set out on his own feet along the road to wider realms . . . Like the initiate of a secret society who has broken free from undifferentiated collectivity, the individual on his lonely path needs a secret which for various reasons he may not, or cannot, reveal. Such a secret reinforces him in the isolation of his individual aims.

Jung comments on the fact that there are no precepts to guide the individual venturing into uncharted regions, when he encounters an unforeseen situation, for example, a conflict of duties. He continues,

But if a man faced with a conflict of duties undertakes to deal with them absolutely on his own responsibility, and before a judge who sits in judgement on him day and night, he may well find himself in an isolated position. There is now an authentic secret in his life which cannot be discussed—if only because he is involved in an endless inner trial in which he is his own counsel and ruthless examiner, and no secular or spiritual judge can restore his easy sleep. If he were not already sick to death of the decisions of such judges, he would never have found himself in a conflict. For such a conflict always presupposes a higher sense of responsibility. It is this very quality which keeps its possessor from accepting the decision of a collectivity. In his case the court is transposed to the inner world where the verdict is pronounced behind closed doors. (*Memories, Dreams, Reflections*. p. 318)

Nevertheless, whether he possesses a "secret" or not, every individual involved in an act of self-abandonment finds himself

plunged into an inner turmoil. His self as a whole, revolts at the position in which it has been placed. This is to be expected when it is remembered that self-abandonment stems from a deliberate undertaking to give up the self. Such an undertaking strikes the self as unnatural, to say the least, and from an intellectual point of view it can hardly be grasped. Almost as soon as the decision is made, the self starts to fight back and refuses to be given up. The peculiarities of the situation are very difficult to describe but further analysis of the nature of the activity does throw some light on the kind of difficulties involved. A deliberate undertaking always relates to a particular movement of the will in a particular situation, and the will needs to be constantly strengthened to maintain the decision in that situation. The constant strengthening of the will is necessary because although a particular act of self-abandonment in a particular situation is the subject under discussion, in practice it is not possible to isolate the incident in this way. A particular act takes place in the present, almost in an instant, while the situation extends forward in time, so from a practical point of view this act involves a continuous process of decisions to surrender until the act is fulfilled. Such a process is especially necessary in cases of self-abandonment because the individual has to take into account the demands of his intellect and emotions, as well as his will, and these usually seem to lag behind the will in these situations, and consequently experience the act as repugnant. The intellect and emotions take time to work out the implications of the act of will which has been made, to assimilate, it and to understand it.

At first the intellect and emotions revolt strongly against what the will has done. They seek to urge the individual to withdraw from self-abandonment, and also, when they consider what is being done, they reveal new aspects of the situation which the will had not bargained for when making the original act of self-abandonment, but which have to be brought within the scope of the act if it is to be complete. It is possible for the individual to withdraw from self-abandonment at any moment, and the intellect and emotions exert strong pressures on the will to make him withdraw. They work powerfully and insiduously, and at least at

the beginning, always with some success, and when the individual finds he has withdrawn from self-abandonment, the decision to engage in the activity has to be renewed, if the act is to be completed. However, if this renewal takes place, it is as if the self-abandonment had been continuous, with the additional advantage that, in fact, the will has been strengthened in its original resolve, and the act has been deepened by including within its scope a wider range of experience. An act of self-abandonment is complete when the individual discovers he is an integrated self again, i.e. a person in whom the intellect, emotions and will, are at one.

The kind of experience being discussed is bound to be intense and overwhelming, so it is not surprising that for its immediate duration the self seems to disintegrate, and at the odd moments when the individual tries to be rational about himself, he is inclined to think he has lost his sanity, gone crazy. He is certain that anyone else would think him mad, if they knew what he was experiencing, because one thing that is clear to him is that, for him, the line between what is generally accepted as real, and what he is now experiencing as real, has become blurred, to say the least. Indeed, unless he can latch on to a strong personal discipline which will enable him to act "normally" in his daily life, other people will think he is mad.

An account of the experience of a man who did lose his sense of self, and was, in fact, put into a mental hospital, is reproduced by R. D. Laing in his book *The Politics of Experience*. The chapter, "A Ten-Day Voyage", is an edited version of experiences undergone by a sculptor, Jesse Watkins, during a "psychotic episode" which lasted ten days. Watkins remarks that he had felt that he had died, and Laing comments,

He had not died physically, but his "ego" had died. Along with this ego-loss, this death, came feelings of the enhanced significance and relevance of everything.

Although other people thought he was mad, Watkins felt that his experience represented a stage that everyone had to go through, one way or another, if he was to reach a higher stage of evolution. He says

a fantastic number of things have got to impinge upon us until we gradually build ourselves up into an acceptance of reality, and a greater and greater acceptance of reality and what really exists—any dodging of it only delays the time—and it's just as if you were going to sea in a boat that was not really capable of dealing with the storms that can rise.

Watkins returned to a more normal state after ten days, but the events of that period constitute one of the most significant experiences of his life. Twenty-seven years later, reflecting on the experience, he observed,

at times it was so devastating, and it taxed my spirit to the limit, that I'd be afraid of entering it again. I didn't have the capacity for experiencing it. I experienced it for a moment or two, but it was like a sudden blast of light, wind, or whatever you like to put it as, against you so that you feel that you're too naked and alone to be able to withstand it, you're not strong enough. It's like a child or an animal suddenly confronted—or being aware of—an adult's experiences for him, for instance. The grown-up person has experienced a lot in their lifetime, they've built up gradually their capacity for experiencing life and looking at things and understanding them, even experiencing them for all kinds of reasons, for aesthetic reasons, for artistic reasons, for religious reasons, for all kinds of reasons we experience things which if a child or an animal, say, were suddenly confronted with these things, they could not take it because they are not strong enough, they haven't got the equipment to do it. And I was facing things then that I just hadn't got the equipment to deal with. I was too soft, I was too vulnerable.

In spite of this, Watkins sums up

I think that ten days and what I went through then, certainly pushed me on quite a bit. A remember when I came out of hospital, I suddenly felt that everything was so much more real than it had been before. The grass was greener, the sun was shining brighter, and people were more alive, I could see them clearer. I could see the bad things and the good things and all that. I was much more aware.

However it is interpreted, there is no doubt that this experience of Watkins represented a transforming crisis in his life. Every human being is subject to what are potentially transforming crises at some periods in his life. For example, the almost insurmountable grief of bereavement; the deep disappointment in the rejection or betrayal of a friend; the realization that something highly prized is for ever out of reach. The pity is that they are seldom recognized for what they are, and opportunities for self-abandonment, and possible occasions for growth and the

release of new life, are lost. Any transforming crisis brings the individual up against the reality of his existence with a sudden shock, and such crises are bound to lead to confusion because they force the individual out of his previous mode of existence against his will.

As, in such a state, the life of the individual appears to have lost its shape, he cannot plan or initiate, he can only do as the moment dictates. If he is to be led truly by events he has to devote his energies to restraining his own activity. The practice of restraint is usually painful and humiliating, but it is the essence of self-abandonment, because it is a test of whether an individual has really accepted the death of his self, or not. Evidence that he has done this is provided by the fact that he is prepared to be led by external pressures and events. However this does not mean he has to allow himself to be determined by them, in fact he may have to fight and reject them. What it does mean is that in relating himself to external pressures and events, the individual does not merely suffer them or try to fight them, but he makes them his own by an acceptance, a ratification of will, and in so doing he transforms them, and his self. This activity follows on the restraining activity previously mentioned, and is not incompatible with it. Restraint is first necessary if the individual is to refrain from trying to evade events which are not of his own choosing, by withdrawing from them, or by trying to lessen their impact on him by not treating them as real. As these events inevitably conflict with the individual's own desires, and hurt him, he is constantly tempted to try and pretend they are other than they are, and to withdraw from them. But until he really accepts them as facts, he cannot begin to transform them, or himself be transformed.

It is worth noting that what may be potentially a transforming crisis for a particular individual often strikes external observers as a not especially significant event. When confronted with a crisis situation the individual tends to think that it is the end of the world for him, that he is peculiarly unlucky, that he has been singled out for misfortune, while a more objective view usually assesses the situation as being a rather ordinary event, and not especially critical. The stress situation may emerge, for example,

because of the failure to obtain a sought after job, because of the failure to obtain a desired qualification, because of ill-health, or it may stem from the individual's own limitations, or from a social situation at work or at home which is less than satisfactory because of other people's limitations. However, whatever the cause, if the situation is to be a transforming crisis for the individual, he has to accept the situation as it is, accept the unpalatable fact, or facts, disclosed by it as a challenge, and integrate it, or them, into the structure of his life.

A disregarded prophet ?

Lancelot Law Whyte (1896–1972)

CHARLES PARKIN

L. L. Whyte is a name that crops up in many fields of the sciences and arts. Not an easy man to place; the combination of scientist, financier and philosopher hardly evokes any recognizable image, and he held no position in the academic world or general run of docketable professions and careers. Yet a man whose personality and ideas won admirers, or sympathetic hearers and supporters, ranging from Edith Sitwell and Marilyn Monroe to Einstein, Bertrand Russell and Mies van der Rohe must have something to offer as important as the defined and acknowledged, but fragmentary, achievements which are more characteristic of the time. It is his distinctive and all-pervasive vision of things, a passionate sense of wholeness and order, of which his personal aspiration to universality, imperfectly realized as it had to be, was simply his living expression.

Two formative experiences stand out in Whyte's reminiscences, *Focus and Diversions* (1963). One was a Scottish Calvinist background, bracing and fortifying but deeply inhibiting, and his struggle to break free from its divided, guilty feeling for sexuality, its austere aspiration to spiritualized Eros. The second was his youthful response to a widely shared experience of his generation, the battle of the Somme. He saw in it (besides a lifelong symbol for the formless anarchy ever dragging at life) Europe's historic destruction of its own moral and rational humanist tradition and hope, its vindication of the nineteenth century prophecies of sickness, the demonic and the nihilistic.

Theoria to Theory
1974, Vol. 8, pp. 143–152

Published by
Gordon and Breach Science Publishers Ltd.

Out of this personal and universal abyss slowly emerged for Whyte a renewal, an intuition gradually articulating into a vision and a philosophy, of a unitary, formative, dynamic tendency in nature and in man; the vital source at once of whole-hearted life and of true knowledge, a mediator between experience and theory, an insight into the discords and divisions of modern personality and the European tradition, and a prevision of their potential healing. The unfolding of this vision, beyond the conventional distinctions of religion and science, became his real vocation.

Meanwhile the aftermath of the war in inner and outer confusion tore him away from stable human relations, from the beginnings of an academic career in Rutherford's team at Cambridge, and propelled him into a life of physical and emotional wandering, gradually liberated by the greater honesty and spontaneity of living and the more robust speculative life of the Continent, and sustained, it seems, by the mundane pursuits of patent consultancy and finance in the City. The improbable climax of this facet of Whyte's history was his organizing the backing, in 1935, of the crucial first stages of the unknown Whittle's jet engine scheme, till the authorities, at first sceptical and indifferent, woke up to its significance, and the State finally took over the company towards the end of the war.

By aspiration a scientist, Whyte's guiding intuition stimulated him to look beyond the dominant postulates of the special sciences and their current dilemmas and disjunctions, to seek for fruitful new approaches. Characteristically he believed that he discerned already tendencies within the sciences which, if freed from the distortions of an inappropriate conceptual scheme, might at one and the same time resolve the disorder within themselves and dissolve the seemingly insurmountable barriers which parted them one from another. There were three fundamental impasses or ignorances: the search for a unified theory of physical particles, thwarted by the older conceptual scheme of random movement of permanent substances under external forces; the problem of the character of biological organization, obscured by the legacy of vitalist and mechanist assumptions and vocabulary; and the in-

tegration of brain/mind processes, whose embarrassments extended to its very foundation in the Cartesian dualism. The concepts to which Whyte's intuition seemed to point, on the other hand, were those of form and structure, some kind of ordering process, a unitary development dialectically subsuming tensions and oscillations.

In physical theory, Whyte's original field, the trend to which he hopefully looked was the move away from older assumptions of natural *disorder*, random relations of ultimate particles with inherent properties, towards concepts of system and structure where properties were relative to *patterns* of relations. Order seemed to be emerging as a more powerful concept than quantity. In biology, there were the well-known difficulties created by the growth of the subject under the shadow of the dominant physical sciences and its struggle to adapt the vocabulary of atomism and mechanism to its special subject matter. The marchings and counter-marchings of vitalism and mechanism had terminated in an approach which seemed to Whyte in close harmony with his own ideas, the "organismic" concept associated with von Bertalanffy, Woodger and others. (Whyte later, in 1965, put forward a specific application of his general postulate in *Internal Factors in Evolution*, noting expressions of the idea among working scientists. The external Darwinian adaptive selection resulting from haphazard mutations, as an explanation of the mechanism of evolution, might be supplemented, he suggested, or perhaps even in certain epochs superseded, by an *internal* selection of mutations by the inner integrity and structural possibilities of the organism, on a principle not of competition but of coordination.)

The realization that transformations in physical theory were loosening, and potentially reversing, the conceptual hold of the natural over the life sciences was already explicit in J. S. Haldane's well-known remark: "if physics and biology one day meet, and one of the two is swallowed up, that one will not be biology." It was raised to the status of a formal philosophy in Whitehead's "organic mechanism." All this was influential on Whyte; but he confronted the problem in his own distinctive way. He was struck

by the contrast between his most authentic sense of inner experience—continuous, ordered, displaying succession and development, and irreversible—and the hypothetical world of physics, quantitatively precise and strikingly successful, but conceived in utterly different terms, atomist, mechanist, random, above all primarily concerned with *reversible* processes. Either, he concluded, one must be content to live with an ultimate dichotomy of Experience and Nature, Subject and Object, or there must be underlying ideas mediating between the two realms. Already quantum physics, the organismic approach in biology and medicine, and Gestalt psychology, were groping in limited fields towards that mediation. But the concept which came to Whyte as a general clue was that of *asymmetry*. Physical theory, biological theory, and the sciences of man, might be at once clarified within themselves and united in a single synthesis on the basis of the idea that *asymmetry decreases and gives place to symmetry in isolable processes*. As usual, Whyte was able to find that other scattered thinkers had adumbrated his intuitions, for example Pierre Curie in 1893, “c’est la dissymétrie qui crée le phénomène”; but he tried to work out its abstract implications systematically in *The Unitary Principle in Physics and Biology* (1949). The formula demanded that the postulates of reversibility and symmetry be dropped in physical theory, that the assumption of development—a formative tendency ordering disorder brought about by decline of asymmetry—should be accepted as primary. The principle was more comprehensive than the existing one in that it could embrace symmetry as a limiting case, whereas the converse was not true. The ideal of quantitative precision was not to be abandoned; the mathematical expression of the principle was to be sought; but natural science would share a common conceptual base with the sciences of life and of man; the hoary divisions of Subject and Object, Mind and Matter, might be in principle dissolved in a wider simpler single view.

The called-for recasting of physical science would obviously be radical; but the implications come closest home for the sciences of man, though Whyte explored these less systematically. From the standpoint of his unitary intuition, the dualisms built into the

explanatory and normative interpretations of human nature are to be exposed as the artificial creations of false premisses: physiology/psychology, unconscious/conscious, necessity/freewill, subjective/objective, nature/spirit, sin/grace, etc. His reinterpretations all spring from the slow transformation of his own sense of life after the dark night of the war: "before the change knowledge existed independently of my disordered being; after it knowledge was part of my being." The integrity and dynamism of personality must be the basic hypothesis and norm: "everything in man is the expression of a central vital tendency, an inner formative process, of which instinct, reason and all human faculties are expressions." The dichotomies of physiology/psychology, body/mind, brain/consciousness, are to be transcended in a unitary scheme of hierarchical levels of organization, each with surplus vitality and formatively creative (Koestler's *Act of Creation* presents the elaboration of a comparable conception). The acute disjunction and opposition of conscious and unconscious (the second concept brought into being by the excessively sharp Cartesian formulation of the first) fails to acknowledge justly the formative and creative capacity of the unconscious, and demands for conscious purpose or preconceived aim a control over behaviour which may refuse to recognize, and so thwart, underlying formative vitality. The dilemma of necessity and freewill, the polarity of subjective and objective, can disappear in the recognition and acceptance of personality as one manifestation of the formative tendency constituting the whole system of nature. Systems of ethics erected on the dualism of nature and spirit, which oppose their universal, static, unconditioned ideals to the complexities and fluidity of organic impulse, must give place to the norm of an immanent developing integrity, balance and harmony proper to each person, each phase of life, each epoch of society. In general, the harsh dichotomies, discords, conflicts and oscillations in human nature (or rather, in Western man) must be seen, not as inherent characteristics of the species, of which the "higher" are to be pitted against the "lower," but as equally unbalanced and inadequate distortions of the single vital ordering process. The Western tradition has been most fertile of these complementary

disharmonies, rational/passionate, spiritual/sensual, ideal/real, etc.; but integration is the norm, dualism a problem to be explained and resolved.

A vision of integrated human nature is a familiar refrain. Whyte's distinctive note is to offer it as simply part of a comprehensive unitary science. In general, it is easily seen that much in his thought is not unique to himself; it is indeed essential to his position that it should not be so, and he was glad to identify corroborative developments in many quarters; what remains nevertheless distinctive is the passion, single-mindedness and articulateness with which he sought to draw scattered, inchoate tendencies into their explicit context in his single vision.

His commitment to the ideals of science, even while wishing to transform it from within, was no doubt Whyte's deepest loyalty. Much in the reigning scientific orthodoxies was however un congenial to him; and he in particular criticized its lack of methodological and historical self-consciousness. He laid characteristic emphasis on the value of the historical approach to scientific problems, to provide perspective and detachment from current working presuppositions, to recover possibilities and alternatives abandoned on once valid but later obsolete empirical grounds, to clarify the psychology of scientific progress, simultaneous discovery, long dormancy of ideas, forgotten hypotheses, and to allow a more rational anticipation of current trends. In connection with the last, he commented on the absence in the literature of systematic critical statements of *ignorance*, quoting Maxwell, "thoroughly conscious ignorance . . . is the prelude to every real advance in science." He provided such brief historical perspectives to two fundamental unresolved concepts of scientific theory in his *Essay on Atomism* (1961) and *The Unconscious before Freud* (1960). There was a lifelong fascination with Kepler, as the paradigm of a creative scientific mind in which sensuous and aesthetic impulses fertilized with dedication to mathematical truth, passionate monotheism with respect for detailed fact, in the search for a formative process in nature. (Again Koestler's study of Kepler parallels and perhaps owes something to Whyte's ideas.) His hopes were for a science which will reunite itself with the insights

of aesthetic enthusiasm in its expanding grasp of orderly process, repairing the impoverishment which has overtaken both by their separation; which will recover a *visualizable* concept of nature; which will make explicit the necessary unity of knower and known in the act of knowledge. Rebuking his own earlier impatience, he was nevertheless still confidently speaking of the coming unification of science.

The most ambitious and comprehensive, yet in some ways the most personal and moving, of Whyte's historical surveys is his wartime book, *The Next Development in Man* (1944); an application of his unitary conception to the European tradition to explain its unique achievement and contemporary dissolution, and to point to the tendencies in it which could subsume it fruitfully into a world outlook and order. The argument owes much to Nietzsche, something to Marx and other dialectic thinkers; and in fact the development seems to assume a dialectic form. The unitary process consciousness of a Heraclitus was destroyed by the establishment of the static, abstracting, universalizing outlook of monotheism, moral idealism, rationalism; which made possible the purposeful, dynamic, Faustian European individual, but at the cost of the rigid dualisms of mind/body, reason/instinct, grace/sin, etc., the illusory stabilities of personal immortality, abstract ideas, universal ideals, the savage conflicts and oscillations of a divided, unbalanced human nature. The subjective religious and humanist orientation of the earlier phase was progressively undermined by an objective quantitative science erected on the Cartesian dualism, which made possible the conquest first of the external, then of the inner, world but lacked any formative integrative insight, and condemned the social order to the formless anarchy of capitalism. The undermining and dissolution of the subjective humanist ideals of Europe in turn opened the door to the irrationalism and demonism of Fascism and uncontrolled technology. Whyte chooses certain historical figures to crystallize this spiritual adventure. Plato and St. Paul are the twin apostles of idealist consciousness, static, aspiring, dualistic, self-hating. Kepler expresses the unique moment of union of the religious and scientific epochs. Marx is process thinker falling back on the fixed dualism of class confl

and surrendering to the hope of a static utopian dénouement. Freud seeks to bring the objective methods of science to rescue what can be saved of the rationalist and humanist hope, but struggles in a framework of static, dualistic concepts from which the integrative tendencies of life perpetually escape. In Nietzsche the proud aspiration of the god-man plays out its inversion. Inevitably, Goethe was a central light and inspiration in Whyte's life and thought; and his well-known aphorisms, on life's integrity, its immanent process and form, the continuity of experience, the unity of the religious, aesthetic and scientific impulses, man's participation as knower and doer in the formative activity of nature, are echoed in Whyte's writings at every point. And Goethe foreshadows the hoped for post-European man; the resolution of the disharmony of Europe's past, the *comprehending* return to unity, form and process through a science freed from the Christian, rationalist and Cartesian dualisms; the integration of Europe's characteristic achievement with the less polarized and less dynamic civilization of Asia.

That at least was Whyte's hope of 1944. He was less sanguine later. He perhaps suspected that something of his historical interpretation was the projection of his own inner history and aspiration to harmony. Certainly he felt the temerity of the book's ambition and simplification. And there were other withdrawals. He no longer hoped to identify the mathematical statement which would unify all physical invariants as aspects of a one-way process; he must be content to prepare the conceptual background for such a unification. He admitted that his imaginative vision far outran his capacities (as Jung sympathetically saw: "Are you aware how often you have used the phrase 'One should'? Why don't you?"). Still, he had had his vision; and he continued to evolve its possibilities, addressing himself particularly to the young. Further preoccupations were the edition of a symposium on the eighteenth century Jesuit Boscovich, whose concept of matter as point-centres of interaction had interested him since school-days; an edition of Kepler's treatise on the snowflake, the first attempt to provide a mathematical theory of formative processes; and the missing historical perspective, a promised history of the concept of

biological organization. He seems to have felt the closest personal affinity with the Continent; he found his most responsive audiences in later life in the U.S.A. among artists, architects and visual designers, and he thought that their work may be anticipating the complex forms and structures of the coming science of process. The current English mood can hardly be responsive to him, or have been congenial to him; its torpid unvitality and strident self-laceration are equally remote from what he looked for. It is a pity, because much in the English social tradition (for example, as articulated by Burke) has a deep affinity with his vision, as he himself granted in *The Next Development in Man* in speaking of England's "passion for continuity." On the other hand, his Scottish taste for speculation found scant nutrition on the diet of English empiricism, which he believed to have been damaging to British science. He reports a pregnant exchange with Rutherford on admitting to an interest in theory: "Whyte, are you by any chance Scotch? . . . Then go and join the Continentals!" A specimen of his own commitment to the theoretical approach is the memorandum, reproduced in *Focus and Diversions*, which he composed and circulated in 1938 on Britain's prospects and role in the international crisis. Abstract thought must be integrated with experience, it must be continuous with life, but there must *be* abstract thought. He has some, in the circumstances authoritative, reflections on the failure of the establishment to recognize the potentiality, or rather the imminence, of Whittle's jet flight proposals, in which he again touches on his interpretation of scientific discovery: "those who are experts in the specialisms of the past inevitably tend to view new problems too narrowly . . . The most fertile new ideas are those that transcend established specialized methods and treat some new problem as a single task."

It is the fate of prophets, if not to be persecuted, to be ignored; but perhaps, among modern prophets, Whyte is not so neglected after all. Acknowledgements of him in diverse quarters bear witness to a wide suggestive influence; and there are besides, one suspects, many quiet admirers who have felt the authority of his message. His work is admittedly an adumbration, a sketch of possibilities rather than a roll-call of achievements. The objection-

of specialized scholarship are of course too obvious, and on their own terms too unanswerable, to need mentioning. And an ideal of monism, in thought or in life, is probably for most people a receding rather than an advancing star in our time. Nevertheless, his scientific ideas, though highly general, seem to be informed enough to be respectable, and specific enough to be noticed by working specialist scientists. His explorations of the concept of form appear to have a real influence among artists and technologists. And even to a layman his writings manage to transmit the vital impulse which is their constant theme. They are comprehensive and coherent; they have integrity and authenticity; and they expand one's sense of life's possibilities. They might claim what Goethe claimed for his writings, they give the reader a certain freedom of mind; and, as in Goethe, the note of hope is not cheap, it has been paid for. "Scars fade, life enjoys itself, beauty heals, fears grow less, acceptance reveals new vistas. Suffering itself proves a capacity and evokes new ones." "Whatever you can do with your whole nature is right." "Meyer," said Goethe laughing, "always says: 'If thinking were not so hard!' And the worst is, that all the thinking in the world does not bring us to thought; we must be right by nature, so that good thoughts may come before us like free children of God, and cry, 'Here we are'."

Principal writings of L. L. Whyte

Archimedes, or the Future of Physics (1928).

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Notes on "soft technology"†

Part I

PETER HARPER

That modern and scientific-industrial technology leads to problems as well as benefits is a widely discussed topic. There is a well-established consensus on both the political Right and Left that these problems are not attributable to the technology as such, but to misapplications of it. While they hold different views on the causes of such misapplications, traditional Right and Left tend to agree that solutions to the technical problems of industrial societies, whether implemented before or after revolutionary change, will involve more energy, more material, more mechanization, more specialized expertise, more highly capitalized research, and larger, heavily centralized production units.

There is a small minority of dissent from this dominant view. The dissenting view sees many of the problems of industrial societies as necessary consequences of large-scale industrial technology, and advocates technical change of an unconventional, even eccentric, kind. It advocates decentralized participatory production systems based on technologies, known as "soft" technologies, which will tend to demand less energy, less material, less mechanization, less narrow expertise, and smaller production units. Research would be carried out in directions appropriate to this change of emphasis, and would intimately involve the population as a whole. Social, ecological and resource-conserving considerations would be at least as significant as output or growth.

Few practising scientists or technologists working in recognized

†I wish to thank UNESCO for financial support in this work.

Theoria to Theory
1974, Vol. 8, pp. 153-165

Published by
Gordon and Breach Science Publishers Ltd.

institutions share this view, and nearly all the thought and research in support of it is carried in a social milieu which has become known as the “counter-culture” of the West. This paper is an attempt to convey something of the content and the flavour of what is going on in this de-institutionalized setting. Many readers will experience a sense of unreality on reading this paper (“surely he’s not serious?”), but although it should be taken somewhat light-heartedly, it can also be read as an indicator of ideas that are likely to influence, if only marginally, the next generation of scientists and engineers in the West.

1

“Soft technology” is not a well-defined term. Its use is surprisingly widespread, and this can partly be attributed to diffusion, but there seems also to have been some independent invention. I have seen it in use in Britain, North America, France (*technologie douce, technologie légère*), Germany (*Sanfte Technologie*), the Netherlands (*Zachte Technologie*), Italy (*Tecnologia soffice*) and Sweden (*Mjuk Teknik*). Control of meaning is therefore rather weak¹ and it means different things to different proponents (and opponents). It is most commonly taken to mean “environmentally benign technology,” but this is just the tip of a large Utopian iceberg. I don’t know why the name has proved so attractive: probably it’s the implied oxymoron.

2

Soft technology is currently more a dream than a reality, although that is not to say it cannot have a vigorous and practical future. The roots of the idea are a matter of speculation² but the motivation to develop soft technologies appears to spring from a congeries of dissatisfactions with existing technologies.³ Conventional technologies, it is held, have a rationality of their own which does not necessarily coincide with all human interests, and tend to frustrate or fail to serve various important human goals.

Such goals *could* be served by other technologies, designated "soft," which have a different rationality. Sometimes the goals of a given type of soft technology are specific and narrow, but more generally they are mixed, and the purpose of a "soft" approach is seen as serving a number of goals on the supposition that they are likely to be related, or at least not incompatible. The diverse goals are cemented together by diffuse ideological convictions about the working of natural systems, the use of natural resources, the preconditions of work-satisfaction, the control of technology, and so on: in fact, the nature of the Good Life. In this respect it is not unlike "revealed Intermediate Technology" in its more visionary mode.⁴ A certain Utopian quality is almost invariably present, captured rather well by Robin Clarke:

. . . men before machines, people before governments, practice before theory, student before teacher, the country before the city, smallness before bigness, wholeness before reductionism, organic materials before synthetic ones, plants before animals, craftsmanship before expertise, and quality before quantity.⁵

So there seems to be a psychological as well as a technological softness.

3

"Soft technology" has a number of approximate synonyms, such as "biotechnics," "new alchemy," and most importantly, "alternative technology." There are other related terms which are more clear about their intentions, such as "ecologically-based technology," but there is much to be said for an open-ended term whose meaning is adjusted by the community which uses it. The case may be compared with the relationship between the terms "Intermediate Technology" and "Appropriate Technology." "IT" is relatively narrow and can be operationally defined (say in terms of capital cost per workplace). But low capital cost per workplace is not a good in itself. What is required of course is Appropriate Technology (virtually by definition), of which IT may be an expression in a given situation. But to use the term

“Appropriate Technology” in this way renders it almost empty, and by a natural process within the community of those who use the term, a narrower meaning has become common in which not all technologies that might be appropriate in a given situation are called by that name, only the intermediate scale things, and the term “Appropriate Technology” ends up by being used rather like “Intermediate Technology.” A similar thing has happened to the term “Alternative Technology”—the acquisition of an “illicit” content narrower than a strict interpretation would demand. Thus not all technical alternatives to existing technologies are called by the name:⁶ the term “Alternative Technology,” strictly too broad to be useful, ends up by being used rather like “Soft Technology.” In this case the content seems to have been conditioned by the connotations of the word “alternative” in the “counter-culture” (youth subculture) of the West: implying a technology not controlled by dominant institutions; cheap; improvisatory; personalized; accessible to amateurs, etc. It is this “outsider” aspect which I shall concentrate on as being critical to “Soft Technology,” although the great bulk of funding, skill and equipment in fields that tend to be applauded by the aficionados (solar energy, low-cost housing, use of natural products, intensive horticulture, etc.) remains in the hands of professionals working in recognized institutions. The literature of soft or alternative technology, such as it is, tends to be rather inaccessible in the academic, governmental and business subcultures.

4

What all this is alternative to (how to define the enemy) is much debated. Generally the problems complained of are held to arise from highly centralized, bureaucratic, large-scale mechanized production systems requiring large quantities of raw material, high levels of specialization and expertise and exact process control; which in turn generate pressure for increased control of markets, resources and labour, spilling over to affect all aspects of social life. There are two questions to consider. First, how serious are the

problems? Enough to warrant a fundamental change? Or can they be adequately handled within the present structure? Second, are the problems (and by implication, the solutions) a matter of the technologies themselves; or of the organization? It is probably fair to characterize the conventional wisdom as holding that the problems are not fundamental, and can be handled by the almost "natural" cybernetic processes of small social adjustments guiding technical changes of presumably every-increasing sophistication. The most solid tradition critical of this approach has come from Marx, arguing that the *organization* (relations of production) is fundamentally wrong and must be transformed, while the technology can (must?) be retained. Proponents of alternative technologies share the view that the problems are fundamental and require radical change, but in contrast to traditional Marxists have drawn their analysis from critiques of the *technical* aspects of industrial production systems, both from those who charge that modern technology is inevitably "dehumanizing" or "alienating" in a direct psychological or spiritual sense;⁷ and from those who stress the more tangible effects of resource depletion, damage to environment, dangerous possibilities of misuse, etc.⁸

This classification is of course too sharp, as the distinctions between "fundamental" and its opposite, or between "technique" and "organization" are too sharp. There is a tendency for certain Marxist theorists to focus more than hitherto on technical matters, on the supposition that there may be things intrinsically undesirable about technologies whose historical development has always been directed by capitalist imperatives.⁹ From the other direction, many soft technology theorists interpret the term "technology" very generally to mean (with J. K. Galbraith¹) "methods of production" taken as a whole. This blurring of the distinction between technique and organization among radical critics of industrial culture may indicate the emergence of a more unified radical theory asserting that "not only the relations of production, but the means themselves, must be changed."¹⁰

Practically, many of the alternatives suggested by soft technologists are technically quite orthodox but unconventionally organized.¹¹ In other cases the opposite is true,¹² while in yet

other cases, the unorthodoxy lies merely in using, for “non-economic” reasons, well-known techniques that are not the most efficient available.¹³

5

Classification of alternative technologies by goals is difficult because they can only be approached satisfactorily in terms of the groups that formulate and practice them, and nearly all groups have mixed goals. Sometimes they attempt to state their goals and assumptions clearly; more generally they do not. On the whole, little effort is made to specify a set of ground-rules that an engineer might follow. Instead, practitioners are expected to judge intuitively whether a given line of development accords with the mix of goals approved by the group. Here are some typical expressed goals:

- direct control by producers and/or consumers
- absence of exploitation
- regional or local self-sufficiency
- resource conservation
- ecological stability or diversity
- work satisfaction
- recovery after “apocalypse”
- harmony with nature in a spiritual sense
- etc.

These are not always taken as ultimate goals. Some may be held to be means to others—a minimal attempt to be “operational” in defining methods. As discussed above, the supposition is that such goals can be promoted not only by social policy but by certain types of technology. If each goal could be unambiguously defined, and quantifiable rules specified for achieving it, it is easy to imagine that there could be an “appropriate technology” for it.¹⁴ While unambiguous definitions are not common in this field, a number of groups are sufficiently concerned with quite narrow goals to make it possible to analyse soft technology into com-

ponents, "alternative alternative technologies," as it were. Examples will be discussed below.¹⁵

6

To differentiate various alternative technologies by goals is not the only way. Obviously where there are mixed goals, conflicts arise and there are strong differences of opinion on how these conflicts should be resolved. Differences among alternative technologists are partly of this kind—about goals—but also (and perhaps even more importantly on a personal level) about style and basic social, political or cultural assumptions. The following dimensions of difference can be discerned:

6.1 Politics

	"utopian"	
liberal		radical

This is related to certain distinctions drawn in Section 4. Liberals tend to think in terms of conventional institutions doing alternative things; radicals in terms of alternative institutions guiding technical alternatives; utopians in terms of direct relationships between people rather than institutions.¹⁶ Most alternative technologists are "utopian" at least in the sense that they think individual action or small group action is worth while and could have an important influence on the population as a whole. They are also rather unmaterialist in their conception of what moves things in human society. At the same time they tend to be "radical" at least to the chic extent of ritual cynicism about the legitimacy of bourgeois-democratic governments. Some are directly radical in that they see alternative technologies as revolutionary tools (see below Section 11). As to the differences between liberals and radicals, I recall some angry exchanges at an Alternative Technologies Conference at University College, London, with disappointed liberals asking "What's all this about revolution? I came here to talk about windmill engineering," etc.

followed by a debate as to whether the cause was better served by every family making its own windmill, or persuading General Motors to make them at “popular prices.”

6.2 Cultural Style: “straight” — “freaky”

Most people under 30 understand this very well and it seems to be quite important. It concerns attitudes to stability, property, achievement, accumulation, formality, sexual and other relationships, presentation of self, consumption patterns, conformity to norms etc.¹⁷ I would love to know whether there is anything about it in the academic literature. Any suggestions?

6.3 Mysticist — technician

Many who have accepted certain counter-cultural values are nevertheless keenly interested in technique and its challenges. They are inclined to use whatever they find useful in conventional technology. They tend to “think external”—to observe carefully, to define clearly, to weed out inconsistencies, to create tangible things: Soft Faustians, as it were. On the other hand there are many for whom the whole nature of conventional technology is distasteful, and they tend to withdraw from it as much as possible, often creating intentionally whimsical or rustic alternatives that differ as much as possible from the stereotypically “scientific” qualities of smooth, angled, exact, machined, predictable, clean, complex, efficient . . .¹⁸ They tend to “think internal,” to seek other kinds of perception and awareness, to be more interested in being than doing. There may nevertheless be technologies appropriate to these predilections, as the title *Technicians of the Sacred*¹⁹ a book commonly found in these circles, might suggest. In a sense there is as much concern with alternative *sciences* as with technologies, as would befit those who wish to see as well as do, things in a different way (see below Section 13).

6.4 Small units, perhaps federated — large units

On the whole, soft technology enthusiasts tend to be decentralists, and I am tempted to make decentralization a critical attribute of

soft technology. But it is perfectly possible that many of the goals listed above could be well served by centralized processes or control, and indeed for some of the goals a certain degree of centralization may be essential. Small unit organization tends to be favoured particularly by those for whom social goals such as workers' and consumers' control, or a sense of community, are paramount. An important psychological reason for thinking small is that you can do it *now*, at least in a symbolic way (see also Section 9 on self-sufficiency). Alternative technologists frequently discuss certain technical changes without reference to any decentralization of production or organization (e.g. mass transit systems, grid-scale wind generators).

6.5 Plan as for a total economy——part of an economy

Some alternative technologists are haunted by the question "what if everybody did it?," and feel obliged to develop schemes of complete generalizability; others are not so haunted, and doubting that there will be any rush to emulate utopian experimenters, urge that the main task is to maximize the impact on the rest of society, or maximize research etc. in the short term.²⁰ This is essentially the problem of self-sufficiency (see below Section 9). Part of the drive to plan a total economy is to avoid the necessity of competing in the overall economy. Another motivation is a kind of "worst case" demonstration: if it works on a small scale, it can only be better on a larger scale. This is not always true, as areas differ so enormously in their endowment of natural resources. Secession of a rich area is of course no demonstration at all.

6.6 Emphasis on social change——emphasis on technical change

This is discussed in Section 4 above, and Ref. 10.

6.7 Alternative technologies as means——as goals

For some, alternative technologies are self-justifying. For others they are means to other goals, either as an optional or a necessary

part of an overall strategy; even, in the extreme case, a necessary evil. This bears comparison with intermediate technologies: while Intermediate Technology has some claim to being a useful aid in development, only a minority believe it to be valuable in itself (e.g. Schumacher, Illich).²¹ It is worth saying here that many practitioners who feel that soft technology (by their definition) justifies itself, also feel that we are not yet in a position to practice it, and need many years of development before it can be achieved.

(To be continued)

Notes and references

1. Stewart Frances. "Intermediate technology: A definitional discussion." Study Group on the Choice and Adaptation of Technology for Developing Countries, OECD Development Centre. Background Paper No. 11 (1972).
2. For a rather erratic discussion of this topic, see my "In search of allies for the soft technologies," *Impact of Science on Society* 23 (4), 287-305 (1973).
3. Critiques of advanced technology take so many forms that I despair of classifying them. A random sample might include Brian Easlea, *Liberation of the Aims of Science* (Chatto & Windus, 1973); Jacques Ellul, *The Technological Society* (Knopf, 1964); Dan Greenberg, *The Politics of American Science* (Penguin, 1969); Jurgen Habermas, *Towards a Rational Society* (Heinemann, 1971); W. Heitler, *Man & Science* (Basic Books, 1963); Erich Heller, "Faust's damnation: The morality of knowledge," in *The Artist's Journey to the Interior* (Vintage, 1965); John McDermott, "Technology: The opiate of the intellectuals," *New York Review of Books* (31 July 1969); Herbert Marcuse, *One-Dimensional Man* (Sphere, 1969); Lewis Mumford, *The Pentagon of Power* (Harcourt, Brace and Jovanovich, 1971); J. R. Ravetz, *Scientific Knowledge and its Social Problems* (Oxford U.P., 1971); Catherine Roberts, *The Scientific Conscience* (Braziller, 1967); Theodore Roszak, *The Making of a Counter-Culture* (Faber, 1970); Eugene S. Schwartz, *Overskill* (Ballantine, 1971); Leslie Sklair, "The sociology of the opposition to science and technology: With special reference to the work of Jacques Ellul," *Comparative Studies in Society and History* 13 (2), 217-235 (1971). And these are just the social and ethical critiques. The "internal" attacks on the epistemological status of scientific knowledge are perhaps even more insidious. See Israel Scheffler, *Science and Subjectivity* (Bobbs-Merrill, 1969) and Note 59).
4. Schumacher, E. F. "Buddhist economics," *Resurgence* 1 (11) (1968); "The economics of permanence," *Resurgence* 3 (1) (1970).
5. Clarke, Robin. "Technology for an alternative society," *New Scientist* 57, 66-68 (11 January 1973). For example, the use of the "fusion torch" to ionize wastes combined with an electromagnetic centrifuge would in principle permit the simultaneous solution of the problems of

energy, pollution and resources at one blow (B. J. Eastlund and W. C. Gough, "Energy, Wastes and the Fusion Torch," Division of Research, US Atomic Energy Commission, 1971). This is "alternative" in that it does not yet exist, but most of those who call themselves alternative technologists would find it hard to look kindly on the fusion torch, implying as it does power generation in the gigawatt range and a stupendous centralization of waste treatment and resource distribution. Other radical groups are all for it, however, as witness *Blueprint for Extinction: A Critique of the Zero Growth Movement*, by the National Caucus of Labor Committees in the USA which deplores the lack of fusion research relative to the fission and breeder programmes.

7. The works of Theodore Roszak perhaps present the most vivid case, see footnote 3, and more recently *Where the Wasteland Ends: Politics and Transcendence in the Post-Industrial Society* (Faber, 1973), and *Sources* (Ed. Roszak, Harper Torchbooks, 1972). See also Catherine Roberts, *The Scientific Conscience* (Braziller, 1967); W. Heitler, *Man & Science* (Basic Books, 1963); and Robert Graves, "Science, technology and poetry," *New Scientist* (2 December 1971), 34-35.
8. Gallino, L. "Rationality and irrationality of technology in advanced industrial societies," 13th Pugwash Symposium, Frascati, Italy, April 1971; Peter Harper, "Problems arising from widespread industrial activity and innovation," Symposium on "Culture and Science," UNESCO (6-10 September 1971); Robin Clarke, *The Science of War and Peace* (Cape, 1971); John Platt, "What we must do," *Science*, 166, 1115 (1969); Sheldon Novick, *The Careless Atom* (Houghton-Mifflin, 1969); Donald N. Michael, *The Unprepared Society* (Basic Books, 1968); Paul and Ann Ehrlich, *Population, Resources, Environment* (Freeman, 1970); Richard Falk, *This Endangered Planet* (Random House, 1971); The Ecologist, *A Blueprint for Survival* (Penguin, 1972); D. Meadows *et al.*, *The Limits to Growth* (Earth Island, 1972).
9. Gorz, Andre. "Technical intelligence and the capitalist division of labour," *Telos* No. 12 (Summer, 1972), 27-41; Gary Werskey, "A historical side-bet: Science in socialist thought," BBC Radio script (1972); Robert Jungk, "Politics and technocracy," in Ken Coats (ed.) *Socialism and the Environment* (Spokesman Books, 1972); Brian Easlea, *Liberation of the Aims of Science* (Chatto & Windus, 1973); Peter Harper and Bjorn Eriksson, "Alternative technology: A guide to sources and contacts," *Undercurrents in Science and Technology* No. 3 (1972), 275 Finchley Road, London N.W.6, England. (This contains an extensive if somewhat outdated bibliography on alternative technology and a brief theoretical introduction.)
10. Harper and Eriksson. "Alternative Technology: A guide to sources and contacts," *Undercurrents in Science and Technology* No. 3 (1972).
11. For example the "communal factories" described by D. Hayes, R. Fielder and M. Kirkham in "Radical technologists: Workers' control in an urban community," *Undercurrents* No. 3 (1972); or the "readers' research program" of decentralized scientific investigation carried out by the New Alchemy Institute through the journal *Organic Gardening & Farming* (NAI, P.O. Box 432, Woods Hole, Mass 02543, USA).

12. For example, commercially produced and distributed solar water heaters on Israel, see e.g. Technion Research and Development Foundation Ltd, Haifa, Israel, "Architectural Integration of Engineering Services in Multi Storied Blocks of Flats: 3. Solar Water Heaters" (1968).
13. For example the use of animal traction in agriculture because you like horses, or low-yielding free-range chickens because you dislike battery rearing.
14. According to many critics the need for precise operation definition of goals in a pluralistic technological society is one of main roots of dehumanization. The inhumanity arises from trying to fit complex (perhaps "ineffable" is too strong) social and personal variables into the procrustean bed of quantification. Some of the more comic absurdities to which this can lead are discussed by John Adams in "London's third airport: From TLA to Airstrip One," *Geographical Journal*, 137 (4) 468-504 (December 1971). For more tragic and grotesque aspects, see Noam Chomsky, *American Power and the New Mandarins* (Penguin, 1969).
15. To continue to a point raised in Note 6, ideally it would be better to use the term "alternative technology" literally to cover absolutely anything technically unorthodox, and reserve "soft technology" as a vaguer and narrower term to cover certain philosophies of the use of technology (see Section 12). In practice however, the terms tend to be used interchangeably. The movement is not noted for its semantic hygiene.
16. Cf. the classification "traditional-radical-utopian" used by Paul Smoker "An action-oriented research programme for global networks," Peace and Conflict Research Programme, University of Lancaster, *Newsletter No. 3* (1972).
17. The "freaky" style and ethos is expressed with enormous energy throughout an anthology of the "movement" edited by Mitchell Goodman, *The Movement toward a New America. The Beginnings of a Long Revolution. A collage. A What?* (Knopf, 1969).
18. A sudden vision of these qualities through disaffected eyes is described by Lloyd Kahn:

So I took off for Cambridge with my son Peter who'd never been in a plane, or east. Our first helicopter ride, from Sausalito, smelly exhaust, a dreadful machine, to the S.F. airport. Then in a 747, five hours across the country, whew! The huge jet was not 1/5 full, a terrible waste of fuel. When I went into the bathroom, the finely-built one-piece aluminium washbasin and toilet stand gave me an insight into Buckminster Fuller's ideas of housing. Since Bucky has been constantly travelling now for many years, he spends an enormous amount of time in planes. He has always loved machines and metal (see the Phantom Captain chapter in *Nine Chains to the Noon*) and his love of air flight and aerospace technology led him to dig aluminium efficiency such as the 747 in-flight bathroom. Bucky and many others (see Le Corbusier: *Towards a New Architecture*) think of houses as machines. Probably because machines were just beginning to demonstrate their remarkable clanking capabilities when Bucky and Le Corbu were at impressionable ages, they laid

on people the trip of houses being mass-produced, standardised, and now computerised.

Smart But Not Wise: Reflections on Domebook 2, Plastics and Whiteman Technology (Shelter Publications, P.O. Box 279, Bolinas, Ca 94924, USA): This pamphlet is an informal manifesto of neo-primitive alternative technology, and a fine example of counter-cultural thought, warts and all. It is now reprinted in the encyclopaedic and long-awaited *Shelter*, Ed. Kahn *et al.*, from the same address.

19. Rothenberg, Jerome (Ed.). *Technicians of the Sacred* (Doubleday, 1968). See also Carlos Castaneda, *The Teachings of Don Juan* (Penguin, 1970), and Note 61. For a discussion of the possible role of "counter-cultural epistemology" in science, see Thomas R. Blackburn, "sensuous-intellectual complementarity in Science," *Science* 172, 1003-1007 (1971).
20. For example:

Many soft technology communities exist simply for their own sake. Their motivation is a horror of the values of Western society, their problem is how to survive, and the solution adopted is primitive and/or neo-technologies. Characteristically, such communities solve many of their problems by having a low input and output, adopting a puritanical approach to material demand and coupling this to a very catholic attitude to social and sexual organisation. In other words the easiest solutions to such problems as energy, food and shelter are: use less . . .

So are these communities freak-outs? (i.e. withdrawing from their responsibilities to the rest of society). Probably yes, in the sense that they have no demonstration effect (or a very limited one) because (i) their life-times are so short; and (ii) their approach is so puritanical as to be at best unimpressive and at worst repellent to most members of Western Society.

(Robin Clarke, *Soft Technology, Puritanism and Imperialism*, published 1972).

21. Schmacher, E. F. *Small is Beautiful* (Blond & Briggs, 1973); Ivan D. Illich, *Tools for Conviviality* (Calder and Boyars, 1973).

Réflexion sur le temps qui passe

IVAN ERBE

I

Nulle religion que la nôtre n'a enseigné que l'homme naît en péché, nulle secte philosophique ne l'a dit; nulle n'a donc dit vrai . . .¹

Après "le péché" originel et avant qu'il n'envoie l'humanité à son destin, Yahvé Dieu dit: "Voilà que l'homme est devenu comme l'un d'entre nous, pour connaître le bien et le mal!"²

La "faute" accomplie, le premier couple humain est précipité dans un état poignant et misérable: "Alors, leurs yeux à tous deux s'ouvrirent et ils connurent qu'ils étaient nus; ils cousirent des feuilles de figuier et se firent des pagnes."

"Ils entendirent le pas de Yahvé Dieu qui se promenait dans le jardin à la brise du jour, et l'homme et la femme se cachèrent devant Yahvé Dieu parmi les arbres du jardin."³

Ils ne pouvaient pas ne pas succomber car ils étaient innocents, au départ. Pas Satan: parmi "les fils de Dieu,"⁴ ses idées non conformistes lui valaient mauvaise réputation.⁵

Dieu, en colère, appelle l'homme: "Où es-tu, dit-il⁶ Le malheureux parut devant lui. Yahvé lui reprit ce qu'il avait donné⁷ et changea son statut: "A la sueur de ton visage, tu mangeras ton pain, jusqu'à ce que tu retournes au sol, puisque tu en fus tiré" . . .⁸

Ensuite, "lorsque les hommes commencèrent d'être nombreux," "la terre se pervertit devant Dieu et elle se remplit de violence."⁹

Yahvé, plein d'amertume, "vit que la méchanceté de l'homme était grande sur la terre et que son coeur ne formait que de

Theoria to Theory
1974, Vol. 8, pp. 167-186

Published by
Gordon and Breach Science Publishers Ltd.

mauvais-desseins à longueur de journée,”¹⁰ . . . de souffrance aussi: Yahvé se repentit d’avoir fait “l’homme sur la terre et il s’affligea dans son coeur,”¹¹ . . . et de dépit, car finalement il dit: “je vais effacer de la surface du sol les hommes que j’ai créés, et avec les hommes les bestiaux, les bestioles et les oiseaux du ciel, car je me repens de les avoir faits.”¹²

Mais Noé “était un homme juste, intègre parmi ses contemporains, et il marchait avec Dieu.”¹³ Aussi trouva-t-il grâce aux yeux de Yahvé¹⁴ qui fit avec lui alliance conditionnelle.¹⁵

C’est pour cela, nous dit-on, que nous sommes toujours sur cette terre.

Yahvé, cependant, n’oublia rien. Les “torts” accumulés par les hommes au cours de leur histoire l’y incitèrent. Il fallut que son Fils, dont l’arrivée en ce monde fut reconnue par les Mages,¹⁶ y vienne tenter de les sauver.

Ses premières paroles rapportées par Matthieu sont adressées à Jean, témoin de Dieu.¹⁷ A Jean, qui ne veut pas le baptiser et lui dit: “c’est moi qui ai besoin d’être baptisé par toi et toi, tu viens à moi!” . . ., Jésus répond: “Laisse faire pour l’instant: c’est ainsi qu’il nous convient d’accomplir toute justice.”¹⁸

Tout bien pesé, Dieu veut cependant s’assurer que son fils pourra aller jusqu’au bout de sa mission: “Alors, Jésus fut conduit au désert par l’Esprit (Saint), pour être tenté en vain par le Diable.”¹⁹

Jésus fit ensuite ce qu’il s’était fixé, avec l’accord de son père. Il mourut en croix pour racheter les hommes.

De par leur naissance, près d’un milliard d’entre nous, de nos jours, croient ou puisent leur morale en cette histoire magnifique et bouleversante.

Près d’un milliard et demi se réfèrent, dans, hors, ou contre Jésus, à l’ancien testament.

L’autre moitié de l’humanité croit à d’autres choses.

Pour nous, occidentaux, nier l’enracinement profond du christianisme en nos âmes, c’est se renier.

Mais un monde nouveau, technologiquement avancé, se superpose aux anciens: il ne coïncide plus, c’est visible, avec la chrétienté.²⁰

Ses frontières s'élargissent à la mesure de la connaissance humaine; au delà, s'étendent les espaces de la conquête économique, qui seront intégrés et à défaut exploités.

Il n'a pas encore de morale globale à lui, mais son éthique se fondera sur la démarche "objective" de la science, son élément moteur.

Les anciens mondes religieux sont obsolescents. Nulle conquête nouvelle vraie, nul élan visible. Les écolâtres de toutes confessions ou idéologies sont exposés à ne plus pouvoir, en conscience, enseigner contre le réel. "Ecolâtre" signifie (Littré): "Ecclésiastique dans les cathédrales, dont la principale fonction est d'enseigner aux jeunes gens qui se destinent au service de l'église les humanités et les devoirs de la profession qu'ils veulent embrasser..." Il y a toute aussi bien des écolâtres du marxisme...

Qui peut prétendre aujourd'hui détenir la vérité?

L'affirmation de Pascal est devenue fausse: L'homme n'est pas maudit, et les autres religions ne sont pas plus fausses que le christianisme.

II

Faire appel à un mécanisme autre que mutatif et aléatoire s'impose à tout système prétendant expliquer l'évolution... Il est possible que dans ce domaine, la biologie impuissante cède la parole à la métaphysique.^{21,22}

Les religions s'enracinent dans le passé animiste de l'humanité. Fussent-elles marxistes (il existe des religions sans dieu), elles font toutes appel aux mêmes ressorts profonds. A leurs signes extérieurs communs, elles sont toutes reconnaissables.

Certes, notre espèce chemine sur les voies de la "spiritualisation"²³ et ces voies passent par les religions, l'histoire humaine le montre. Mais elles n'en constituent pas le terme. Ces voies continuent au delà.

Lorsque des esprits suffisamment éclairés admirent l'idée que la connaissance "objective" constituait la seule source authentique de vérité, les religions furent condamnées en tant que telles: si, de nos jours, il y a encore des Galilée, du moins les cris qu'ils

viendraient à pousser en se reniant pourraient-ils être entendus de leurs pairs.

L'homme, pour s'accomplir, doit avoir le courage de franchir l'obstacle religieux.

Je rejette l'idée, encore plus la sanction, d'une faute originel le. Celui qui tente le voleur n'est ni sage, ni honnête. Ce qu'a fait Dieu est tellement humain, tout au long . . .

C'est bien l'homme qui l'a créé et affublé à son image.

Mais alors, si Dieu n'est pas cela, ou s'il n'existe pas, l'être humain peut se reconsidérer!

Tel Pinocchio, il s'apercevra, en se réveillant, qu'il n'est plus un pantin de bois. Il est devenu, "au contraire, un enfant comme tous les autres."

Il n'est coupable de rien. Le voici disponible. Pour moi, j'ai mis ensuite longtemps à m'assurer que je pouvais ne pas renier ce que j'aimais le plus: les trois vertus théologiques.

Elles permettent tout. Je les entends ainsi:

- La Foi, capacité d'aimer.
- L'Espérance, force invincible dans le coeur de l'homme.
- La Charité, amour désintéressé du prochain.

L'expérience montre que sans courage, ni tolérance, ni bonté, ni gaïté, elles ne sont guère que des mots.

Quand aux dogmes démentis par les faits, ils apparaissent dérisoires et dangereux. Il faut s'en éloigner, en attendant qu'ils tombent.

Reste l'inquiétude . . .

"Si l'ambition ultime de la science entière est bien, comme je le crois, d'élucider la relation de l'homme à l'Univers . . ." ²⁴

. . . la métaphysique n'a pas entamé les énigmes. Je ne vois ni comment, ni pourquoi la biologie si chargée de promesses (peut-être aussi de dangers), et dont les apports sont éclatants à la compréhension de l'homme et de la vie, pourrait l'attendre et lui céder le pas!

III

Ou, penchés à l'avant des blanches caravelles, ils regardaient monter, en un ciel ignoré, du fond de l'océan des étoiles nouvelles. ²⁵

En l'an mille, il y avait un peu plus de 300 millions d'hommes sur la terre, incomparablement moins "savants" — à notre sens — que tous ceux d'aujourd'hui.

Il y en aura plus de six milliards dans 25 ans, dont les trois quarts "en voie de développement" (dans quelle direction?).

Au sein de cette multitude, chaque individu a la faculté de s'estimer un cas particulier.

Il peut, de ce fait, regarder alentour, et juger de son état.

Si, d'aventure, tous ces cas particuliers — dont je suis — confrontent aujourd'hui leur sentiment, beaucoup arrivent à conclure qu'en ce bas monde — chez nous, occidentaux — on s'ennuie. Finie l'aventure, croit-on. La planète Terre est une boule dont on fait et refait le tour, même dans le cosmos.

C'est l'absurde Société de consommation²⁶ et du révolutionnarisme bourgeois, celui des bien nantis . . .²⁷

Et pourtant, la civilisation nouvelle est en train de naître. Empêtrée dans les défroques des anciennes alliances, elle s'enfante dans la souffrance et les déchirements.

L'aventure est toujours là: l'inexploré en ce qu'il a d'inaccessible, dans l'inconnu en ce qu'il a d'inconnaissable.

A partir de la science — moyen de connaître mieux et plus — et non plus du scientisme qui se veut la connaissance en soi, l'homme de maintenant peut encore et de nouveau rêver.

Mais, pour se dépasser, il a besoin de pouvoir frémir aux appels qui viennent d'un ailleurs mystérieux et fascinant.

L'Épopée demeurera dans le destin de l'homme tant qu'il devra risquer pour satisfaire son permanent besoin de savoir. Mais la soif de connaître ne peut plus s'étancher aux lointaines sources animistes. Les arrangements avec soi — tels la foi religieuse traditionnelle — ne sont plus acceptables.

La science devient majeure . . . Elle doit refuser impitoyablement la pseudo-science, les mots qui recouvrent des ignorances. Elle en a désormais les moyens, et c'est elle, elle seule, qui se les est forgés.

Grâce à elle, il est devenu possible de discerner maintenant vers quelles régions l'humanité évolue ou dérive —, s'il s'agit d'une dérive.

Mais c'est mauvaise science que de refuser la prise en considération de certains phénomènes: il existe de grands thèmes sur lesquels l'homme médite finalement en vain. Cette démarche lui est apparemment exclusive sur la terre.

En ces domaines, comme dans bien d'autres, les mots recouvrent, véhiculent, traduisent, ou dissimulent les idées.

Certains mettent l'esprit en éveil, mais de telle façon que pour les expliciter, l'esprit doit en chercher d'autres. Cette recherche peut devenir dramatique. J'appellerai ces mots "suspects." Pour n'avoir pas davantage à m'expliquer, il me suffira d'en citer quelques uns

– âme	– dieu	– infini	– objectivité
– ange	– dogme	– intelligence	– occulte
– Dieu	– homme	– mystère	– etc . . .

Tous ces mots ont un trait commun: ils recouvrent une ignorance, une méconnaissance, ou des fictions. Recenser en permanence ces mots suspects, et circonscrire une désignation de ce qu'ils masquent, permettrait de singulariser des zones qu l'on ouvrirait à la recherche, avec les moyens d'investigation de tous ordres dont nous disposons à présent – notamment dans le domaine des probabilités, au sens mathématique –. Une seule condition préalable: exclure systématiquement et sans pitié la métaphysique, qui n'est plus de mise en ce domaine.

A ce prix, à ce seul prix, l'affaire pourrait un jour être prise au sérieux.

IV

Alors, Fritz partit d'un immense éclat de rire, et, s'étant assis, il s'écria: "Rebbe, je t'aime! Tu es le meilleur homme et le plus réjouissant que je connaisse. Puisque tu a honte de défendre Abraham, parlons d'autre chose!"²⁸

J'ai toujours aimé les chemins de terre, de pierres et de sable. Les

cailloux, rides capricieuses laissées par l'eau des pluies, les ornières persévérantes et les bas-côtés en constituent la géographie.

A des signes, on reconnaît la destination des chemins.

Il y a des chemins droits, ombreux, qui coupent la forêt.

Je préfère ceux qui tournent, qui montent, où il y a des pins et du soleil. Ils sont secs. Vienne une pluie, alors leur peau rugueuse boit l'eau du ciel, leurs touffes d'herbe économes et rares se revigorent et tiennent, après l'ondée, comme des perles de lumière, des gouttes d'eau attardées à leurs pointes.

J'aime aussi les enfants et les vieux. Les premiers s'ils ont l'innocence, les autres, le détachement et la bonté.

J'aime les pays de bon vin, de bien manger, la fûtaille, les ceps.

J'aime les métiers manuels qui élèvent l'âme. Ils anoblissent le corps, à l'encontre de ceux qui, empêchant de penser, dégradent l'homme.

J'aime l'intelligence, par où l'homme s'affirme et prend son envol.

Je me méfie du scientifique triste. Se prenant au sérieux, il ne peut rien donner de bon.

Je souhaite que l'homme nouveau se sente délivré de celui des croyances mais lui rende en bonheur de vivre ce que son humble et permanent effort lui permet d'acquiescer en savoir.

Je souhaite aussi que pour tous les hommes, l'homme nouveau ne considère pas le travail comme une malédiction, mais pour ce qu'il est réellement: un impôt.²⁹ L'impôt payé, l'homme peut rêver et s'accomplir.

V

L'homme sait enfin qu'il est seul dans l'immensité indifférente de l'Univers d'où il est émergé par hasard.³⁰

Il y a plusieurs athéismes. Le seul vrai, que je rejette, est celui qui refuse toute espérance à l'homme.

Pour le reste, je me déclare volontiers athée.

Jacques Monod, dont j'aime l'austère et honnête rigueur, pourrait être classé parmi les véritables athées.

Il écrit cependant sur l'âme: "En trois siècles, la science, fondée par le postulat d'objectivité, a conquis sa place dans la Société: dans la pratique, mais pas dans les âmes."

. . . Cette Société, dont il dit par ailleurs que de tous ses maux, le plus profond et le plus grave est bien "le mal de l'âme."

Les voies qu'il emprunte sont droites: aucune concession à ce qui n'est pas la vérité scientifique, à ce qui transgresse les lois de la physique.

Il ne peut y avoir, dans l'univers, deux sortes de loi. La vérité ultime est une, tout en procède.

Je trouve son livre beau et respectable. Par ses méthodes, on établira le "comment" des choses.

Il n'a pas voulu aborder le "pourquoi."

Il est encore trop tôt pour ce faire.

Un travail énorme est auparavant nécessaire. Je pense que c'est à l'homme nouveau, maintenant, de l'entamer.

Mais avant d'appareiller vers le monde qui s'offre à lui, et quoi qu'il lui en coûte, il lui faut, tranchant ses derniers liens, laisser derrière lui l'immense et touchant héritage de l'homme des croyances, qu'il n'a plus la mission d'assumer.

Notes

1. Pascal *Pensée* 606.
2. Genèse 3. 22.
3. Genèse 3. 7, 8.
4. Fils de Dieu et/ou "Nephilims," qui eurent des enfants avec les Filles des hommes (Genèse 6. 1, 4).
5. Job 1. 6, 7. Gurdjieff a trouvé une partie de son inspiration dans ces versets.
6. Genèse 3. 9.
7. A l'homme et à la femme, Dieu avait dit: "je vous donne toutes le herbes portant semence qui sont sur toute la surface de la terre et tous les arbres qui ont des fruits portant semence: ce sera votre nourriture." Genèse 1. 29.
8. Genèse 3. 19.
9. Genèse 6. 1, 11.
10. Genèse 6. 5.
11. Genèse 6.6.
12. Genèse 6. 7.
13. Genèse 6. 9.
14. Genèse 6. 8.

15. Genèse 6. 5, 11.
16. Matthieu 2. 1, 2.
17. Jean 1. 6, 7, 8.
18. Matthieu 3. 14, 15.
19. Matthieu 4. 1.
20. Le Japon, en particulier, est Shintoïste.
21. In *l'Evolution du vivant*, de Pierre P. Grasse—chez Albin Michel 1973.
22. Le sens etymologique de métaphysique est: “qui vient après la physique.” On peut l’entendre aussi “qui va au delà de la physique . . .” C’est en fait une méthode d’introspection spéculative que l’on utilise pour s’accommoder et essayer de sortir de son ignorance du vrai. On l’utilise en deçà et au delà de la physique. On peut l’utiliser aussi par manque de courage ou de modestie. On recouvre son ignorance par des mots, des gloses et des raisonnements, des mensonges. Ou, s’il y a bonne foi, des contre-vérités.

La physique, c’est ce qui recouvre le réel, la réalité, c’est à dire la vérité. Par physique, j’entends “toute la physique.” On discerne maintenant que tous les phénomènes se résolvent dans la physique. Je mets dans la même abstraction perceptible à nos sens ou à nos entendements: une odeur, une couleur, et aussi une pensée (dans le sens de penser). Ne sont-elles pas des résultantes de combinaisons physiques sous-jacentes? cela peut aller très loin, hors de toute fantaisie pseudo-scientifique, s’entend. Sans doute peut-on penser que répond à la physique tout phénomène régi par une loi . . . ce qui est le cas de tous les phénomènes certainement.

Les lois se résolvent en une loi ultime, une vérité ultime. Cela ne me gêne pas si la loi, la vérité ultime sont d’ordre “spirituel” bien que je ne sache pas encore ce que veut dire le “mot suspect” SPIRITUEL.

Je ne suis pas gêné non plus par les notions de “matériel” et “d’immatériel”: il s’agit de deux apparences, de deux états (voir équivalence de la matière et de l’énergie.)

23. L’évolution qui aboutit au système nerveux central humain en témoigne.
24. In *Le hasard et la nécessité*, de Jacques Monod. Ed. du Seuil. Paris, 1970.
25. José Maria de Hérédia — Les Conquérants.
26. Lorsque la consommation est présentée comme une finalité, à quel niveau ce concept réduit-il l’homme? En s’hypertrophiant, cette Société de surenchère se transforme en “Société de gaspillage.”
27. La planète Terre n’appartient à personne, semble-t-il. L’homme, comme les autres animaux et les végétaux, se l’approprie comme, aussi bien, l’on peut dire que la rivière s’approprie son lit. Dans la propriété ainsi entendue, c’est l’usage qui compte: chaque fois qu’il y a superpositions de propriété, sans conflit, c’est que les usages en sont compatibles. — La notion traditionnelle de propriété sera emportée — tant au niveau des particuliers qu’à celui des états — dès lors que la concentration des hommes sur la terre dépassera un seuil critique. La propriété peut s’appliquer aussi, à titre principal, à des choses immatérielles: par exemple, dans le cas d’un objet modeste mais chargé de souvenirs.
28. Erckmann-Cnatrion — L’ami Fritz.

29. En contre-partie de cet impôt, la communauté redistribuerait, avec prudence, une quantité systématiquement croissante de moyens "gratuits" (au sens commun et non économique).

Ce serait, au premier stade, affaire de gouvernement. En se gardant de tomber dans l'utopie, on rechercherait ainsi l'élévation constante de la condition humaine; gratuité de la nourriture élémentaire, de certains transports, des médicaments courants, de l'énergie domestique banale, etc . . .

De plus en plus, certains moyens supérieurs (biens et services) seraient désirés et éventuellement gagnables par chacun en proportion de sa culture, génératrice d'apport social.

A l'inverse, on pourrait concevoir qu'un "intellectuel" veuille fournir l'impôt par un travail manuel, si possible de son choix.

30. En *Le hasard et la nécessité* de Jacques Monod – déjà cité.

Translation

GLADYS KEABLE

I

No religion but ours has taught that man is born in sin, no philosophic school has said so; none therefore has spoken the truth.¹

After the primal "sin" and before he sends mankind on its destined way, the Lord God says: "See how man has become like one of us, knowing good and evil."²

The first human couple, their error committed, are plunged into a state of anguished misery: "And lo, the eyes of both were opened and they knew themselves to be naked; they sewed fig leaves and made themselves breeches.

"They heard the footsteps of the Lord God walking in the garden in the cool of the day, and the man and the woman hid themselves from the Lord God among the trees of the garden."³

They could not have avoided falling because at the outset they were innocent. Not so Satan: among the "sons of God"⁴ his non-conforming notions earned him a bad reputation.⁵

God, in wrath, calls man: "Where are you." he said.⁶ The wretched man appeared before him. Yahveh took back what he had given⁷ and changed his decree: "In the sweat of your brow, you will eat your bread until you return to earth, since you were taken from it."⁸

Then "since men began to multiply," "the earth was corrupted before God, and was filled with violence."⁹

Yahveh, full of bitterness, "saw that man's wickedness was great over the earth, and that his heart conceived mischief all day long . . ."¹⁰ . . . of suffering too: Yahveh repented of having put man on earth, and he grieved in his heart¹¹ . . . and of rancour, for at last he said "I will wipe out from the face of the earth the men I

have created, and with them the beasts, the insects and the birds of the air, for I repent of having made them.”¹²

But Noah “was a just man, upright in his generation, and he walked with God.”¹³ So he found grace in Yahveh’s eyes,¹⁴ who made with him a provisional covenant.¹⁵

That is why, we are told, we are still on this earth.

Yahveh, however, forgot nothing. The “wrongs” piled up by men in the course of their history spurred him on. His Son, whose entry to this world was recognized by the Magi,¹⁶ must come here to save them.

The first words of his that Matthew reports are addressed to John, God’s witness.¹⁷ To John, who does not want to baptize him and who says to him “It is I who need baptism from you, and you come to me” — Jesus answers: “Let it be for the moment, it is in this way that we must fulfil all righteousness.”¹⁸

After weighing up the situation, God wishes to be sure that his son will be able to carry out his mission to the end: “Then, Jesus was led into the desert by the (Holy) Spirit, to be tempted in vain by ‘the Devil’.”¹⁹

Jesus in due course did what he had determined upon, with his father’s approval.

He died on the cross to redeem mankind.

Nearly a billion of us today, from birth onwards, believe or base our moral standards upon this magnificent and shattering story.

Nearly one and a half billion base themselves on the Old Testament, for, apart from, or against Jesus.

The other half of humanity believes in different things.

For us, westerners, to deny how deeply rooted Christianity is in our souls, is to disown ourselves.

But a new, technologically advanced world is overlaying the world of our elders; it is quite evidently not coterminous with Christianity.²⁰

Its boundaries widen proportionately with human knowledge; beyond stretch the immensities of economic conquest, which will be incorporated and recklessly exploited.

It has as yet no proper worldwide ethic, but its morality will be based on the “objective” march of science, its dynamic factor.

The old religious worlds are obsolescent. No truly new conquest, no visible fresh start. The “*écolâtres*” of all confessions or ideologies are liable to be unable, in good conscience, to go on teaching against what is real. “*Ecolâtre*” means (Littré): a cathedral dignitary whose principal task is to teach the young men who are destined for the church’s service the humanities and duties of the profession which they wish to embark upon.” Marxism also has its “*écolâtres*” . . .

Who can set himself nowadays to halt truth?

Pascal’s affirmation has become false; man is not cursed, and other religions are not more false than Christianity.

II

To invoke a mechanism other than one which produces random mutations is essential for any system which sets out to explain evolution . . . It is possible that in this area biology will impotently let metaphysics have its say.^{21,22}

Religions are rooted in humanity’s animistic past. Even if they are Marxist (there are religions without God), they all call on the same deep springs. They are all recognizable by the outward signs they have in common.

It is true that our species proceeds on the ways of “spiritualization”²³ and that these ways pass through religions, the history of mankind shows it. But they do not constitute the goal. These ways continue further.

When sufficiently enlightened minds came to admire the idea that “objective” knowledge constituted the only authentic source of truth, religions as such were doomed: if, today, there are still any Galileos, at least the renegade cries they might utter would be heard by their fellows.

Man, to fulfil himself, must have the courage to leap the religious barrier.

I reject the idea, and still more its enforcement, of original sin. He who tempts a thief is neither wise, nor honest. What God did was, after all, so human . . .

It is indeed man who has created him and tricked him out in his own likeness.

But then, if God is not like that or if he does not exist, humanity can think again about itself.

Like Pinocchio, he will perceive, in his awakening, that he is no longer a wooden puppet. He has become, "on the contrary," a "child like all the others."

He is guilty of nothing. Here he is, open to all possibilities. I have for a long time set out to re-assure myself that I could not renounce what I loved most: the theological virtues.

They allow for everything. I understand them in this way:

- Faith, capacity of loving.
- Hope, an invincible force in man's heart.
- Charity, disinterested love of one's neighbour.

Experience teaches that without courage, tolerance, generosity and gaiety, they are empty words.

As to dogmas given the lie by the facts, they show up as ridiculous and dangerous. One must withdraw from them, and wait for them to collapse.

Anxiety remains.

"If the ultimate ambition of all science is truly, as I believe, to throw light on the relation of man with the universe . . ." ²⁴

. . . metaphysic has not begun to unravel its mysteries. I do not see why or how biology, so full of promise (perhaps also of danger), and whose findings throw a flood of light on the understanding of man and life, could wait for it to grant it precedence.

III

Where, leaning over the prow of the white caravelles, they watched new stars, in an unknown sky, rise from the depths of ocean. ²⁵

In the year one thousand, there were little more than 300 million men on earth, incomparably less "learned"—to our way of thinking—than all those of today.

Twenty-five years from now, there will be more than six billion,

of which three-quarters will be “on the road to development” (in what direction?).

In the midst of this multitude, each individual is apt to think himself a special case.

Because of this, he can look around, and judge his condition.

If, by chance, all these special cases—myself included—acknowledge their own feeling today, many arrive at the conclusion that in this world below—among us westerners—one is bored. The adventure is over, we believe. Planet Earth is a ball on which we walk round and round, even in space.

It is the senseless society of consumption²⁶ and of a bourgeois revolution,—that of the well-heeled . . .²⁷

And yet, the new civilization is in its birth pangs. Caught up in the stripping of old alliances, it is brought to birth in suffering and anguish.

Adventure is always there: inaccessible in the unexplored, unknowable in the unknown.

Starting off from science—the means of understanding more and better—and no longer from scientism which merely wants knowledge, the man of today can dream again anew.

But, to surpass himself, he needs to be able to thrill at the calls which come from a beyond which is fascinating and mysterious.

Epic will continue as part of man’s destiny in the measure in which he is prepared to take risks to satisfy his perpetual need to understand. But the thirst for knowledge can no longer be quenched at far off animist sources. The terms of settlement with oneself—such as traditional religious faith—are no longer acceptable.

Science is coming of age . . . She must mercilessly reject pseudo-science, words which cover up ignorance. Henceforth she has the means, and it is she and she alone who has fashioned them.

Thanks to her, it has become possible to distinguish in what direction man evolves, or is diverted—if there is a question of diversion.

But it is bad science to reject what has been gained because of certain marvels: there exist great themes on which man broods without any possible finality. This is apparently precluded on this earth.

In these realms, as in many others, words conceal, carry along, translate or falsify ideas.

Certain words alert the mind, but in such a way that to explain them, the mind has to look for other words. This research can become dramatic. I call such words "suspects." To save explaining myself further, it will be enough to cite some of them:

—soul	—god	—infinity	—objectivity
—angel	—dogma	—intellect	—occult
—God	—man	—mystery	etc.

All these words have one thing in common: they conceal an unknown, a misunderstanding, or tall stories. To censor such words permanently, and to delimit a zone denoting what they mask, would allow for the singling out of those areas to be opened up for research, with all the present means of investigation at our disposal—notably in the field of probabilities, in the mathematical sense. Only one previous condition: the systematic and pitiless exclusion of metaphysics, which is no longer applicable in this domain.

At this price, and only at this price, the enterprise might one day be taken seriously.

IV

Then, Fritz let out a tremendous burst of laughter, and when he had sat down, cried out "Rebbe, I love you! You are the best man and most jolly fellow I know. Since you are ashamed to defend Abraham, let us talk of something else."²⁸

I have always loved paths of earth, stones and sand. Pebbles, freakish wrinkles left by the rains, persistent ruts and low-lying ground are the makings of geography.

By certain marks in roads one discovers their goal. There are straight shady roads which cut through the forest. I prefer those which twist, which climb, where they are pines and sunshine. They

are dry. If the rain comes, their rugged surface drinks the heaven-sent water, their sparsely scattered tufts of grass revive and, after the shower, hold drops of water, like pearls of light, poised on their tips, to fall.

I also like old people and children. Children if they are innocent, the old if they have detachment and kindness.

I like a countryside with good wine, good food, wine casks, vines.

I like those manual crafts which exalt the soul. They confer nobility on the body, in contrast to those which, preventing thought, degrade man.

I like intelligence, through which man proves himself and takes wing.

I mistrust scientific solemnity. Taking oneself seriously can produce nothing good.

I hope that the new man feels himself freed from the man of beliefs, but allows himself a source of happiness in whatever knowledge his humble and persevering effort enables him to gain.

I also hope that, for everybody, the new man does not take work for a curse, but for what it really is: a tax.²⁹ When the tax is paid, man can dream and fulfil himself.

V

Man knows at last that he is alone in the immense indifference of the Universe from which he has emerged by chance.³⁰

There are several kinds of atheism. The only authentic kind, which I reject, is the one which refuses man all hope.

Apart from that, I willingly declare myself atheist.

Jacques Monod, whose austere and honest harshness I admire, could be classed among the real atheists.

However, he writes about the soul: "In three centuries, science, founded on the postulate of objectivity, has won its place in Society: in practice but not in the heart.

. . . This society, of which he says elsewhere that of all ills, the deepest and most serious is indeed "soul sickness."

He adopts a straight course: no concessions to anything other than scientific truth, to anything which infringes the laws of physics.

There cannot be, in the universe, two sorts of law. Ultimate truth is a unity, everything flows from it.

I find his book beautiful and worthy of respect. By its methods the "now" of things will be established.

He did not wish to broach the "why."

It is still too early to do so.

An enormous task awaits us before that. I think that it is for the new man, now, to set it in train.

But before he sets sail towards the world which beckons to him, and at whatever cost, he must, severing his last ties, leave behind him the great and appealing patrimony of the believer, which he is no longer called to inherit.

Notes

1. Pascal *Pensée* 606.
2. Gen. 3. 22.
3. Gen. 3. 7.
4. Sons of God &/or "Nephilim" who begat children with the daughters of men (Gen. 6. 1, 4).
5. Job 1. 6. 7. Gurdjieff found part of his inspiration in these verses.
6. Gen. 3. 9.
7. To the man and the woman God had said: "I give you all the seed-bearing herbs over all the earth, and all the trees with seed-bearing fruit: these shall be for your sustenance." Gen. 1. 29.
8. Gen. 3. 19.
9. Gen. 6. 1, 11
10. Gen. 6. 5.
11. Gen. 6. 6.
12. Gen. 6. 7.
13. Gen. 6. 9.
14. Gen. 6. 8.
15. Gen. 6. 5, 11.
16. Matt. 2. 1, 2.
17. John 1. 6, 7, 8.
18. Matt. 3. 14, 15.
19. Matt. 4. 1.
20. Japan, in particular, is Shintoist.

21. *L'évolution du Vivant*, by Pierre P. Grasse, published by Albin Michel, 1973.
22. The root sense of metaphysics is "what comes after physics." It could also be understood as "what goes beyond physics" . . . It is in fact a method of speculative introspection which is used to adjust oneself to one's ignorance of truth, and to attempt to emerge from this ignorance. One uses it on either side of physics. One can also use it from want of courage or modesty. One covers up one's ignorance by words, glosses, rationalizations and lies. (Or, if in good faith, by untruths.)

Physics is what recovers the real, reality, that is to say, truth. By "physics," I mean "the whole of the physical." One sees nowadays that all phenomena find their resolution in physics. I include in the same category of abstraction, what is perceptible by our senses or our understanding—a scent, a colour and a thought (in the sense of thinking). Are they not the results of underlying physical combinations? This can go very far, apart from any pseudo-scientific fantasy. No doubt one can think that every phenomenon regulated by law corresponds to physics, which is certainly the case with all phenomena.

These laws resolve into one ultimate law, an ultimate truth. It does not worry me if ultimate laws and truth are of a "spiritual" kind, even though I may not yet understand the "suspect word" SPIRITUAL.

Nor am I worried by the notions of "material" and "immaterial"—it is a question of two appearances, two states (compare the equivalence of matter and energy).

23. Evolution which ends in the human central nervous system witnesses to it.
24. In *Le Hasard et la Nécessité*, by Jacques Monod. Ed. du Seuil, Paris, 1970. English edition *Chance and Necessity*.
25. Jose Maria de Heredia—"Les Conquerants."
26. When consumption is presented as an end, to what level does this reduce man? In swelling itself up, this Society of high bidding changes into a "Society of Waste."
27. Planet Earth, it seems, belongs to nobody. Man, like the other animals and the vegetables, appropriates it as much, one might say, as the river appropriates its bed. In ownership as wide as this, it is use that counts: every time there is multiple ownership, without conflict, it is because the uses are compatible. The traditional notion of ownership will be swept away, whether at individual or at national level—when population pressure passes a critical threshold. Ownership may also apply, in its main headings, to immaterial things, for example an object of nominal value which is full of memories.
28. Erckmann-Cnatrion "L'ami Fritz."
29. To set against this tax, the community would share out, cautiously, a systematically increasing quantity of "free" goods (in the communal, not the economic sense).

This would, in the first stage, be the government's responsibility. To prevent oneself from falling into "Utopia," one would seek a constant upgrading of the lot: with free basic nourishment, a certain amount of

transport, current medicaments, ordinary domestic energy etc. . . .

More and more certain superior amenities (goods and services) would be wanted and eventually available for everyone according to his culture, passport to a social dowry.

In contrast, one could imagine an "intellectual" having to furnish the tax by manual labour, if possible of his own choice.

30. In *Le hasard et la nécessité*, Jacques Monod.

Review

The dimensions of healing

The Academy of Parapsychology and Medicine—engaged in the search “for a new vision of man as a unity of body, mind and spirit” and for a medicine based on that vision—present themselves at their annual symposium† “What we are interested in” says Andrija Puharich, “are novel aspects of biological systems such as the biofeedback mechanisms, healing mechanisms, the appearance and disappearance of tissue, the healing process, acupuncture and so on” (p. 56).

Judging by the other speakers however, their scope is wider; including testimony from Faith Healers, analysis of the Edgar Cayce Readings, experiments on the “healing energy” using Kirlian and High Voltage Photography, the possibilities for hypnotic regression to previous existences, and more.

In general terms, all these differing areas of research form for them part of the ongoing investigation into E.S.P. and Parapsychology, because it is from this direction, they believe, that their unified vision of man will emerge.

They are handicapped by the lack of a language—having to make do in the meantime with vague vitalisms of “life force,” “healing energy,” “cosmic fields” and so on—and much of the conference is taken up with hypotheses and model building, various attempts to come to real grips with the subject. But most of these efforts fail because their use of scientific models is just too glib and superficial. Dr. William Tiller, for example, presents

† *The Dimensions of Healing, a Symposium*, The Academy of Parapsychology and Medicine, 1972, \$10.00.

us in quick succession with a picture of God creating the Universe as a “Divine Hologram”: a “Gas Phase model of group consciousness” in which the differing levels of consciousness (C) within a society conform to the Normal Distribution of molecular energies in an Ideal Gas; and the Dipole–Dipole interaction between molecules as an analogy to the “love signals of transpersonal communication”—“... the audience response to them [Christ, Buddha, Krishna] must have been directly related to the broad band, high power signal of love that they radiated” (pp. 68–76). And is Dr. Andrija Puharich really saying it better when he talks of our minds as “computers” and the “Cosmic Mind” as a giant computer memory bank made up of the field of protons resonating in space under a magnetic field?

But scattered among all the theory is some interesting experimental work, and it is this that I would like to concentrate on. “Biofeedback” (p. 41), for instance, is an example of just how useful a good cybernetic model can be: Dr Elmer Green, who has been researching on the possibilities of the voluntary control over autonomic bodily function, now believes that “almost any physiological signal that can be obtained with a sensitive transducer (a measuring device) and fed back to the person who produced it, can be self-regulated” (p. 42). He cites an experiment with 33 housewives who learned to control the blood supply to their heads, as well as the ability of Yogis such as Swami Rama to enter a state of virtual hibernation. The therapeutic implications of this are substantial: already there has been some success in training patients to control their own blood pressure; both migraine (a blood flow problem) and muscle tension headaches can often be put under voluntary control and thus relieved. Further, Green suggests that, since stress of any kind produces an autonomic response, the chronic (i.e. longterm) stress that our life often seems to inflict on us may produce a chronic response which can itself become harmful—“the autonomic nervous system learns a bad habit” (p. 45). (The pain and damage of arthritis, for instance, is almost certainly caused by the body’s own immunological response mechanisms, and certain theories of cancer suggest a similar pattern there.) Clearly, in these cases, the ability to

control these involuntary responses would be advantageous: it would also involve a difficult but significant change in the patient's attitude—perhaps he would be asked to stop taking tranquilizers and start meditating. Just such therapy has been used by Dr. Carl Simonton on both arthritis and cancer patients (p. 139), and in his paper he reports some successful case histories. About his exact methods, he is disappointingly vague, but these seem to include meditation and the formation of healthy body images by the patient.

As far as this general line of research goes, it is obviously foolish to get carried away and assume that the more such subliminal actions are “exposed” the better. There are, of course, good reasons of bodily safety and efficiency for the existence of such reflexes: in developing control over them the true Yogi has a precise end in view—which is perhaps what Dr. Chanduri here calls “Psychosomatic integration” (p. 35). It is this integration which undoubtedly has such great healing power—but, as we are constantly warned in the eastern texts, it is a delicate matter and highly dangerous if abused.

Accounting for the power that he has over his body, Swami Rami states simply “all body is in mind . . .” Then however immediately adding “. . . but not all mind is in body” (p. 45); and this second phrase is central to the Academy's thinking, for they use it to counter the materialist notion of mind-body identity. Psychokinesis is held to be crucial evidence of the identity of this mind-not-in-body, that (to quote Green) “it is some kind of energy structure in its own right” and is more than just the cognitive perception of physiological processes. Gregory Bateson once compared the mind to a television set in which the “screen” of consciousness is essentially a reflection of the workings of internal components—Green might counter: “what about the aerial and what about the signal transmitted from Broadcasting House: how can the set work without that?” This “mind-energy” then associates itself with various concepts: etheric level, spiritual power, “healing energy” and so on; they hope perhaps that this is a model which is “scientific” without being “materialistic”.

Faith Healing (or more appropriately “Laying on of hands” (LH) is thus a form of psychokinesis, and has been the subject of interesting experiments. Bernard Grad (p. 29 et seq.) succeeded in slowing down the growth of artificially induced thyroid goitres in mice. He used LH directly on the mice and also indirectly via a previously “treated” piece of cotton wool placed in the cage. Sister Justa Smith (p. 110) claims that LH can effect enzyme activity in a measurable way. It is a fact (without theoretical explanation as yet) that a magnetic field (10–13,000 gauss) can increase enzyme activity. Sister Smith found a similar effect when a healer layed hands upon a solution of the enzyme trypsin—that is, an increase in activity of about 7% after 75 minutes. There were, of course, temperature controls in the experiment—so this was not a temperature effect. and no magnetic field was measurable between the healer’s hands. Now to equate such an effect with healing is being a bit premature, but these results do look like important evidence of the psychokinetic phenomenon. However, difficulties arise which are typical of work in this field: not only (judging by the error bars on her graphs) is the phenomenon erratic and inconsistent, but when she attempted to repeat her results a few months later the healer was unable to effect the enzyme solution in any way. Sister Smith explained that the healer was rather disturbed and upset at the time of the second trial: then she shifts her ground and offers this failure itself as evidence of the “transcendental nature of the phenomenon of healing.” The health and faith of the healer is as important to the cure as that of the patient.

With such variables, the notion of a scientific “proof” of such phenomena comes to seem completely elusive and even, as Puharich and Simonton both suggest, irrelevant. Simonton even goes so far as to say that the same is true of all science, that the results of an initial investigator are bound to be affected by his great enthusiasm and faith in his own idea (this, remember, is meant to be a psychokinetic effect and *not* of the kind that, for instance, Polanyi means by “personal knowledge” in science). But on the other hand, the Academy certainly does not want to cut itself off from the Scientific Tradition—its approach, its mystique

of objective truth, its past successes, the freedom to draw on it for models whenever convenient. Much of the identity of the Academy is bound up with this tradition, but its relationship to it is often ambiguous—certainly this is partly due to the nature of the subject under research, but I don't think that is quite the whole story. At one point Puharich says that what he means by "science" is really "clear thinking"—sometimes I wasn't quite sure how much of either activity was going on at all, even despite some of the concrete results obtained.

JONATHAN GREEN

Comment

Simone Weil on labour

If Fred Rosen has given a true account of Simone Weil's views on work, then it is time we were all on our guard about her. Fred Rosen makes a comparison between Marx and Simone Weil in their attitudes to labour, incidentally describing Simone Weil as "the more spiritual." I would like to say that, though not myself a Marxist in any but the loosest sense of the term, it is Marx who is here being the more spiritual, and that the notion of spirituality that Simone Weil is advocating seems to me both perverse in itself and disastrous in its consequences.

Rosen states that Marx does not show that all work is inherently creative. However, the more fundamental truth is that Simone Weil does not show that all (or most) work is *not* creative. Potentially there is far more creative work than non-creative. However, this simple fact did not suit Simone Weil's highly subjective and selective approach to the problem, so it gets no proper hearing. Instead we get stuff like the following—"The 'irreducible servitude' in the life of the physical labourer is the absence of ends to be pursued and an overwhelming concentration of effort on existence alone." And instead of moving from a recognition of the truth of this description as far as a large proportion of work in modern times is concerned, on to a recognition of the need to change things fundamentally so that such a description of work would no longer be true, Fred Rosen simply asserts that Simone Weil saw any such hope of escape from the servility of labour as an opiate. Not a scrap of evidence is offered for this belief. What it amounts to then, is a flat denial of

Theoria to Theory
1974, Vol. 8, pp. 193–196

Published by
Gordon and Breach Science Publishers Ltd^d

the possibility of meaningful work, coupled with an assertion that men would like to escape from work altogether, and that since they can't, and can't improve it either, they are offered a splendid opportunity of sacrificial contemplation, carrying their work on their shoulders like a cross.

The facts would seem to be very different from this fanciful picture. In the first place, men don't run away from work, not even dullish work, nor do they show very much desire to do so. From what I have learnt, men are much more hostile to the notion of unlimited leisure than to the reality of a lifetime of work. And then there is the straightforward fact that there are still some lucky people amongst us who find positive satisfaction in their work, and who (quite rightly) couldn't imagine a meaningful life without it.

Further than this, it is within our power today to change things in our society so that meaningful work is once again the common pattern. The ideals of William Morris in the past, and the immensely important ideas of men like R. Schumacher and Leopold Kohr at the present time, are showing us ever more clearly how this could be done.

No doubt for highly intellectual people like Simone Weil manual work in any quantity is the grossest kind of servitude. However, for most intellectuals, a measure of physical work is probably a good thing. I find that after a long spell of purely intellectual work an unpleasant dissociation of mind and body can take place, and that physical work can restore a coherent and pleasurable relationship between them in a very short time.

Simone Weil had her own reasons for taking upon herself a burden of work for which she was neither suited by temperament nor strong enough in physique. Very well, it was *her* life and her decision. But she had no right to generalize about the nature of work and the working-man from her own peculiar situation. She certainly had no right to assert that work is essentially servile and that there is therefore no escaping from servility.

In fact, I get a very strong impression from what I have read of Simone Weil that she would not have liked men to escape their servility. If this statement goes too far, it must at least be

conceded that there is something extremely queer about her notion of spirituality. It is surely spiritual perversity to think of the *passivity* induced by drudgery of the worst kind as an appropriate condition for contemplation. It strikes me as being like a recipe for industrial peace drawn from the more extreme descriptions of St. John of the Cross by General Franco! The result could only be to produce pseudo-mystics with impoverished personalities—a horrible tribe of zombie-like creatures, “God-intoxicated robots,” one might say.

Simone Weil is upholding for our admiration a destructive and creeping tyranny which should itself be destroyed if we are ever to enjoy a genuine spiritual well-being. To cut a long argument short, the point is not to *spiritualize* work in S. Weil’s sense, but to humanize it. Can we not hear a little less about S. Weil in these matters, and a little more about old-fashioned unspiritual William Morris, “the idle singer of an empty day”?

I am not arguing here as a humanist and agnostic like Morris himself, but as a sort of Platonist to whom the mysticism of men like Plotinus and Jacob Boehme is a very real thing. The root therefore of my objection to Simone Weil’s “spirituality” (apart from its extremely unpleasant connotations of masochism and spiritual perversion which I have already indicated) is a religious one—I think she fails to distinguish between different levels of spirituality, with fatal consequences. It is foolish and wrong to try to foist on someone who is not suited to it the highest mode of mystical contemplation. It is wrong to do it even to those who are suited to it unless they have first developed strong personalities. That is how one gets the aberrations of quietism. How singularly inappropriate it was then for Simone Weil to advocate nothing less than the discipline of apophatic contemplation, an imageless pure upward-leaping movement of the spirit, for people who are hungering, not after that “divine darkness,” but after a meaningful world of visible beauty and harmony giving scope for the exercise and enjoyment of active faculties and powers. Simone Weil seems clearly to be saying “You cannot have beauty in your work. You must sacrifice yourself for the hidden God—or have nothing.” But, as Swendenborg says, “The Kingdon of Heaven is a Kingdom of

uses.” Work should be able to express that, to some degree at least, or it is indeed servitude.

Finally, on the question of levels, it needs pointing out that even the mystic will not aim to dwell very long in the “cloud of unknowing.” It is much more like a death-and-rebirth experience than a state which can be lived in. From it the mystic is “re-born,” time after time, back into the common world, or if he is more advanced, into the world of archetypes—in either case, into an *organic* world of form as against the “formless” world of unknowing. So it is a question of polarity, in which the *usual* experience is (and must be) of the organic world, at whatever level. A spirituality of the “formless” alone is really so unbalanced as to merit the term “perversion,” and that, I’m afraid, is how I see Simone Weil.

DAVID BRITTON

Sentences

Living in a wheelchair

“Donald! *Hang on!*” It was too late: I’d already fallen. . . . I did not yet know that every muscle in my body, except for my eyeballs, was paralysed . . .

.

“I’ll carry the boy down the steps if you can manage your bags.” It began then, the feeling of being treated like a thing.

.

Haphazardly, I chose a small metal plane. One propeller was off but no matter. It would serve me well enough in my interior flight.

One again, I was being forced to split into two people. The one here in the hospital bed was the puny, immobile kid from a farm in South Dakota who had no control over his destiny . . .

But there was, too, the unseen child who, in spite of distance and the terrific pull of the hospital, struggled to remain part of a life to which he would return one day.

When I first came to the hospital, at the age of seven, I had developed a special vehicle to carry me wherever I wished to go. The vehicle was not my wheelchair, which had become so much a part of me at home, but my imagination.

† From the book *Bottom High To The Crowd*, by Don Kirkendall and Mary Phraner Warren, published by Walker and Company, Inc. New York, N.Y. © 1973, by Mary Phraner Warren and Don Kirkendall, and reprinted by permission.

Nothing a doctor or nurse could say or do was ever able to remove its control from me. I could, in one split second, depart into my other world and be free.

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If (Dad) pitied me, he never showed it. That, of course, was why I loved him. Dad treated me like a regular boy. He called me Don instead of Donnie, thereby adding to my stature. Whenever I needed it, he gave me a hiding . . . His abrupt manner contained more healing in it than the prayers of the preacher who stopped by now and then to lay his hand heavily on my shoulder and utter sonorous platitudes like "Poor little Donnie" . . .

Often I met the inevitable frustrations with anger or tears. But I began to discover a better way. Quite without meaning to, Dad taught me there's nothing like a good belly laugh to help a person see things in perspective.

.

She had a plain face. Her mouse-coloured hair was drawn back into a severe bun. She was an old maid with horn-rimmed glasses and bad breath but she flashed a smile at me and I loved her on the spot.

I had a teacher!

.

I had outgrown the buggy. For a year I went every place in a red wagon, propped with plenty of pillows. And then I got my first wheelchair. I felt like I would burst with joy. No more lying down for most of the day . . .

The hospital was miles away. I was home safe. I was not a blob any more, an anonymous bunch of arms and legs in a doctor's hands. I was Donald Kirkendall. I was me, and I could do anything! Well practically anything.

"Hey, Don, come on out with us. We need you as end man in Crack the Whip." Jack's chapped nose looked like a radish sticking out above his muffler. He hunted for my cap and mittens and off we went. To spin around the ice in a wheelchair was almost as

much fun as skating. Often I ended up breathless and laughing in a snowdrift . . .

You can't stagger very well in a wheelchair, but I got high and felt on top of the world. I made friends with everybody in the Blue Lion and boasted about the band I had led in South Dakota. I was no longer alone.

.

A girl was saying "Yes" to me! "Why?" She laughed "What do you mean, why? You're unique!"

.

Twenty-nine applications. Twenty-nine rejections. Most of the applications were in the field of credit management. I had proved my skill in this area and had a course at the business college to offer as a credential.

At last a man in the employment agency told me the blunt truth: "It is the wheelchair, Donald. Nobody seems to want to take the risk of having a man in a wheelchair, no matter how well he can do the job."

It was difficult, almost impossible, for me to see myself through other people's eyes. My wheelchair was as much a part of me as breath and blood. I never had considered myself a crippled little man in a chair and neither did those who knew me. Hadn't Mary Ann told me I was the most masculine man she had ever met? . . . The wheelchair was the public's hang-up, not mine. Invariably, in public places, I was treated as if I was subhuman. Elevator girls would order my wife, "Move it to the rear of the car, please." In restaurants, waitresses without fail set the menu in front of my wife, assuming I could not order for myself. When the bill was made out, they deposited it at her elbow, not mine. Movie houses had refused to let us in because it would be a fire hazard to have a wheelchair cluttering up the aisle . . . "I think," commented Mary Ann on one occasion, "I know what it must feel like to be black. I'm married to a minority."

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With music I could soar . . . The battered trumpet became part of me like my wheelchair was part of me. As winter wore on, I lived and breathed the trumpet . . . Years of pent-up energy found a release in music. In music I could go places. Oh man, I could go to the ends of the earth. . . . At night when I went to bed after a practice, I was high on music. It would be a long time before I slept. . . . For years polio had left me with a deformed, concave chest, but all this trumpet playing had served as some form of physical therapy! It had developed my chest and filled it out. From the trunk up, I was as normal as anybody else. . . . Before dances, we'd stop at a cafe for coffee. Sometimes I felt a twinge of embarrassment when people watched me being carried in and out of the car or up a step. But I was learning to choose priorities. I didn't mind being packed around like that when I was leader of the band. . .

.

I learnt to look at people and inanimate objects in a new way. . . . I tried to draw the essence of an orange, an apple . . . I watched Mary Ann . . . I looked at my left hand and said to it, "Polio made you what you are. The polio that destroyed the muscle in my right hand brought you into power."

I found I was able to get into a painting and stay there. Inner parts of me emerged, parts I'd never known before. One day a special painting was born from this unknown depth. It was a picture of Mother Earth.

.

I suffered a second heart attack. This time I told Mary Ann, "When I recover, I'm going to hire some extra help at the office. Maybe my life will be shorter than some, but I've got a lot of living left to do and I'm going to do it!" I was forty-five years old.

I am Don Kirkendall. A person. Limited in some ways by a wheelchair. Perhaps.

Notes on contributors

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IVAN ERBE is the pen name of Robert Bonin, Ingénieur de l'Administration des Mines Francaises, and a specialist in Mining Law. At present at an establishment South of Paris concerned with high level research into problems of mining. He has lived and travelled in various parts of the world, notably in Africa, the South Pacific, and Japan.

JONATHAN GREEN was a medical student at Clare College, Cambridge and is now a student in a London hospital. He is also interested in the history of science and of art, and has written on Acupuncture in *Theoria to Theory*.

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BEN WINT read Philosophy at King's College, Cambridge.

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THEORIA to theory

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UNIVERSITY OF MICHIGAN
Volume 8, Number 3

THEORIA to theory

An International Journal of Science, Philosophy and Contemplative Religion

Editors

DOROTHY EMMET, *Fellow of Lucy Cavendish College, Cambridge, England and sometime Professor of Philosophy, the University of Manchester*

ANTHONY APPIAH, *Clare College, Cambridge, England*

TED BASTIN, *Cambridge Language Research Unit and sometime Research Fellow of King's College, Cambridge, England.*

Explorations in the sciences and technology that affect our understanding of religious and philosophical questions—these are the basis of this quarterly journal. *Theoria to Theory* holds that traditional religion has been primarily, and at best, concerned with mystical or contemplative experience; therefore it is important to a widened science in providing one source of insight. *Theoria* was the old Greek name for this insight; *Theory* here stands for an enlarged and revised scientific understanding. The journal represents an effort to keep the two terms with each other.

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JULY 1974 issue

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UNIVERSITY OF MICHIGAN

Editorial

After a long period in limbo last winter and spring, *Theoria to Theory* is now back in accelerated production. The next few issues will be following in fairly swift succession, and we thought we should like to tell readers something of the interests we hope to pursue over the months ahead.

First of all, we shall be following up our interest in happenings outside presently established science. Here “psychic” healing seems to us to stand out. We shall be looking at ways of getting a scientific purchase on material which is presented as a mass of anecdotal evidence. Of course, “psychic” or “spiritual” healing has played a part in most of the religious traditions, notably in early Christianity. Christianity has been exceptional in also giving an impetus to orthodox medicine and hospital care. One question we shall be asking is whether the religious ambiance is more favourable than a secular one to “psychic” healing, and if so, whether there are any good reasons why.

Our especial interest, however, will be in seeing whether there might not be an underlying schema or system in the body, in addition to the recognized neurological and endocrine systems, which is activated or put back in balance in “psychic” healing. We shall be examining the possibility that there might be clues to its mapping in early embryogenesis. Here we shall be trying to get help from people in relevant disciplines.

The *Theoria to Theory* group are consultants for the current ITV programmes “The Mysteries”, which is concerned with certain ranges of allegedly paranormal happenings. We hope, after the series is over, to publish a review discussing it with its producers,

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and also with some of the people who have expressed views in the programmes.

But we are not becoming a journal of parapsychology: among other things, we are picking up again our concern for a “technology to enhance life.” As we see it, there is a need both for large-scale engineering projects, especially in providing against emergencies like the Bangladesh floods, as well as for ingenious small-scale projects which can be economical and also fun to work in. And there is a concern with constructing alternative economic models. We hope to get Dr. Fritz Schumacher (author of “Small is Beautiful”) to start off the discussion with a prominent representative of British Industry.

Any feedback?

Discussion

On dance

KATHLEEN RUSSELL and PEGGY HARPER talk with various members of the *Theoria to Theory* group—here rolled up into Q.I and Q.II—on how they observe and use movement, and about some of what it means to them.

(*Kathleen Russell teaches and researches at the Institute of Choreology; Peggy Harper is Director of Dance for the University of Ife Theatre Company in Nigeria.*)

Q.I. In the Apocryphal New Testament there is a part of a song which is attributed to Jesus and which goes “He who dances not knows not what comes to pass.” I don’t know whether I believe this, but anyhow you two, Kathleen and Peggy, are professionally concerned with dance. What do you think it does for people, especially for people who aren’t themselves dancers?

Kathleen. I assume that you are not asking for some loose generalizations about what dance can do for non-dancers, nor are you asking what dance as an art does: but rather you are asking if some of the very detailed specific knowledge about use of the body that dancers have acquired over centuries of trial and error might be of use to people not aiming at becoming dancers.

Perhaps the simplest way to approach the question, is to try to make a distinction between some areas where the dancer’s training might give useful specialized knowledge and areas where their training does not give any specialized knowledge.

In the latter class I would include such things as how to lift, push, pull heavy weights without risking injury (although there is something of this in the “lifts” of various forms of theatrical

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Published by
Gordon and Breach Science Publishers Ltd.

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dance). Also such things as the most efficient posture for reaching the controls of a car, the keys of a typewriter. Nor have dancers anything special to say about skill in any sport.

Where dancers might have useful skills to offer is in first seeing, then suggesting ways of dealing with certain slight “deformities” in the way the body (including limbs and head) is moved or held still. By “deformity” I mean merely some kind of placing and/or movement of parts of the body that the dancer has learnt by experience *can* lead to physical damage later on. The example that is probably commonly known is the over-curved spine, when an increase in the curve in the lumbar region leads to an increase in the curve in the cervical region. If these curves are allowed to increase, and the muscles of the abdomen are held very slack, then a sudden movement can very easily lead to damage of the spine. In all the main dance training methods of which I have any knowledge there are techniques for correcting the over-curved spine, for strengthening the muscles that will hold the spine in a safe way, while performing many varied complex movements.

A less well-known example is of the use of muscles on the inside of the leg which can control the instep and the knee. If they are not used correctly the instep can drop; and a sudden movement could injure the knee. Again, all the main dance training methods that I know anything about have techniques for correcting these faults, and making the dancer aware of what is going on in the leg. When I say making the dancer “aware of what is going on,” I am not claiming that dancers have a more detailed knowledge of the action of any specific muscle than do the physiologists, but rather it is that they have learnt a relation between sensation in the muscle and joints, and the resultant movement and posture, and how to teach this relation.

It is important that I mention at this stage that correcting a “fault” can be a lengthy and tedious process; daily practice appears to be necessary, at least over a period of months. It is impossible to give specific lengths of time; I assume it will vary with types of deformity, and severity of deformity. Also I have never seen one fault tackled in separation from a complete dance training. But for people who don’t want to have this, new ways of

approach would have to be developed, perhaps aided by physiotherapists.

Dancers tend to describe the change taking place as “building up a new reflex,” or more recently “building up new movement patterns in the brain”; these are not to be taken as descriptions of actual physiological processes, but rather descriptions of how it feels. I think that musicians learning to play an instrument, and athletes are probably familiar with the process.

I would like to mention two strange things I have observed in dance training. First it is possible to improve the performance of a dance by lying relaxed, and in imagination “feeling” the movements, not forming a visual image of the dance outside oneself, but imagining the dance in the body, kinaesthetically. I have not tried to see if this works without actual physical training of the muscles, but would not expect it to. The second strange thing is that it appears that perhaps a specific posture and movement can cause a specific mental state; *and* the specific mental state can cause specific postures and movements. I have put that statement in a rather provocative way! Of course there is a great problem about the terms “mental state” and “cause”: I think all I can do at the moment is describe the kind of experience that has led me to think this may be the case.

When teaching classical ballet technique to children, we find occasional children who appear straight away to “look like a classical dancer”: they appear to be inside the “feel” of classical ballet and to order their movements to some preconceived pattern. They may need direction to show them how to achieve the classical lines, but the movement is all of a piece, and “classical” straight away. It is much more common to find children who don’t appear to have the instinctive classical “set” of these children: some appear to acquire the classical “set” by being taught how to achieve a classical line in only a very few postures and movements (i.e. shown in detail how to use the muscles); then suddenly a kind of understanding appears to take over and they can apply this to many other movements and postures.

Q.I. Kathleen is trying to think of how skills in dance could show a new area in physiology, for instance, when she speaks of

new "reflexes." Another application could be switching from doing things right and left-handedly. I am more or less ambidextrous, but I have great difficulty in serving in tennis with my left hand.

Kathleen. A dancer can learn to switch from starting a sequence of movements with his right limbs to his left, not just for a specific movement, but in principle and generally.

Q.II. How do you, Peggy, see the way dancers use their bodies?

Peggy. Part of my work entails research into the dances of many different cultures in Nigeria. After making a formal study of a dance I find it necessary to stay in the area and observe the way of life of the people, and then attempt to grasp imaginatively the way in which they experience their bodies in relation to the surrounding space and the ground on which they move: in short, to discover their attitudes towards space and time. This is greatly influenced by the physical nature of the environment in which they live, which in turn affects the type of work they do, the design of their houses, their clothing, furniture: such as the beds on which they lie and the chairs on which they sit. These are a few of the factors affecting the way in which people of a particular culture use their bodies. For instance, habitual squatting on the ground or sitting on low stools develops the strength and flexibility of the legs and the knees. Sitting upright on the ground strengthens and straightens the back, as do the hoeing movements used by farmers and the pounding movements of women preparing food. Carrying loads on the head strengthens the muscles of the back and neck and produces a characteristic posture and walk. In Ibadan we made a study film comparing the way in which Europeans and Africans take the strain of walking over an uneven surface. We observed that the Europeans make extensive use of the joints of their ankles and feet: taking the body vertically up and down, while Africans are more flexible in the knees and hips so that the strain is taken up in lateral movements made by shifting the body weight from side to side. Thus the European's head rises and falls as he walks whereas the African's head remains at a

relatively constant level. I suggest that this difference is the result of environmental and social conditioning.

Like "space," "time" is a cultural concept, so that the tempo, rhythm and qualities of effort or energy that people use in their dances differ from one culture to another. The Tiv women use predominantly sustained gliding movements while the Ijans often use rapid staccato movements.

Q.II. Can you enlarge on the different relations people have to the earth?

Peggy. Again I will use a very generalized comparison. In European ballet, dancers create the impression of escaping from the earth and going off into space. The balletic posture requires dancers to draw their weight up into the solar plexus or centre of their bodies, and direct their movements and gestures upward and outward into space. Their main concern is to create precise, geometric spatial patterns with their movements. In Africa, in the majority of dances the basic postures and gestures, even the attention of the dancers is directed towards the earth. There is a conscious relation to the earth, as the source of life and the place in which the ancestors lie. The most important element in African dance is the time-rhythm: through percussive motor-rhythms dancers continuously return to the earth. I see these rhythms as a heightening and development of the rhythms of daily life. The rhythm of an oarsman is stylized in his dance, the farmer may use the rhythms of his working movements as the starting point for the development of a dance movement. Thus the ballet dancer attempts to escape the physical confines of gravity and the weight of his body whereas the African dancer positively accepts the weight of his body as a basic element in the dance.

Q.I. Didn't Marie Rambert want to heighten ordinary movements as imagined? Patterned movements can occur when doing a job. Watch a plasterer plastering a wall. He swings the trowel across the wall in a long, smooth arc, and the trowel stays in one plane to within one sixteenth of an inch, although the entire body is involved in the reach of the movement. He does this with a consistent rhythm.

Q.II. Young people feel there is a split between their use of mind and body. When they see a musical like "West Side Story," or a film like "The Clockwork Orange," they respond at once to the possibility of making unifying movements like those they have seen in the performance.

Peggy. I think this indicates a fast-developing enjoyment of rhythm as an important element in dance. Young people in Europe now show far more rhythmic ability than my contemporaries at their age. This may be due to African musical influence via Black American Jazz and West Indian Calypso which have found their way into modern pop-music, or it may be a return to something basic to all human beings which has been lost by Europeans and which they are now striving to recover, in an effort to rediscover a wholeness of mind and body.

Kathleen. I think that Peggy's implied question is very interesting; but whether the modern forms of disco dancing are quite independent returns to something more basic, or just African influence through America, I still want to comment on the style of the dancing and the mental states associated with it. Where rhythms are made mainly by movements of the pelvis, and, with some exceptions, are made by percussive use of the feet on the ground, they tend not to be associated with intellectual or spiritual states. They are perhaps more primitive. I would assume that we are looking for a style of dance that builds up from, and perhaps by building from varies, these basic movements and the associated mental states to a more sophisticated, intellectual and perhaps spiritual style of dance.

Peggy. I object to "primitive." In Africa dancers dance with the whole of themselves: they respond to music physically, emotionally and intellectually. I regard this as more sophisticated than the dissociation of mind and body which I suggest underlies your statement that formalized spatial movements are expressive of spiritual and intellectual states as opposed to rhythmic motor-movements, particularly of the pelvis, which you discard as primitive.

Kathleen. "Primitive" may not be the right word; let me try to explain what I mean. When I am dancing, or for that matter

moving at all, I can enjoy the stretch and release of muscles. I can enjoy the effect of gravity on my body in movement: these are rather splendid sensuous pleasures. Next I can enjoy patterns of muscular tension and release and patterns formed by the way I resist or give in to gravity. I think I would describe these as sensuous, but with something else as well. Next I can use these sensuous pleasures and their patterning to formulate some mental state. The first stage I would call primitive, the last not primitive. I think classical dancers take these sensuous pleasures for granted as the ground of their dancing; they don't pretend they don't exist.

Peggy. I still suggest that you associate the latter with sexual movements which you feel to be "of a lower order." In Africa the dancer accepts his body as a means of expression of his imaginative, intellectual and spiritual aspirations, and accepts his sexuality as an integral part of this experience. All dance includes sexual elements, but this does not imply the provocative sexiness which dominates much of the contemporary European forms of entertainment. Fortunately African cultures have not been deeply influenced by the sexual hang-ups which I see as an expression of the European dichotomy of mind and body. I suggest that this split has its roots in the historical development of the Christian Church in Europe. The early Christians rejected dance as a religious art, reacting to the decadence of the later Roman Empire. They relegated it to the position of an amusing form of secular entertainment. This attitude was strengthened by the extreme Puritans at the time of the Reformation, who banished not only dance but all the arts from their churches, in their regard of the physical world as the seat of evil.

Kathleen. It is perhaps a little amusing to find that dance historians have to refer to the descriptions by Church writers of the devilish things that should *not* be allowed, in order to tell what many of these dances were like.

Peggy. A feeling of guilt and shame about sexual activity is surely one of the more obvious results. African paganism, like Catholicism, sees the physical as a means for the use of the spiritual forces for good or evil and in Africa dance remains an integral part of religious ritual. In the Yoruba culture of Nigeria, a

Sango priest praises the god of thunder through the movements of his dance: using his shoulder rhythms to express the thunder and the gestures of his arms to express the lightning of the god.

Q.I. But I don't want to worship Sango. We don't want everyone in Europe just doing African dance. And in classical ballet you don't just imitate a set of shapes, which might be set up as cardboard cutouts. Is there a part of the person which is not being used in, for instance, pop dancing and which people who do this are going to miss?

Peggy. I am not saying that Europeans should or could do African dances, nor that they should worship Sango, but that pop dancing in Europe is a starting-point from which young people are getting back the sense of bodily rhythm.

Perhaps we should clarify our discussion by distinguishing between theatrical dance and popular dance. This distinction is applicable in Africa as well as Europe. In West Africa, dances which are an integral part of the life of a homogeneous community are described as traditional dances, that is, dances which have evolved through generations to play an important role in the religious, social, educational and working life of the people as well as being a source of delight and entertainment. In these village dances the spectators create a performing area by physically surrounding the dancers. They are there not only to be entertained but to participate in a restatement of their values, beliefs and attitudes through music, song and dance. They see that standards are maintained and traditions respected. In some instances they may join the performance by clapping the rhythm or singing the songs, and in others they are permitted by the dance-leaders to join the performance. The traditional dance evolves by outstanding artists introducing innovations from year to year, whereas theatrical dance is the creation of a choreographer at a particular time. It is performed on a stage designed for the purpose and set apart from the spectators, who are usually seated in a specific area generally to one side of the stage. This radically affects the form of the dance as the movements are designed to be seen from one angle; thus the dancers perform "to the front," as in the ballet.

Q.I. Are these African dances like a library store with a repertoire of how things should be done? What kind of European society would you like to see in which this kind of thing was common? I can imagine ourselves as a widespread musical society—in fact, you have this in parts of Wales where everyone gets involved in singing—but not as a dancing society.

Q.II. There are plenty of people in bed-sitters in London who play guitars and sing, and about 10 per cent of them dance. If that 10 per cent changed to 90 per cent what would be coming to play in them that isn't now?

Q.I. What kind of movement do you define as “dance” anyhow?

Peggy. Dance is an art in which emotion or ideas are expressed in terms of a patterning of the movement of the dancer's body in space and time. The material of dance is this rhythmic and spatial patterning which is performed with specific qualities of physical effort or energy. For an analysis of these “efforts” you should read Rudolf Labans “Effort” or “Mastery of Movement.”

Q.II. I object to this use of the term “energy” which has been given a defined meaning by physicists since the 17th century.

Q.I. But surely, dancers need a terminology for how they change the ways of using their weight to increase their range. We need some words—if not “energy,” which after all is an older word than the physicists' use of it; I applaud the way the counter-culture has invented the word “vibes”, and so got away from the technical meaning of “vibrations.” In singing, you imagine something moving down your body as your voice goes up, and then the voice can go up to high notes. The Eastern people spoke of the Mobile Centre of Consciousness (M.C.C.) being pushed from one part of the body to another. Is this just an imaginative remark, or is the centre of effort really at different places at different times, and could there be any sign to test this? When is it metaphor?

Q.II. Like “breathing in through your navel.” There are bio-feedback tests which show that temperature has been raised in the hands, and there are healing actions with the hands which give a sensation of heat, but there is no sign that the temperature is

really raised. I think of it as more likely to be a re-organization of energy already there rather than a transfer of energy from the healer.

Q.I. Dancers clearly need a terminology for something being able to shift from one part of the body to another and for being able to direct it. The centre of energy is thought of as shifting. Non-dancers need to start from the idea of this moving centre which they can direct, and so unstiffen themselves, though they don't do it in dance. Thinking like this—as the Yoga people did—could get us nearer to the healing situation. We need the physiology of musculature here.

Q.II. But what is known of the physiology of musculature is still very primitive. I am interested in how Peggy's descriptions correspond to particular kinds of effort, and how different dancers have skills which enable them to express the tensions of particular actions. In so far as a ballet is related to skills the choreographer sees round him in life, it depends on skills developed by workmen or athletes for particular purposes—like the plasterer—though we have destroyed many of the beautiful actions, like scything, which we used to do. Getting precision in these skills is very difficult to do. Some of the quality of the excellence is taken over by the dancer, who can communicate that excellence without actually doing the action. The precision of how the body moves as a whole is something very different from mediocre performances. It is not just to be described as concatenating movements, but something like the unconscious mind comes in.

Q.I. There are two kinds of memory; you can remember either by thinking, verbal memory, or by “body memory,” and you can feel a click on passing from the former to the latter. Going the opposite way is more subtle; it is a form of using your intellect helpfully to integrate your perception of what you are doing, rather than having a lot of disconnected thoughts and perceptions.

Kathleen. The shape of the body can get altered in dance training. I used to have much too short a neck—now my neck isn't exactly a giraffe's, but it is a decent length.

Peggy. I was taught to alter my posture to overcome a

lordosis (an extremely hollow back), and this made an enormous difference to my physical state, and indeed my mental state.

Q.I. But how long does all this take? You need someone to teach you, and can non-dancers afford to take all that time? Singing can improve with 5 minutes breathing exercises a day, but dance takes up far more time.

Kathleen. You can point out to a person that if she goes on using her body in a certain way, eventually she won't be able to walk.

Peggy. And you can show people how they are wasting their energy, for instance in the way they walk.

Kathleen. You can walk in a way that shows you are unhappy when you *are* unhappy and the shape of the movements is an unconsidered result of your unhappiness. This is not dancing, any more than the quick withdrawal of your hand from a hot iron. But if, though not necessarily unhappy at the time, you formulate unhappiness in the shape of your movements, then you ARE dancing, or at least miming.

Q.I. The creation of a form is essential, as in literature and poetry. No one has mentioned intermediate things like football and bull-fighting, where the movements are highly stylized.

Kathleen. In 1971 I had a discussion with the people of Action Space† a group of artists who create large inflatable objects out of coloured P.V.C. But not until earlier this year did I manage to see any of their work. I think that some of their ideas, and the objects they create may lead us to ideas relevant to this discussion. Peggy has been talking of the way that the Africans dance for many occasions, and explaining how the dances grow out of the ordinary physical surroundings and the everyday actions. We have just had the suggestion that football and bull-fighting might be halfway things between the "prose" of ordinary everyday movement and the "poetry" of dance. But they don't appear to lead to a new kind of communal dance, perhaps because we are not all footballers or plasterers. The Action Space people say that their work is ". . . an experiment in living as well as striving to find

† See *Theoria to Theory*, Vol. 5, No. 2.

an art relevant to a wider public” but before I can attempt to show how the Action Space thing might help us to a new kind of communal dance formed out of movements that are common to us all, part of current culture, I had better give a brief description of my experience with their inflatables in what they called a soft room. The walls of the soft room were yellow soft plastic, with slashes of transparent plastic as queer shaped windows. Through these windows I watched the soft room changed. The brilliant coloured plastic bags of air sagged into crumpled stiffish plastic and were rolled-up. Other bits of brilliant stiffish crumpled plastic were rolled out, the pumps started to inflate the crumpled plastic until it formed into tubes, spheres and a very, very large parallelepiped; but none of these shapes were exact, the soft surfaces and seams making them like reflexions of themselves in rippled water, but too bright for reflexions. Bright spheres, like giant balloons descended from the ceiling on ropes. The large parallelepiped was too high for me to climb; someone gave me a leg-up. If the soft room had been less soft I would have felt unsafe wobbling around so high up. As I jumped it threw me up at angles I did not expect. I did not stay for the adults-only “event house,” my idea was simply to try the inflatables for myself. But thinking about the experience I feel I should have stayed; perhaps my almost solitary experience missed the point. Perhaps the inflatables make an event, like the train lurching and stopping in the tunnel that *can* start the exchange of a smile, a laugh, a helping hand. They provide structures where help is needed: to be given a leg-up, to be pushed on a swing. If someone sways on a crowded underground train, everyone sways; if someone jumps on an inflatable, everyone else on that inflatable is bounced. On the underground, if the swaying mass of people collides against our day’s tensions and fears, we may respond badly. On the underground it is hard to respond well. We feel tired, pushed, tossed and rushed. Perhaps one approach to improving our reaction is to improve our feelings. Perhaps one approach to improving our feelings is not to resist the pushing and tossing and rush, but to make ourselves aware of the quality and shape of our movements in relation to the quality and shape of the movements of all the others in the crowd with us.

Can the soft room give us practice in awareness of our movements and the movements and intended movements of the others in the crowd? And can it give us practice at fitting our movements neatly with theirs? Might the bright colours tend to blunt our awareness of others? Might the softness tend to make for careless violence, for after all, people knocked down are unlikely to be hurt in such a soft environment? If the soft room can lead us to enjoy patterns of movement, it just might help us to respond with kindness and joy.

Holborn underground station in the rush hour may be considered not the easiest place for kindness and joy. But there are beautiful patterns of movement at the bottom of the escalators, only waiting for our participating enjoyment. Crowds move from left to right: crowds move from right to left: crowds move from both left and right to the up escalators: crowds move from the down escalators to both right and left: making complex crossing and intermingling patterns that cover most of the floor space.

To take part in these movements and to keep them going at a comfortable efficient pace, requires more than conventional courtesy to the person immediately crossing our path. It requires awareness of the total pattern, so that we can judge the speed and placing of each step in such a way that we can allow everyone the maximum speed and comfort.

Freed from the conventions and restraints of every-dayness, with sensitivity to our own and others' movements, we might find the swaying movement in the underground train becoming a new kind of communal dance.

I wonder if we would drive better if we enjoyed traffic movements like a dance.

Peggy. You are looking at crowd movement with the eye of a choreographer who uses the ability to discern patterns of movement in everyday life as a starting point for creating theatrical dance. Many Modern Dance choreographers have tried to re-establish dance theatre as a popular art by using working and other types of daily movement as their material. I feel that choreographers in Europe will now have to "get with" the new rhythmic developments in pop music to achieve this and that

Modern Dance will have to be open to a wider range and complexity of rhythmic movement.

Q.I. What do you actually do as a choreographer in Nigeria?

Peggy. In Nigeria I have used traditional dance skills as a basis for developing a theatrical dance technique by incorporating a wide range of dance movements from a number of different cultures. I have worked in the theatre in Ibadan and in Ile-Ife with groups of young performers and we have created a series of dance-dramas based on African myths, which are not unlike the Greek myths. These dance-dramas have used stylized dance-forms combined with improvisation and have resulted in dance works which could be described as African ballets. These have been enthusiastically received by elite audiences at Universities and in cities in Nigeria and Europe but have not had a general popular appeal. I think this is because they are too abstracted from everyday life. I am now working in a different way. My last production was the result of studying and recording a Yoruba ritual festival over a period of two weeks. I returned to the theatre and played the tapes of the music, incantations and songs to the Yoruba performers in the University of Ife Theatre Company. We studied the intricate movements of the dances appropriate to the ritual and gradually a production evolved in which the performers contributed to the creation of their roles; I developed these and related them into a whole. The result was not a pure dance performance but a closely-knit relation between poetry, dance, music, song and the spoken word which expressed the essence of the religious festival in a closely condensed hour of theatre which could not be described in the European terms of ballet, musical or play. The Nigerian composer Akin Euba described it as a dance-poem, and it was a popular success. Working in Nigerian theatre is a continuous search for ways of relating past and present in terms that are meaningful to modern Nigerian audiences. It has taken years of watching, studying and taking part in traditional dances all over the country for me to have the skill and confidence to work as a catalyst in the creation of new theatrical forms. Perhaps new ways of looking at theatre and its relation to daily life are necessary in Europe—the discovery of forms which relate all the performing arts into a “whole” form of theatre.

Q.I. Can you tell us more of the way in which you work?

Peggy. When I start on a new work with the members of the company I throw out ideas in words and movements and they respond. We set up a dialogue using movement, music and words freely so that the physical, mental and emotional expression becomes an integrated experience. In this way we work amazingly rapidly with great fluidity in our exchange of ideas. I am aware of an easy flow between the “conscious” and “unconscious” in this method of work that I find expressed in Zen thinking.

I prepare for a rehearsal by sleeping deeply, so that I enter the theatre with an “open” mind and rely on my reactions to movements and suggestions from the performers to create an “impetus” on which I build. I realize that I have slowly learnt a new rhythm of work from the master-dancers who have taught me their traditional arts, and by trying to steep myself physically and imaginatively in the rhythms of African life. This reliance on the promptings of the unconscious does not imply a loss of control or precision but a growth of the ability to think and remember in terms of movement; to extend the range of perception of movement and heighten the immediate reactions to movement situations. Over the past four years I have worked closely with a master-drummer with whom I have no common verbal language. Percussive rhythms are of course the basis on which we build all our work.

Q.II. Do you think that African dancers have a greater natural talent for dance than Europeans?

Peggy. I am continually amazed at how rapidly African dancers master new dance movements and rhythms. I don’t think this is because they are all “natural dancers” but because their bodies and minds are well-integrated so that their concentrated energies are directed outward into what they are doing, and they are not held back by doubting of their abilities or fears of trying out movements outside their experience. I consider that this lack of negative physical selfconsciousness is the result of an easy flow between the conscious and unconscious levels of the mind which Europeans have lost, and many are striving to regain on the psychiatrist’s couch or through dance or even drugs. Possibly this is one of the prices paid for an overemphasis on materialistic and

technological development over the last four centuries which itself is a symptom of the separation of the material and spiritual which we have discussed.

Q.II. Is this movement from the “conscious” to the “unconscious” anything to do with states of trance?

Peggy. Dance in Africa is based on percussive rhythms. In some traditional styles of dance these change continuously, in others they are repetitive. Most dances start with a simple transference of weight from one part of the body to another—let us say from one foot to the other; the weight of the body moves into and away from the earth without the effort of fighting against gravity. As the rhythm develops it may call for great skill and precision of movement but (apart from acrobatic dancing) these movements seldom cause strain and dancers are able to continue for hours without becoming exhausted. I suggest that the dancer enters into a rhythmic experience which could be described as the first stage of trance: in which the intense inner concentration and sheer delight in the dance releases new depths of energy. In traditional dances in which the tempo of a repetitive rhythm is rapidly accelerated, performers commonly enter into a state of “possession” in which they are unconscious of their immediate surroundings or in a state of deep trance. When this happens the dance organizers “catch” the dancer and take him away to release the spirit which has taken possession of him.

Q.II. Are these states of trance and possession used as part of religious ritual?

Peggy. It is usual for priests, priestesses, even devotees to be possessed by the god they serve during or after sacrificial ceremonies.

In a remote village in the Niger delta I watched a priestess slowly moving into a state of possession. In the early morning she approached the shrine in response to the summons of the drums. She stood motionless in the outer shrine, her feet apart, her face lifted in deep concentration—holding the sacrificial tray in both hands. The inner sacrificial shrine is taboo to women. Over the next hour the drumming gradually intensified and her entire body vibrated in response. At the moment of climax she burst through

the plam leaf screen of the inner shrine, possessed by a male god. Her posture, movement and gestures were those of a man. For the next three hours she carried out the intended pattern of the ritual with controlled formality and dignity. She had become one with the world of the spirits—not by leaving her body but by allowing the spirit to work through her. To people living within the African traditions, the spiritual is as real and immediate as the physical world. Interaction between the two worlds appears to be a common daily experience.

Africa has much to learn from European technology in order to survive the economic pressures of the twentieth century. I feel that Europe has a great deal to learn from Africa—not by imitating the externals of religious practice or the arts which express them, but by recognizing the sanity of accepting the unity of body and spirit which makes the whole man: and dance is surely one of the most vital expressions of this unity.

Notes on "soft technology"

Part II †

PETER HARPER

7. ECOLOGICAL TECHNOLOGY

This is a strong component of many "mixed" soft technologies, and the term "soft technology" is often used to mean "environmentally sound technology," as mentioned above. There are any number of approaches to it, depending on the ecological theories held by the practitioners. Plenty of purely technical solutions to ecological problems have been put forward in a perfectly orthodox way by big manufacturing corporations,²² making what Johan Galtung calls "anti-technologies,"²³ but for the present purposes these don't count. Somewhat more radical are proposals such as those of Commoner²⁴ to substitute for a fixed catalogue of environmentally damaging technologies (such as the private automobile, chemical fertilizers, chemical pesticides) a matching catalogue of "clean" technologies doing essentially the same thing (public transport, "organic" fertilizers, biological pest control). Some of these changes could have political implications in themselves, although it seems that Commoner envisages their being brought about through primary political change. A more catastrophic view of ecological stability sees the causes of environmental deterioration in globally cumulative deviations from "natural" ecological cycles. According to this view, the only

† Part I appeared in *Theoria to Theory*, Vol. 8, No. 2.

Theoria to Theory
1974, Vol. 8, pp. 223–239

Published by
Gordon and Breach Science Publishers Ltd.

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guaranteed security lies in a technology that mimics these cycles to within some supposed homeostatic tolerance. Taken literally, this leads to very decentralized communities based almost exclusively on renewable sources of energy (wind, sun, water, vegetable fuels) and materials (plant and animal products, earth, glass, stone, etc.),²⁵ but it is unusual to go this far. Less extreme forms of “eco-technology” make free use of advanced methods but take pains to avoid known long-term risks. For example, the use of wind-generated electricity, perhaps using electrolytic hydrogen as a form of store, might avoid the short and long-term effects associated with fossil fuel burning. For general sources on ecological technology, see Ref. 26.

8. RESOURCE-CONSERVING TECHNOLOGY

This is strongly related to ecological technology in that flow of materials and energy are inevitably ecological variables. Furthermore “despoliation of a resource” is often the same as pollution. Clean, cold water, for example, may be a valuable resource. Nevertheless, there may be conflicts between the two. Increased use of biological materials in place of (say) nonrenewable mineral resources may result in overcropping and severe ecological disruption. Applying the two constraints together may necessitate an absolute diminution of flow of materials for production, a result which many alternative technologists accept as a hallmark of the new approach. *Their* R & D would go into finding out how to make do with the lower flow of materials. Some alternative technology theorists base themselves on certain ethical principles about how resources should be apportioned, in time as well as in space. This involves (at least implicitly) classifying resources into various groups, and also classifying the interested parties into groups according to their “rights” as regards entitlement to resources. Deep differences emerge in such classifications, and there is no agreed set of resource-disposing ground-rules for alternative technologies.²⁷ Many of these problems would be

resolved in a stable completely self-sufficient economy, were such a thing possible, since there is negligible in- or out-flow and no “using up.”

9. SELF-SUFFICIENT OR REGIONAL TECHNOLOGY

Ecological and resource considerations often indicate self-sufficiency as a possible solution, but there are also political considerations. Radical analyses of the phenomenon of underdevelopment often emphasize the imbalance between the “metropolis” and the “periphery,”²⁸ and a number of writers have suggested that a withdrawal from the system may be the best plan for exploited nations.²⁹ A similar imbalanced condition is found in the metropolitan countries themselves, where in the interests of the whole, the cities exploit the countryside. Meanwhile the quality of the cities as places to live is sacrificed to the needs of international commerce (airports, roads, offices, hotels). No area lives for itself, but for requirements of other parts of the system. One can suppose this to be an inevitable product of the uneven accumulation of capital characteristic of monopoly capitalism,³⁰ and the same mechanism virtually guarantees other environmental problems.³¹ A list of the reasons that have been given for relative self-sufficiency at various levels might include the following:

- a) there is ecological stability in that material is not depleted in one place and dispersed in another as pollution;
- b) the system does not exploit and cannot be exploited—at least not in a commercial sense;
- c) the system does not depend on supplies or processes elsewhere which may be unreliable, it is less vulnerable to disruption by military or economic attack;³²
- d) the economy could proceed at its own pace without having to compete with external economies;

e) randomly-selected self-reliant areas would constitute “worst cases”—in general any collection of such units would be more efficient than a single one, an option always open through various forms of federation;

f) the population has direct control over its products, processes and distribution; it defines its goals in its own terms.

Very few soft technology enthusiasts take total self-sufficiency seriously: it has so many obvious drawbacks. Nearly always it is assumed that certain crucial (“seed”) materials can legitimately be brought in from outside. There is a sizeable literature on the economics of decentralism,³³ some of it specifying particular sizes of units or even particular places.³⁴ In the third world certain radical approaches to development have stressed decentralization and self-reliance, notably China and Tanzania.³⁵ On the more strictly technical aspects, Murray Bookchin’s essay “Towards a Liberatory Technology”³⁶ is perhaps the best known, while the most detailed, at least in the “household” rather than production sector, are the reports of the Technical Research Division of the Architecture Department at the University of Cambridge.³⁷

10. SELF-HELP TECHNOLOGY

This is clearly related to self-sufficiency, but also involves simplicity of production, operation, maintenance, etc.;³⁸ cheapness;³⁹ and a certain independence of the “normal” economy, although much self-help technology uses scavenged material that would simply not exist without the detritus of industry. Sometimes the idea is pressed to the individual level, but is more often thought of in terms of collective self-management. The break from normal production techniques tied to the main economy is driven by the desire to regain direct control over the production process; not to be “mystified” by experts, and thus to take decisions “in full knowledge of the relevant facts.”⁴⁰ Self-help technology fits comfortably into direct-democracy self-sufficient communities, but potentially has a much closer

relationship to life in big cities. Radicals see it as a means of raising consciousness by showing the possibilities for direct control, as in the case of squatters organizing their own services like plumbing and heating,⁴¹ or the running of small-scale “communal factories.”⁴² Self-help technology can be seen as the technical aspect of the rapidly growing community-action movements in the West, which are attempting to change the loci of control over various goods and services (e.g. food—food cooperatives, health food shops; transport—community buses, white bicycles; information—underground press⁴³ and news agencies,⁴⁴ pirate radio stations,⁴⁵ bookshops; medicine—neighbourhood clinics, advisory medical collectives;⁴⁶ legal advice—claimants’ unions;⁴⁷ education—free schools;⁴⁸ employment—“People’s Yellow Pages”;⁴⁹ architecture and town planning.⁵⁰ Part of the interest that many young scientists and technicians have in the community action movement is to make use of their skills in a way which is directly socially helpful, and not gated through the dubious channels of the state or private corporations. The wilder visionaries see the next phase as the extension of the *soi-disant* “alternative economy” from the tertiary and quaternary (services and administration) levels into the secondary (manufacturing, other than beads and candles) and even primary (production of food and materials) levels. Since this would require a great deal of technical skill and certain kinds of research that are not favoured by the prevailing economic and political forces, it is supposed that an alternative R & D system will need to develop, parallel with the existing one, in which some technically trained young people will prefer to work when they “qualify” or even before they qualify, as a preferred means of training. Possible kinds of organization for “alternative R & D” are referred to in Ref. 11, or in Clarke and Clarke *op. cit.*²⁶

11. REVOLUTIONARY TECHNOLOGY

Many practitioners of alternative technologies feel them to be revolutionary in the negative sense that, further developed, and under the appropriate social circumstances, they could threaten

the existing order by posing an alternative. Others have sought a more direct approach to attacking the dominant institutions through orthodox technical methods, e.g. "Computers for People," disseminating information on how to block the operation of computer systems, the puckish "phone phreaks"⁵¹ or more infamously, *The Anarchist Cook-book*.⁵² In between the positive and negative approaches is a compromise by those revolutionaries who feel that the orthodox type of revolution is no longer possible in industrial countries, and fall back on the idea of "islands" of revolutionary practice which can serve as bases for political activity. Near self-sufficiency would be desirable in these cases on account of its security, and also as a means of testing out patterns of production more in line with the revolutionary ideology.⁵³ Naturally there is much disagreement about "what is to be done" here. The split that recently developed in a French radical science group is typical; as one commentator remarked, "Il y a une tendance politique, et une tendance yaourt."

12. SOFT TECHNOLOGY

In my conception, soft technology is a mixture of various elements of the alternative technologies discussed above. Such a mixture is only possible if there is not too much conflict between the means of achieving the various goals. A crude way to look at the mixture is to consider the technology appropriate to each goal as a set in a Venn diagram. "Soft technology" as I conceive it could then be defined as the intersection of a number of sets: for example (these are *just* examples—it could be any other combination of sets)

Regional, ecological, resource-conserving, social-change-generating, producer and consumer controlled, and so on.

Its scope will almost inevitably be smaller than any one of the component sets, since it has to obey a number of "and" constraints. This picture is, however, far too crude because these sets do not have sharp boundaries. On the contrary, there is likely

to be a complete continuum of “appropriateness” for each goal, and in order to optimize overall—to find the best “soft” mixture—each factor must be given a weight.⁵⁴ I have never seen this attempted formally, but various rules have been put forward with the intention of setting up minimum standards for mixed alternative technologies.⁵⁵ Otherwise, as was mentioned above, the reconciliation of conflicting demands tends to be judged intuitively. And in view of the additional complication that the goals probably cannot be unambiguously defined or quantified, and they do not interact in simple linear ways, this informal approach is probably as good as any other, and perhaps more honest than much that passes as “scientific” cost-benefit analysis.⁵⁶ The implication of all this is that soft technology is an *approach*, a philosophy even, rather than a set of approved techniques. Having arrived at a philosophical conception of “what being human is all about” (what less does it involve?) it strives to set us some organizational desiderata, and then to seek methods and techniques that would be appropriate to them all. In my subculture the consensus seems to indicate the following as a minimal list:

- the use of renewable or very abundant materials and sources of energy;
- remaining within “natural” flow-rates;
- regional self-reliance for most essentials;
- simplification in production and use;
- satisfaction in production and use (“conviviality”);
- small-scale, self-managed production units;
- absence of exploitation inside or outside the unit.

But now here is the real crunch: even if these do not conflict with each other too much, and we *can* find methods of promoting them all simultaneously, one great conflict remains: that between our human goals on the one hand and productivity on the other (or, as cynics would have it, between Utopia and reality). The conventional organization of production in industrial societies is justified precisely on these grounds, that any other organization would be less efficient. And anyway, is not freedom to make

noneconomic choice the prerogative of economies with a sizeable surplus?⁵⁷ Let us admit that if any society were crazy enough to follow the suggestions I have been making, there would be fantastic losses in productivity in the ordinary sense. But there would also be gains, in a subtler sense. Nobody can say until it has been tried, but such systems as soft technologists and radical economists propose would have at least some claims to rationality on the grounds that:

- a) “residual” factors would be released;⁵⁸
- b) in rational production for local needs there need be no superfluous production; neither would there be useless jobs;⁵⁹
- c) diminution of leisure-time consumption would be compensated by the enjoyment of work. Indeed the work-leisure distinction may disappear;⁶⁰
- d) there would be no waste through exploitation or uneven accumulation of capital;
- e) the sacrifice of opportunities and consumption implicit in this programme takes place in the upper reaches of utility curves where it hardly matters anyway; within limits, frugality games can be just as rewarding as opulence games;
- f) “noneconomic” satisfactions would be served directly, rather than indirectly through the medium of exchange.

(N.B. this paper should be read sitting on the grass, with the sun shining.)

13. ALTERNATIVE SCIENCE

On one side of Alternative Technology stands Alternative Society. On the other side stands Alternative Science, and it is always hard to tell where one begins and the other ends. As with “alternative technology,” “alternative science” tends to refer not so much to truly original or unknown things (although some of it does), but to ways in which knowledge is organized. There are a number of more or less formal suggestions, such as “critical science,”⁶¹

“adversary science,”⁶² “community science,”⁶³ and “radical science.”⁶⁴ The first two of these refer to an alliance between scientists and those whose interests are not normally served by the scientific establishment, the corporations or the government; the third refers to the organization of science on a community basis serving local needs and controlled by a local community; and the last is a little of each. A strong influence has been the idea that much knowledge which we need is not teachable, but only learnable through direct experience.⁶⁵ This rather anti-academic idea interacts with certain tendencies within the academy, such as the resurgence of interest in the sociology of knowledge⁶⁶ and the debates over the status of scientific objectivity.⁶⁷ There is also some fringe research that concerns itself with tabooed areas of knowledge⁶⁸ such as dowsing, UFOs, planetary and celestial influences, prehistoric science, macrobiotics, altered states of consciousness, organic gardening.⁶⁹ These count as potential “sciences” in that they have all seen attempts to erect a systematic body of theory, although many of the practitioners deny that they will ever be truly “scientific” in the sense that they become independent of observers trained in a particular way. Sometimes they emerge into respectability, as with astronomical interpretations of certain megalithic sites⁷⁰ or recently, acupuncture. Personally I think momentous changes in the dominant Western world-view will emerge eventually from the growth and maturation of some of these para-sciences and the continued erosion of the philosophical basis of conventional science.

14. SOFT TECHNOLOGY AND THE THIRD WORLD

Soft technology is a Western idea, riddled with Western values. It is not for export. If the people of the Third World want colour-televisions and motorcars, that’s fine. It may well be that the somewhat paradoxical claim of Intermediate Technology is correct—that by avoiding very large scale sophisticated technology in the first instance, balanced growth occurs faster and the capacity to mass-produce consumer-goods is achieved sooner. It

may also be the case that maximizing GNP growth is not the most rational way of achieving development goals.⁷¹ But technologically this is none of the business of us white folks. The task of a citizen in the industrial countries who wishes to help the Third World is here in the belly of the beast, actively opposing the dominance of the metropolis over the periphery, or at least, the rulers over the ruled.⁷² For some of us at least, soft technology, applied in the industrial countries, is part of our contribution to healthy global development.

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This is all a bit half-baked of course. Fortunately, nobody minds that too much in the movement, but since I'm writing it here, I would appreciate any feedback from other subcultures.

Notes and references

22. Quinn, J. B. "Next big industry: environment improvement," *Harvard Business Review* (Sept.-Oct. 1971), 120-131.
23. Galtung, Johan. "The 'limits to growth' and class politics," International Peace Research Institute, Oslo, Publication No. 27-7 (1972).
24. Commoner, Barry. *The Closing Circle* (Cape, 1972); this theme is frequently treated by the influential magazine *Environment*, 438 N. Skinner Blvd., St. Louis, Mo 63130, U.S.A.
25. One of the problems taken seriously by such groups is that of *anticipation* by a homeostatic system. A homeostatic system can correct deviations or misalignments from some norm, but it is always possible to exceed the system's capacity to correct. The earth seems to be an example of an evolutionary homeostatic system which can "learn" to correct new types of misalignments. In a very long evolutionary history, the world ecosystem has "learned" to handle an extraordinary variety of misalignments brought about by its own evolution. The question is, can that capacity for learning be exceeded, and are the current varieties of man-made effects so completely novel and rapid that they will fall outside the system's capacity to adjust? We certainly have not enough information to judge, but some people argue that if there is a long lag in the response time, irreversible damage may be done before there are signs which are clear enough for us to judge and to act upon. If this is in fact the case, it would not be irrational to reduce the rate or the quantity of those processes that are qualitatively "new." In one interpretation, this leads to a kind of rational neo-primitivism.

A similar end-point is reached by those who are convinced that the collapse of industrial culture is anyway not far distant. The best chance of surviving a collapse, and reconstructing afterwards, is gained by reduced reliance on heavy capital which itself depends on the efficient functioning of the entire economic system, and would not work "afterwards." The most general and reliable technology is one based on absolutely basic natural materials.

This position is discussed in some detail in my unpublished paper "Soft technology: a proposal for alternatives under conditions of crisis" (Youth Division, UNESCO, 1971). (For anyone who reads Dutch it has been published as "Meerzoeken naar alternative technologie," *Katernen* 2000 9-10 (1972); and one of its appendices as "Technologische Ongelukken," *De Gids* 9-10 (1971)).

A schematic example of a small unit economy supposedly based on "ecological technology" is given in "Soft technology: blueprint for a research community" by Janine and Robin Clarke, *Undercurrents* No. 2 (1972).

26. Clarke and Clarke, op. cit., footnote 25 (largely reprinted as "The biotechnic research community," in *Futures* (June 1972)); Harper and Eriksson, op. cit.; Stefan Szczelkun, *Survival Scrapbook*, Vols I, II, V (Unicorn Books, Brighton, 1972-3); "Designing for survival," special feature in *Architectural Design* 42 (7) (July 1972); John and Sally Seymour, *Self-Sufficiency* (Faber, 1973); Ian McHarg, *Design with Nature* (Doubleday, 1971); *Journal of the New Alchemists* No. 1 (1973), P.O. Box 432, Woods Hole, MA 02543, U.S.A.; publicity material for Messrs. Low Impact Technology Ltd., 275 King's Road, Kingston-on-Thames, Surrey.
27. A basic problem is that we have no universal doctrine of the entities that populate the moral world and what their rights are. In Western culture we accord certain rights, say, to living compatriots, others to aliens, others to lunatics and children. At times in our history slaves were hardly part of the moral universe, and at other times women were not. The line is obviously variable. In other cultures the dead have rights, and we too recognize a temporal dimension in feeling certain obligations to "posterity," although this does not go very far. Similarly we accord rights to some kinds of animals (for example in antivivisection laws) but we draw the line at rivers or mountains, unlike, say, many American Indian societies. The question has taken on a particular interest in the light of the "environment debate" because some writers have claimed that our impact on the environment may spring from the pattern of rights we accord various entities in nature (e.g. S. H. Nasr, *The Encounter of Man and Nature* (Allen and Unwin, 1970); John Black, *The Dominion of Man* (Edinburgh U.P., 1970); Lynn White, *Machina ex Deo* (MIT Press, 1969); Edward Hyams, *Soil and Civilisation* (Thames and Hudson, 1952)). The implication is that perhaps we should revise our moral universe, but this always strikes us as absurd because the one we have is always "obviously correct." Sophisticated relativism does not help very much since if the whole thing is arbitrary, one might as well do what one

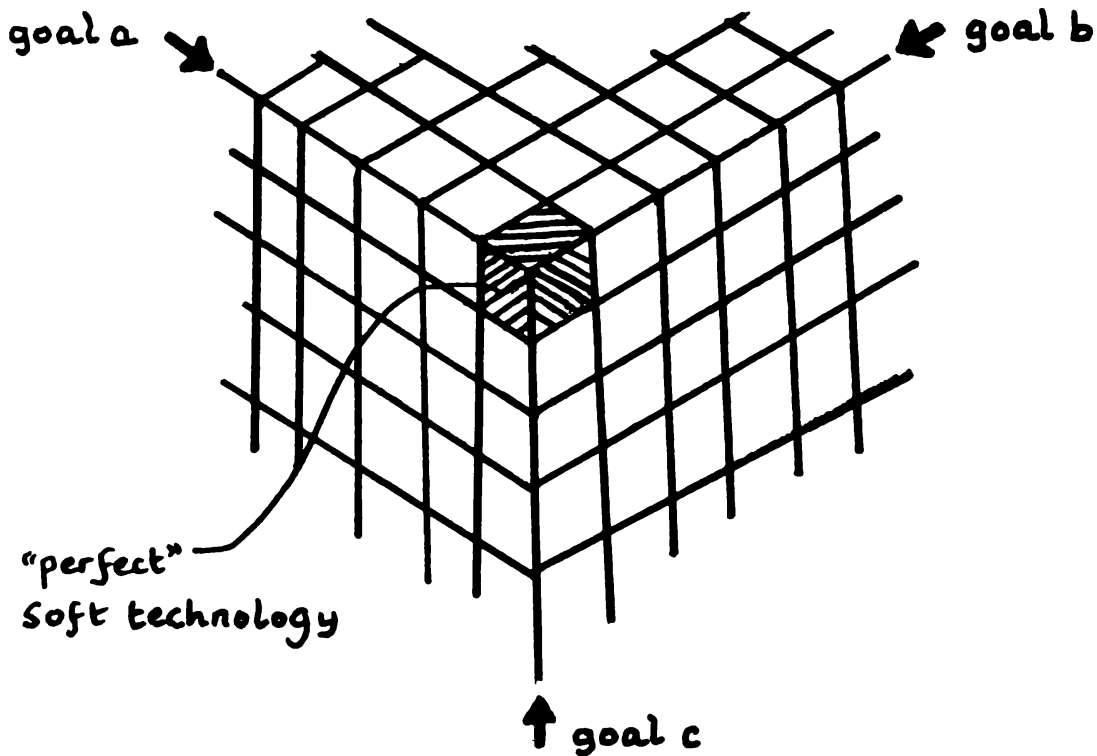
is used to. There is a different attitude in some sections of the Western youth culture, where one of the favourite "eco-games" is to draw up "charters of rights" as it were, for all sorts of natural entities. This involves making judgments about the supposed "interests" of such entities, which might seem a remarkably fruitless thing to do. Nevertheless, it is done with honourable intent, and it is possible to regard it as a useful adaptive procedure that could help us gain our own human ends, as has been argued by Roy Rappaport in "Sanctity and adaptation" (Proceedings of Wenner-Gren Symposium on *The Moral and Aesthetic Structure of Human Adaptation* (Burg Wartenstein, 1969)). On the other side of the coin is the problem of classifying the resources themselves—what to use and what not to use, how and when etc. The rule of renewability is the most common one, but it is hard to apply in practice. Sometimes this has been restated in terms of "natural materials," but this is also very vague. The clearest and most enchanting interpretation of this must be that of Lloyd Kahn, struggling to formulate his distaste for certain materials after ten years of building geodesic domes out of every possible stuff: "I don't like living under anything that's had its molecules rearranged" (Lloyd Kahn, *op. cit.*, footnote 16).

28. Frank, Andre Gunder. *Capitalism and Underdevelopment in Latin America* (Monthly Review Press, 1969).
29. Amin, Samir. *L'Accumulation a L'Echelle Mondiale* (Paris, 1970). To offset the obvious disadvantages this would bring, a programme of regional cooperation would be desirable, see R. H. Green and Ann Seidman, *Unity or Poverty?* (Penguin, 1968).
30. Galtung, *op. cit.*, footnote 23.
31. Weisberg, Barry. "Beyond repair"; *The Ecology of Capitalism* (Beacon Press, 1971); Harry Rothman, "Murderous providence"; *A Study of Pollution in Industrial Society* (Rupert Hart-Davis, 1972); Ken Coates (ed.), *Socialism and the Environment* (Spokesman Books, 1972); Richard England and Barry Bluestone, "Ecology and class conflict," in *Ecology, Society and Man*, eds. J. D. Allen and A. J. Hanson (Wadsworth, 1971); Vincente Labeyrie, "Crisis of environment or crisis of capitalist economy," *Marxism Today* (April 1973).
32. Decentralist policies in China and North Vietnam can to some extent be interpreted as responses to the potential threat of air attack. Not only is it harder to destroy significant proportions of the industrial base by concentrated bombing, but attacks on any one part will not impair the economic function of others, as they would in a more integrated economy. Thus all parts of the economy are everywhere, bearing a relation to the specialized economy rather like that of a hologram to an ordinary photograph.
33. "Workers' councils and the economics of a self-managed society," Solidarity, Pamphlet No. 40, c/o 123 Lathom Road, London, E.6; Murray Bookchin, *Post-Scarcity Anarchism* (Ramparts Press, 1971); Peter Kropotkin, *The Conquest of Bread* (Allen Lane, The Penguin Press, 1973), and *Fields, Factories and Workshops* (Blom, 1968). For a liberal

- critique see Assar Lindbeck, *The Political Economy of the New Left: An Outsider's View* (Harper and Row, 1971).
34. Roberts, Nick and John Hodge. "Peterchurch: the development of a rural community," unpublished 5th year thesis (Architectural Association, London, 1972); J. and S. Seymour, op. cit.; Peter van Dresser, *A Landscape for Humans* (Biotechnic Press, P.O. Box 26091, Albuquerque, New Mexico, U.S.A., 1972).
 35. Sigurdson, Jon. "Rural industrialisation in China," Science Policy Research Unit, University of Sussex, Brighton, England, 1972. See also "The suitability of technology in contemporary China," *Impact of Science on Society* 23 (4), 341-352 (1973). Nyerere, Julius. *The Arusha Declaration and TANU's Policy of Socialism and Self-Reliance*; J. Nyerere, *Ujamaa, Essays on Socialism* (Oxford U.P., 1967).
 36. In *Post-Scarcity Anarchism*, op. cit.
 37. Technical Research Division, Department of Architecture, University of Cambridge, Scroope Terrace, Cambridge, England.
 38. Stewart, Frances. (op. cit., footnote 1) makes the telling point that simplicity is not a unitary thing in technology and that simplicity in different aspects (production, use, maintenance etc.) may intrinsically conflict. A machine easy to make may require great skill to use; a complex machine easy to use may be very tricky to repair.
 39. Cheapness is also a goal with problems, see "Transfiguration among the windmills," *Undercurrents* No. 5 (1973).
 40. Engels, F. *Anti-Duhring*, part III.
 41. e.g. *Squatters' Handbook* (BIT, 146 Great Western Road, London, W.11).
 42. "The Community Workshop," *Anarchy* 3, No. 30 (1963); Hayes, Fielder and Kirkham, op. cit.
 43. Noyce, John. *Directory of Alternative Information Services and Libraries in Britain* (1973); *Directory of Alternative Periodicals* (3rd ed., 1973) (Smoothie Publications, 67 Vere Road, Brighton, Sussex).
 44. e.g. *People's News Service*, 119 Railton Road, London, S.E.24.
 45. Turner, Nigel. *Community Radio in Britain: A Practical Introduction* (Andrew Singer, Publisher, The Mill Cottage, Bottisham, CB5 9ED, Cambs.).
 46. For example, the manual *Our Bodies Ourselves*, produced by the Boston Women's Health Book Collective, Box 192, West Somerville, Mass. 02144, U.S.A.
 47. See *Claimants' Union Guidebook* (Claimants Publications Library, 19 Carlyle Road, Ladywood, Birmingham 16, England).
 48. Paton, Keith. *The Great Brain Robbery* (53 Kitchener Road, Birmingham 29); W. Kenneth Richmond, *The Free School* (Methuen, 1973); Alison Truefitt, "How to set up a Free School" (57 White Lion Street, London, N. 1); S. Hansen and J. Jensen, *The Little Red School Book*, Stage 1 (21 Theobalds Road, London, W.C. 1).
 49. In *the Making* (71 Thirlwell Road, Sheffield S8 9TF); *Directory of Alternative Work* (Uncareers, 298b Pershore Road, Birmingham 5);

Peoples Yellow Pages (Vocations for Social Change, 46 Inman Street, Cambridge Mass. 02139, U.S.A.).

50. The Berkeley Tribe. "Blueprint for a communal environment," in Roszak (ed.) *Sources* (Harper Torchbooks, 1972).
51. The phone phreaks are in perpetual play/battle with the telephone engineers as they "decode" the structure of the international telephone system and devise systems that permit free use of the telephone system. See for example the circuits in "Freefone: Peoples Power Pamphlet No. 1" (no address can be given as distribution of the pamphlet is illegal).
52. Powell, William. *The Anarchist Cook-book* (Lyle Stuart, N.Y., 1971).
53. See for example *Street Farmer* (65 Patshull Road, London, N.W.5); G. Caine and B. Haggart, "Ramifications and propagations of Street Farm," *Undercurrents* No. 4. (1973); "The evolution of the communes: some possible trajectories" (Aquarius Project, Box 4013, Berkeley CA 94704, U.S.A.).
54. The problem can be partly illustrated by casting the various goals in a n -dimensional matrix, symbolized in 3-space as the corner of a cube:



The corner cell is "perfect soft technology"—where you have achieved all your aims simultaneously, something which is probably impossible, even if it were possible to define them and order them adequately. Where we are *now* is at various places inside the cube, plotting various routes to the corner, and arguing over which dimensions are the most important to

work on. Naturally, economics and technology being what they are, improvement on one dimension will often call for deterioration on another. This generates a complex of trade-offs between one desideratum and another, and leads to a lot of problems for the soft technology theorist who has no taste for standardizing devices such as money. Choices tend to be relegated to collective discussion—easier in a small economy than a large one.

55. Robin Clarke has proposed the formula ("Clarke's Canon"), "Technology for all men for all time," i.e. could be carried out indefinitely without destroying its base, and would be accessible to everybody. George Wald in another context suggested the criterion, which has much charm, "Is it good for children?"—"Are H-Bombs good for children? Is napalm good for children? You tell me." These are not over-helpful in practice, but they serve an inspirational purpose.
56. See Adams, op. cit., footnote 14; also Duke Maskell's droll "Men of distinction," *Cambridge Quarterly* (1972).
57. The domination of a society's values by economic considerations has been named "Techno-economism" by Leslie Sklair, who grumbles about it in his *Organised Knowledge* (Paladin, 1973), chap. 8. See also my "Soft technology and criticism of the western model of development," *Prospects in Education* 3 (2) (1973) (UNESCO).
58. As, to the sympathetic eye, is the case in China. According to some economists, the major originality of modern Chinese economic policy is not so much in effectively deploying the available resources, but in releasing hidden resources. See Jack Gray, "The Chinese model: some characteristics of Maoist policies for social change and economic growth," *Socialist Economics*, edited by Alec Nove and D. M. Nuti (Penguin, 1972).
59. Paton, K. "Work and surplus," *Anarchy* 10 (12) (Dec. 1970).
60. Paul and Percival Goodman draw an ideal picture of such a society in their *Communitas: Means of Livelihood and Ways of Life* (2nd ed., Vintage, 1960), chap. 6. See also my essay "What's left of alternative technology?" *Undercurrents* No. 6 (March/April 1974).
61. Ravetz, J. R. Op. cit., footnote 3, p. V.
62. Goffman, J. "Nuclear power and ecocide: an adversary view of new technology," *Bull. Atomic Scientists* 27 (7), 28-32 (1971). The suggestion is that instead of "technology assessment" being in the hands of the government or the usual kind of regulatory agency funded by the government, it should be controlled by independent groups of scientists whose function is simply to criticize in any way they think relevant to the public good, or perhaps more importantly to small group interests that get squeezed out in the vast averagings of technical progress.
63. Dickson, David. "Science to help the people," *New Scientist* (4 May 1972); *Science for People* No. 20 (1973) (BSSRS, 9 Poland Street, London, W.1).
64. Hayes, Fielder and Kirkham, op. cit., footnote 11. Or, with a more Leninist flavour, B. Zimmerman *et al.*, "Censored: Science for the people" (SESPA, 9 Walden Street, Jamaica Plain, Mass 02130, U.S.A.).

65. Rossman, Michael. *On Learning and Social Change* (Vintage, 1972); Michael Polanyi, *Personal Knowledge* (RKP, London, 1958); "Where do correct ideas come from? Do they drop from the skies? No. Are they innate in the mind? No. They come from social practice, and from it alone . . ." *Quotations from Chairman Mao Tse-Tung* (Foreign Languages Press, Peking, 1967), p. 206.
66. Berger, Peter L. and Thomas Luckmann, *The Social Construction of Reality* (Allen Lane, the Penguin Press, 1967); G. Gurvitch, *The Social Frameworks of Knowledge* (Blackwell, 1971); R. Finnegan and R. Horton (eds.), *Modes of Thought* (Faber, 1971).
67. Scheffler, op. cit., footnote 3; T. S. Kuhn, *The Structure of Scientific Revolutions* (2nd ed., Chicago U.P., 1970); I. Lakatos and A. Musgrave (eds.), *Criticism and the Growth of Knowledge* (Cambridge U.P., 1970); S. B. Barnes (ed.), *The Sociology of Science* (Penguin, 1971).
68. Or, as Charles Fort called them, "the damned"; *The Book of the Damned* (Abacus 1973).
69. I cite the following without further comment. General surveys: S. Ostrander and L. Schroeder, *Psychic Discoveries Behind the Iron Curtain* (Abacus, 1973); Lyall Watson, *Supernature* (Hodder and Stoughton, 1973); Colin Wilson, *The Occult* (Mayflower, 1973); L. Pauwels and J. Bergier, *The Morning of the Magicians* (Mayflower, 1971). Altered states of consciousness: Carlos Castaneda, *The Teachings of Don Juan* (Penguin, 1970). *A Separate Reality* (Penguin, 1972); J. C. Lilly, *The Centre of the Cyclone* (Calder and Boyars, 1973); Robert Monroe, *Journeys Out of the Body* (Doubleday and Souvenir Press, 1972); the journal *Creative Intelligence* (SRM Foundation, 2 Bishopswood Road, London, N.6). Prehistoric sites and practices: John Michell, *The View Over Atlantis* (Abacus, 1972); Guy Underwood, *The Pattern of the Past* (Abacus, 1972); Alfred Watkins, *The Old Straight Track* (Garnstone Press, 1970); the journal *The Ley Hunter* (5 Egton Drive, Seaton Carew, Hartlepool, Co. Durham TS25 2AT). Celestial influences: Michel Gauquelin, *Astrology and Science* (Mayflower, 1972); J. A. West and J. G. Toonder, *The Case for Astrology* (Penguin, 1973). Unidentified flying objects: Jacques Vallee, *Challenge to Science* (Neville Spearman, 1966); J. Allen Hynek, *The UFO Experience* (Abelard-Schuman, 1972; the journal *Flying Saucer Review*; also see Charles Fort, op. cit. Unorthodox medical practices: Harry Edwards, *Spirit Healing* (Herbert Jenkins, 1963); Stephen Black, *Mind and Body* (William Kimber, 1969). Nutrition: the journal *Seed* (269 Portobello Road, London, W.11). History: *The Velikovsky Affair*, ed., Alfred de Grazia (Sidgwick and Jackson, 1966); the journal *Pensée*, especially vol. 2 (Box 414, Portland, Oregon, U.S.A.). Other tabooed areas: Cleve Backster, "Evidence for primary perception in plant life," *Int. J. Parapsych.* 10 (4), 329-348 (1968); P. Tomkins and C. Bird, *The Secret Life of Plants* (Harper and Row, 1973); A. Guirdham, *The Cathars and Reincarnation* (Neville Spearman, 1970); Ian Stevenson, *Twenty Cases Suggestive of Reincarnation*, Proc. of the American Society for Psychical Research, Vol. xxvi. The quality of these works is uneven, but it is symptomatic of the

philosophical crisis of contemporary science that it is becoming harder and harder to find consistent reasons for excluding them from the canon. Martin Gardner made a very readable attempt to draw boundaries in his *Fads and Fallacies in the Name of Science* (Dover, 1953); this (thankless?) work has been continued by Christopher Evans' more recent *Cults of Unreason* (Harrap, 1973).

70. Thom, A. *Megalithic Lunar Observatories* (O.U.P., 1971).
71. See my "Soft Technology and Criticism of the Western Model of Development, with Special Reference to the Chinese People's Republic", *Entwicklungsländer* 3, 1974, Weltstudentendienst, 53 Bonn, Lessingstrasse 32, West Germany.
72. My view of Western-Third World relations is derived largely from Frank.²⁸ Against many of Frank's views, Bill Warren, in a controversial recent article, has argued that the political and economic power of under-developed countries *vis-à-vis* the developed ones has been greatly underestimated, and that disparities *between* nations will be more and more overshadowed by disparities *within* them.



The recurring face of Malthus

ROSALIND MITCHISON

This is United Nations' World Population year, and that has to be interpreted, as far as I can see, as meaning World Anti-population year. The government of Britain is being urged by various propagandists to have a "positive" population policy, by which is meant a negative one. There is, in fact, a tendency to take for granted a large body of Malthusian thought. Before we as a nation accept it it is worth looking at it in the context of the developed economies of the world, and in particular to stop and consider the implications of what many people now advocate, a falling population for Britain.

Obviously in the long run Malthus's gloomy arithmetic has validity for the world as a whole. There must be, if not an absolute limit to its food producing capacity, a point at which marginal improvements in productivity become minute compared to the resources allocated, so that mankind would be engaged in little but food production. Since in the last 35 years we have made enormous advances in the control of death, some similar control over birth is necessary. And there are areas, notably in South America and India, where very little in this direction has yet been achieved, where birth rates run at 45 or 50 per thousand, higher than anyone has ever traced for this country. There is as yet no sign of a decisive fall of the birth rate in any really undeveloped country, and it is possible that the social environment which makes people willing or anxious to control their own fertility cannot be attained at very low levels of income, personal and national. If this be the case, then for the world to survive without a major disaster

Theoria to Theory
1974, Vol. 8, pp. 241-247.

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such as another war, we have got to reduce the tremendous differences in standards of living between richer and poorer countries as a first step towards the limiting of population growth.

It is also true that human beings have always been careless about the environment. Undeveloped societies, whether on their way to development or not, have deforested recklessly, practiced destructive agriculture and moved on, scattered household and industrial wastes. Archaeologists may be grateful for the rubbish round neolithic axe factories or palaeolithic camps, but the habit of not looking where you throw the wrapper, oyster shell or broken pot is only a small scale manifestation of the indifference that has led to large scale poisoning by organo-mercuric compounds in Japan. For our own sakes we have got to learn how to control the impact of our own waste products. This means we have both to understand the chemistry and biology of decay and to use our political systems to devise effective economic restraints on throwing things away. The fact that the Irwell is now almost restored as a "clean" river after a century of pollution shows that we can do it if we try. but there are a lot of places where nobody has tried, and every new technological advance creates new practical problems. Possibly oil from under the sea by pipelines will be less devastating on the shores than oil by tanker, but we will still have to have a framework of control.

But it is necessary to recognize that the problems of pollution, and those of congestion and misuse of resources, do not relate simply to the size of a country's population. An obvious instance is the use or over-use of the motor-car. This problem became conspicuous in the 1960s. In that decade the cars on our roads approximately doubled: the human population went up by a bit over 5%. There has been a sprawl of housing into the countryside as the poor have pushed out, or been pushed out from their urban ghettos. All sorts of things may be wrong without housing policies, and in some places almost every aspect of recent building has shown a disregard for humanity, but the basic idea that if land is needed for housing it should be assigned to that development seems to me hard to deny. Yes indeed, let us keep some of our man-made landscape as countryside, and specimens of our

“natural” scenery as nature reserves. But not all existing patches of nature have high claims, I myself find it difficult to join the environmentalist lobby in arguing against the Alaskan pipeline. There is a great deal of permafrost around in Alaska, and it should not be difficult to arrange for bridge areas of it to be constructed to allow for animal migration. The campaign here seems to be one of opposition to the very idea of economic development. Invariably in such a campaign comes the claim that misuse of resources is inevitable unless the population of the developed countries can be reduced. Malthusianism is argued for those very areas where it was already being shown as invalid within twenty years of Malthus’s death.

Malthus was probably the single most influential thinker on nineteenth century opinion, and many examples of social cruelty and ruthlessness of that century were justified by appeals to his dogma. If his teaching had been adopted by those on whom he most wished it impressed, no unskilled labourer would have married, and all forms of mutual aid and social welfare would have been abolished. Even in forms less extreme than those of the master himself, Malthusianism has frequently given openings to those who wish to justify hostility to the human race. There is no sphere of human life in which people more readily offer advice, unasked, to others than childrearing. Malthusianism enables this to be extended from the treatment of children to their very existence, leading to pronouncements on how many children someone “ought” or “ought not” to have. Good and conscientious Malthusians, like the Reverend T. R. Malthus himself, apply the advice to themselves. Malthus married late, had three children and lost one of them in adolescence, so that two outlived him. The present Malthusian argument in most moderate form, “zero population growth” interprets this as an average family of 2.2 children. This means that “good” Malthusians should have two or fewer children, allowing the extra for mistakes of one kind or another. This, they claim, is necessary to preserve the environment and the quality of life. Is this true?

This is a serious question about which people in any country should think for themselves in the light of what we can learn not

only from the study of ecology but also from our knowledge of society. Far too often it goes by default or is answered with no reference to the social sciences. There are even courses in some Universities on "the future of man" which derive all their material from physical science, ignoring the disciplines of politics, sociology, anthropology, economics and history. Yet if in the interest of the animal and vegetable kingdom we are to be urged towards a specific social policy, that policy should be worked out in the light of our knowledge of human society. Is there a strong case at this moment for an active campaign for the further limitation of the birth rate in any developed country? In particular, is there one in Britain?

At present the birth rate in this country is falling. In spite of the trend to earlier marriage it has been falling for ten years. It looked from the 1971 figures as if the downward movement was ending, but the figures for 1972 show a much faster drop than in earlier years. The net reproduction rate is still a little above unity: in other words the population is still expanding, and that expansion is not simply due to people living longer. In fact, though some of the middling age groups here can expect to do better than their parents did, in this country as in many other advanced societies the expectation of life is ceasing to increase. Our actual increase in population is less than the difference between birth and death rates alone would produce, because still, in spite of the fuss over the entry of "Commonwealth" immigrants in the past, we have for long sent more people abroad than we have received from elsewhere. Probably this movement of people to other countries will cease in another generation or so. We may have a world that does not need, or does not want our young adults, whatever their skills. Certainly decisions about future population should not take for granted indefinite continuation of this flow. But even if we retain all our own people it is quite possible that our total level of human beings will stabilize of itself. We have already effected, over a century or more, the drop in fertility that we are hoping the undeveloped world will achieve much more rapidly. The long swings of our birth rate, from a "high" of over 18 per thousand, to its present low of 14 or so, or even lower, may turn out to be

oscillations about stability. Even if they do not, the total population growth they suggest is small within the next twenty years.

Within that twenty years we may well expect to go some way in persuading individuals and organizations to be tidier with their refuse. We might also go some way in advancing our theory of economics. At present we are likely to discover that any drop in demand leads to an accentuated depression in basic heavy industries. We would in any case, end up with a more regular age-structure. Much of today's inhumanity to the old stems from the fact that we have so many of them, relics of the high birth rate early this century. Already the benefit of the "bulge" in birth rates after the second world war is appearing in the increased size of our younger labour force, the people most ready to try new jobs or new places of work. We are likely to be much nearer to self-support in food and fuel. There are no very strong arguments, from an internal point of view, against continuing with a slight rate of population growth, and there are numerous arguments in favour. Our economy, our family life, both in the immediate household and in the wider kinship network, our educational system, are all probably the better for the scatter of families that run to four or more and keep our average family size above 2.2 children. In ways similar to the effects of moderate monetary inflation, moderate population inflation can be agreeable to live with. But its most beneficial effect would be the removal of Malthusian pressure by one person on another.

Because, in fact, this pressure can be very harsh if given the chance. Malthusian programmes offered to the consideration of legislators can range from simply preposterous, put a tax on prams and layettes, to the socially divisive, cut family allowances for larger families. Their advocates do not seem to have discovered what even Malthus himself came to admit, that any policy which drives people further into poverty is likely to destroy their capacity to restrain their fertility. Malthus was dealing only with the theme of moral restraint, sexual abstinence, but all family planning organizations know of people unable to get to their clinics or make systematic efforts towards contraception because

of the physical or emotional paralysis of poverty. More serious still is the tendency to judge those in need of housing, money or other forms of aid as if their fertility were a crime for which society is entitled to impose a penalty. People who rear children undertake long commitments for the future of the society, and those who criticize them for this should stop to think where the resources for their own pensions will be found without the earning power of future generations. The response to the problems of family life in slum conditions should not be the recent suggestion of a town councillor in Hull, compulsory abortion, but the provision of houses. Perhaps this councillor is an unfair example, too extreme, but he is part of a general habit of bullying the philoprogenitive. Twenty years ago there was a subtle propaganda in all family magazines against the "selfishness" of the childless marriage, and claims that it was "unnatural" for children to be reared without siblings. Now it may be a welcome relief for those with one or no children to be let off this pressure, but the pressure on others can be equally unkind. I have met students in the United States who felt, regretfully, that it was obligatory on them, as thinking and conscientious people, to avoid childbearing altogether for the sake of the environment. It seems a pity that they should be sacrificing themselves for a dogma not only unproved but perhaps misleading.

What I am urging is that we should let each other alone, or at least go no further in population policy at present than providing full opportunities for a considered choice by all families. Where jobs have been available for married women the birth rate has always been lower than where there have not. Many women prefer a career, or a part-time job, to childbearing. Others want a family, but many curtail production when they discover what it means in hard work and physiological strain. A minority want large families. The right to choose is as important a part of the quality of life as is the preservation of "unspoilt" countryside.

There is a further argument against the Malthusian theme in this country, that it deflects the energies of responsible and conscientious people from more important issues. It is possible, in a short-sighted way, to think that if only the population could be reduced to "reasonable" limits, the problems of pollution, of

human and industrial wastes, would solve themselves. More seriously, it does little to help undeveloped countries. It may even lay plans that would impoverish them further. The poorer areas of the world do not look with envy on our appetites for their products, but with approval. They know that a drop in the demand for bananas, cocoa, jute, sugar could spell disaster. Developed countries are valued customers. They could, and should, be better ones. If we could expand our intake of materials from poorer countries to include some of their industrial products, their economies would benefit more. Hostility to population growth in this country can be a penitential hair shirt assumed by people who show that they care for the long-term future of space-ship earth, but pay little attention to the short-term circumstances of many of its inhabitants. It is one way of ignoring the most pressing problem of our age.

Prototypic organisms XII

Orchids[†]

WILLIAM SANFORD

A friend of mine, who is a botanist in another university, once told me a family anecdote that has a bearing on my subject. His infant son was playing in the yard with the neighbouring children.

“What does your father do?” they asked him.

“He’s a botanist,” the child said.

“But what does he *do*?” they insisted.

“Oh, he plays with flowers.”

It was a long time ago that I heard this story, and I was much younger then. I responded to it rather snappishly by saying, “So many people think that’s all a botanist does!”

“But it is!” said my friend. “And a very good thing to do, too.”

I am no longer ashamed of admitting that I play with flowers. In fact, I publicly confess that I play especially with one kind of flower that is often, in Western society, considered the symbol of luxury, the orchid. Most people would not consider this a very practical occupation, and some would think it shockingly impractical that I should be allowed to follow it in Africa. For this reason it would perhaps be appropriate if I examined this occupation from the standpoint of its impracticality, both to clear my own mind and to give you a chance to make up yours as to whether or not it is worthwhile.

† Inaugural Lecture delivered at the University of Ife, Nigeria, on March 27th 1973, and published under the title of “The Role of the Impractical” by the University of Ife Press. © William Sanford. Republished here by permission.

Theoria to Theory
1974, Vol. 8, pp. 249–269.

Published by
Gordon and Breach Science Publishers Ltd.

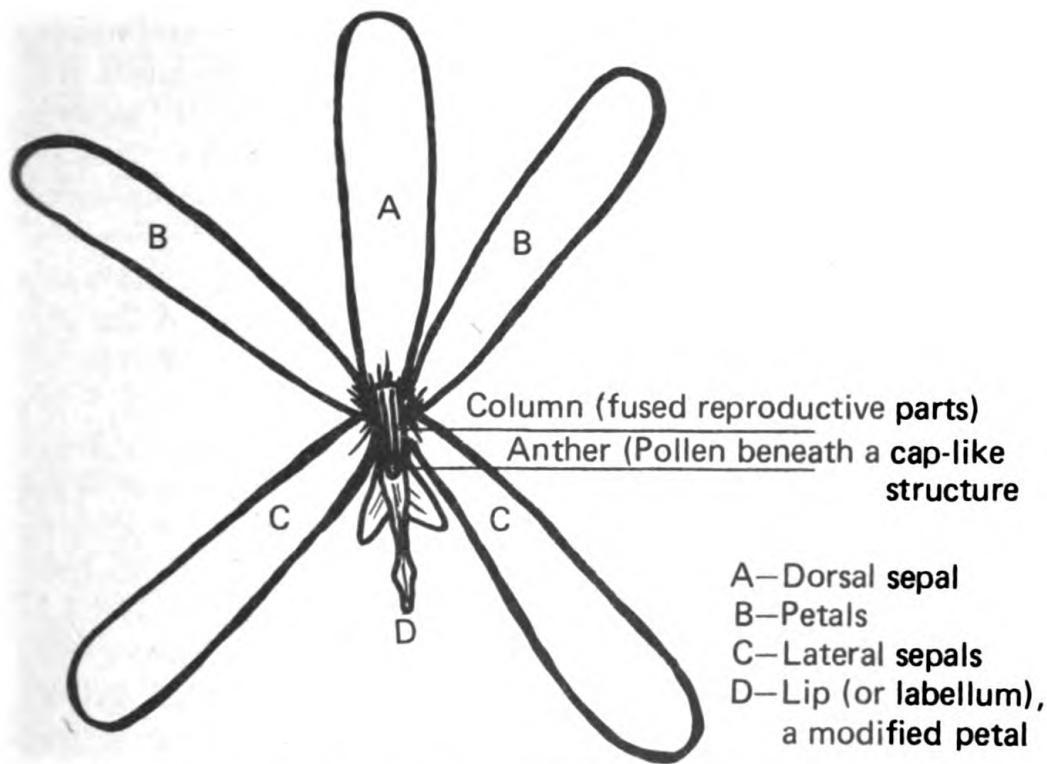
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By practical in science I mean directly applicable to the wants or needs of man, as opposed the "pure" or "fundamental," which is not directly concerned with wants or needs. Before we weigh these two approaches, we must determine to which of the two the study of orchids belongs. I will begin by outlining the ways that orchids directly satisfy human wants or needs.

The first written reference to orchids (Withner, 1959) dates from between 551 and 479 B.C. This is the remark of Confucius that acquaintance with good men is like entering a room full of fragrant orchids. The Chinese, and slightly later, the Indians, Ceylonese and Japanese have for a very long time treasured flowers much like some contemporary cultures treasure beautiful clothes and others beautiful automobiles. By the end of the Yuan Dynasty (A.D. 1279-1368) there was already a segment of Chinese painting exclusively devoted to the painting of orchids; and treatises on orchids, on their beauty, on ways of growing them and on their spiritual value appeared in Chinese as early as the Sung Dynasty (A.D. 1260-1279). To a culture which values orchids as aesthetic and spiritual objects, playing with orchids is a very practical and worthwhile occupation, much like making clothes or automobiles or holy images for the church. Unfortunately, flowers were never considered this way in Western cultures.

The orchids were so named by the Greek botanist-philosopher and disciple of Aristotle, Theophrastos, 370-285 B.C., from the Greek word *orchis*, meaning testes, in reference to the paired underground tubers that many of the Mediterranean orchids have. The Ancient Greeks, like the people of the East, considered orchid lore practical but not for aesthetic or spiritual reasons: they thought that the tubers were powerful aphrodisiacs. I hasten to add that while many cultures today still value aphrodisiacs, there is no pharmacological evidence for any orchid being of practical use for this purpose. It is true, though, that some peoples of East Africa use the stems of *Ansellia gigantea*, an orchid also common in northern Nigeria, as an aphrodisiac (Breyer-Bradwijk, 1962). Rather disturbingly, some peoples in southern Africa use the stems of the same orchid as a cough remedy.

The Europeans and Americans had a very different view of



Ansellia gigantea var. *Nilotica* (Bak.) Summerh. An epiphytic orchid of the drier forests of Africa (Diagram drawn from living specimen collected on the Jos Plateau, Nigeria. A. O. Isichei).

orchid use from that of the Eastern peoples. They were concerned with medicinal applications. The first written American reference to orchids is in an Aztec herbal of A.D. 1552. Early European references of the 15th and 16th centuries also occur in herbals. One is tempted to draw probably very unfair national comparisons on the basis of orchid use: aesthetic and spiritual pleasure in China from at least the 5th century B.C.; social use in Greece from about the 3rd century B.C.; medicinal applications in Europe and America from perhaps the 15th century A.D. Towards the end of the 18th century Europeans discovered that orchids were beautiful and at once began taking such large quantities of them from tropical Asia and America that these countries have never recovered botanically, and many species of orchids have become very rare or even extinct.

In tropical Africa, few orchids have local names which indicates

that few have uses. Such orchids as do have names have uses which suggest that Africa may lie between the aesthetic East and the medicinal West. In Gabon, for example, the Fang people use the roots of an orchid for the strings of one of their loveliest musical instruments. In Nigeria, the Yoruba people formerly considered one orchid particularly pleasing to the god Ogun and planted in on *Dracaena* trees and at village shrines. A scattering of orchids in all African cultures has been used in medicine. One, *Eulophia angolense*, is used, in an area near Oyo, as a charm to protect little girls.

Today it is, however, almost exclusively as ornamental objects that orchids have become economically important and therefore practical in many cultures. They are grown for cut flowers by florists and as tropical and glasshouse plants by garden hobbyists. Centres of world production are Hawaii, Singapore, U.S.A., Europe, and, to a lesser but still significant extent, Kenya and Australia. One commercial firm exports flowers of horticultural hybrids from Ivory Coast. Orchid growing is so important to the economy of Hawaii that the botany/horticulture department of the university there is engaged almost exclusively in orchid research. Rather fortunately, few Africa-occurring orchids are obviously showy; had they been, they probably would have been removed to Europe in the 19th century. There is now, however, with changing fashion and the increase of specialized hobbyists, considerable world-wide interest in African orchids. We have had requests for West African species from every continent in the world. So far, we have exchanged only a very few species with five botanical gardens, because I feel deeply about conservation. I believe it is man's duty to think very carefully before he endangers the continued existence of some living creation such as a plant or an animal. As I have written elsewhere (Sanford 1970), I realize that not every product of evolution can be maintained or else the world would be cluttered with ineffective and perhaps relatively useless organisms, much as cities become cluttered with ghettos and slums if they are not continually destroyed and rebuilt. But until the science of ecology is much more sophisticated than it is today in evaluating ecosystems (the more or less balanced and

integrated systems made up of plants, animals, micro-organisms and the non-living factors of the environment such as light, water, soil) and in determining how much change a desirable ecosystem can withstand without disorganization, until we are able to do this, it is foolish to destroy anything not obviously harmful. For this reason, I take pleasure in rescuing plants from certain death in timber-felling areas and either growing them myself or sending a few to be grown in botanical gardens. Thus, as long as culture lasts in London, Hamburg, Vienna, Singapore and Budapest there will be West African orchids in these cities.

After a new ecological display house for orchids and other special plants is built in the Biological Gardens at Ife, the present collection of about 4000 West and Central African orchid plants can be consolidated and improved. Then there will be time to rescue local, doomed-to-die plants from timber exploitations, land being cleared for agriculture, road building and university beautification projects, to exchange with botanical gardens for interesting foreign plants.

Medically, orchids have been somewhat of a disappointment to contemporary scientists. The most likely type of medically important compounds to search for in the orchids are the alkaloids. In 1966, H. Aluyi, then a third year student, and I carried out preliminary tests for the presence of alkaloids in sixty-one species of Nigerian-occurring orchids. We concluded that at least 26% of those tested contained significant amounts of alkaloids (Aluyi, 1966). Word of this work reached Professor Lüning, a biochemist in Copenhagen, who asked us to cooperate with him in a search for alkaloids. From our extractions of the Nigerian ground orchid, *Liparis nervosa*, Lüning chemically isolated and characterized a new alkaloid, the aromatic part being 4-hydroxy-3,5-diisopentenylbenzoate with an amino-alcohol, lendelofidine, and a sugar attached (Lüning: in prep.).

Besides alkaloids, orchids may be a reservoir of other organic compounds. The genus *Vanilla*, five species of which are found in West Africa, has long been grown in Central and South America as a commercial source of the flavoring vanillin, which is a coumarin derivative. Practical exercises at the University of Ife have indi-

cated that West African orchids may also be interesting from the standpoint of phenolic compounds, products of so-called secondary metabolism derived via the shikimic acid and acetate pathways. With cooperation from the Faculty of Pharmacy this area may be explored.

When it comes to the immediate and direct gratification of human wants and needs, we have seen that orchids are practical as objects of aesthetic and spiritual enjoyment, as objects of recreation, i.e. in gardening, and as the source of Vanillin. It is also likely that they may prove to be sources of several alkaloids and possibly of interesting, if not immediately useful, phenolic compounds. A few special uses such as providing the strings for musical instruments and protecting pretty little girls—or attracting pretty bigger girls—may also be cited. But all of this does not come to an impressive total, unless one lives in Hawaii where orchids beat all other cash crops except pineapple. We obviously are not in Hawaii; I have already said that few African orchids are horticulturally sensational, and our university collection of West African orchids, while unique, is not primarily directed towards giving either pleasure or spiritual uplift to the general public. In spite of close cooperation with the Faculty of Pharmacy, I doubt if we will discover many chemicals useful in medicine or as commercial materials. I must admit, then, that playing with orchids in Africa is an impractical pursuit; that orchid study belongs to the impractical, basic or fundamental branch of scientific research. We may now inquire of what importance it is to man. This inquiry brings to mind another anecdote, this time, a zoological one. Professor Hans Kalmus, visiting geneticist at the University of Ife several years ago, once remarked, “I will have great hope for the future of science in any country where I see little boys collecting butterflies.”

His point was that science grows out of curiosity about and enjoyment of one's environment. Such a view may be thought of a rather impractical and luxurious approach to science, as it requires that the individual practitioner have enough security, economic and emotional, to do what he enjoys, largely because he enjoys it. On the other hand, such an approach to science may be thought of

as strictly practical, even necessary, because scientific accomplishment is so difficult and so rare that few, if any, can manage to work hard and well enough to achieve it unless they love their work. While scientific accomplishment requires love, the converse is not true: love of work is no guarantee of successful accomplishment. Furthermore, someone may be found to love almost anything, so that love of orchids for instance, not only is not enough to ensure success with orchids, but there is no *a priori* reason why love of orchids is a good thing.

Again, we are back almost where we started. While admitting that love of work is a necessary and therefore practical prerequisite to scientific endeavour, be it applied or basic, we cannot say that arousing love of work is a function of the impractical simply because we have impractical lovers. We much try to evaluate the impractical, the basic, on more concrete grounds. The role of basic research has often been stated as the search for truth—perhaps something more concrete than love—and some philosophers, from at least as early a time as that of Plato, have insisted that truth and goodness are synonymous and that the only worthwhile purpose of living is to search for the good and the true. Another view has grown up in industrialized societies: that man can never find all truth, if indeed he can find any; therefore, with limited time, ability and energy, man must choose to search for only certain bits or kinds of truth. This view when projected onto the corporate body of society means that a community or a culture will tolerate many truthseekers of some sorts, few truthseekers of other sorts and none at all of still other sorts.

I was reminded of this when, two years ago, I spent some time at the National Herbarium of Vienna in which is housed the 19th century dried plant collection of Reichenbach, one of the three or four most famous orchid scholars of all time. I had been working for several hours, sitting in his armchair, too, when the curator came by and said, “We have not had a specialist in African orchids here for over fifty years!” I replied, “One every fifty years is enough isn’t it?”

He said, “Yes.”

If we accept that there is not a need for the same quantity of all

kinds of truth-seekers, we still have the problem to solve of what is the use, if any, of my particular and rare kind.

Basic research may also be considered from a purely utilitarian standpoint: while applied research is directed towards the solution of a single, specific problem and if successful will solve only a single, specific problem, basic research if successful will provide general knowledge which can in turn be used in solving a number of specific problems as well as in furthering the search for still more general knowledge. In this way, basic research is often in the long run more economical than is applied research. My impractical playing with orchids may, then, be an avenue of truth-seeking which, while not a necessary one for many men, might be necessary for a few men and might have as an aim the finding of general truth that is applicable not to orchids alone, or to any one specific problem, but is applicable to many plants and to many problems. But if we accept the contemporary industrial dictum that not all general truth is of value, then we need to explore precisely what kind of general truth orchid research is concerned with. It is in this abstract field that I must now wander.

When discussing the abstract and the general, it is easier to begin with the specific and concrete. I had better begin by trying to inform you what orchids are—something that up to now I have avoided doing, because I felt that their identity had no practical importance so long as we were discussing them as practical objects. Now that we are discussing them as subjects of general inquiry, as mechanisms for getting at general truths, it becomes imperative to know quite a bit about them.

The Orchidaceae is a family of monocotyledonous flowering plants which probably arose in the Cretaceous period in Malesia, perhaps something like 50,000,000 years ago, and has since spread to every continent of the earth except those areas perpetually covered with ice and snow. Plants are considered to belong to this family if they possess a number of characteristics in common, including the unusual feature of completely fused filaments (carriers of pollen-bearing anthers) and styles (carriers of stigmas) into a single structure called the gynostemion or column; reduction of pollen-bearing anthers to one or two, reduction of

the female receptacle, the stigma, to one; the production of hundreds of thousands of extremely minute seeds which contain no stored food (endosperm) and no differentiated tissue (embryo) but are composed of only *c.* 80 to 200 cells more or less like each other. The flowers of these plants are made up of two whirls of showy segments, the outer one containing three sepals usually much like each other, the inner one of three petals, one of which is usually markedly different in size, colour, and shape. This odd third petal is called the labellum or lip and may be modified into innumerable strange shapes, all the way from tubular spurs 30 to 40 cm long to shoe-like pouches in which insects are made drunk or mad. Some lips are such effective mimics of female insects that the males try to copulate with them. Every known colour of the visible spectrum is represented in the orchid flower, and under ultraviolet light, fluorescent patterns appear.

There is considerable argument as to how large this extended family is. Hunt counted the valid specimens in Kew Herbarium and arrived at about 17,000 species in 750 genera (Hunt, 1967). Garay, at Harvard University, on the other hand, counted the original diagnostic type descriptions and arrived at 30,000 species.† My own view is that if a thorough, modern revision could be made of the orchid family, we would end up with about 15,000 species. This means that about 7% of the flowering plants of the world are orchids. The bulk contribution to the flora of the world alone gives orchid study some claim to importance, and thus one aspect of orchid study becomes orchid identification: we cannot describe the plant cover of any part of the earth intelligibly unless we can identify the orchids we encounter. Not all regions of Africa have yet been catalogued and provided with means of identifying the plants occurring there. Kew is at present working on such a flora for East Africa, and the National Museum of Natural History in Paris, in cooperation with the government of the Republic of Cameroun, has asked me to do the book on orchids for the Cameroun flora series, which will cover the 400–500 species found there. Kew published a flora for the orchids of West Tropical

† Leslie Garay (1970): personal communication.

Africa in 1968 which includes Nigeria (Summerhayes, 1968). Like most orchid floras, I fear that this one is very much a specialist's book in the sense that even the professional botanist does not often use it to identify orchids but rather sends his specimens to an orchid specialist for determination. You can imagine the difficulty there is, then, in the identification of orchids for agriculturists, foresters, ecologists and nature lovers. Many of us feel that this situation must and can be remedied. I am, therefore, working on a volume for the *Flora of Nigeria* series, which I hope will make possible the identification of most of the more than 400 orchid species found here for almost anyone who is really interested. Incidentally, the editorial board hope that the *Flora of Nigeria* will eventually update and supercede the *Flora of West Tropical Africa* and bring the problem of the taxonomy and identification of African plants back where it belongs—to Africa.

It may be well at this time to ask what is the purpose of identifying orchids other than cataloguing them as plants of a region? The orchids that are used as research objects in the search for general truth must be identified so that other scientists, both now and in the future, can know precisely what the research material was and so perhaps repeat the experiment to test the results or apply the findings to other plants and other environmental situations. For this reason, a specimen of any plant, orchid or not, that is used as a test object for published research must be deposited as a voucher specimen in a herbarium that is recognized by the International Association for Plant Taxonomy at Utrecht. The University of Ife herbarium has been so recognized for four years and is internationally coded IFE; I believe the only herbarium code name in the world which is also the complete location name.

In summary, we must be able to accurately identify orchids so that we can describe the vegetation of the world precisely and so that we can use orchids as research objects. This now brings us to what the purpose of research on orchids may be. In order to know this, we need to know something of the special peculiarities of these very strange plants.

One of the odd things about them is their nutrition. As has

already been remarked, the seed contains no stored food. In order to develop into a seedling it must be supplied with carbohydrate as well as with water, oxygen and minerals. Under natural conditions, the tiny, dust-like seed must imbibe water, swell and be invaded by the hyphae of fungi. A complex fungal-plant tissue association is then formed, the mycorrhiza. The fungal components now digest cellulose from bits of dead plant material, most often wood, and the sugars so formed are then transported to the orchid cells. At the same time, it appears that the hyphae facilitate transport of water and minerals. There is very recent evidence that somewhat later the orchid begins to synthesize materials needed by the fungus so that some mutual assistance occurs (Arditti and Robert, 1972). Such a situation is not confined to orchids, but is surprisingly common in forest trees of the tropics, so that playing with orchids from this standpoint brings information applicable to trees. The orchid, soon after fungal invasion, begins to synthesize fungal-inhibiting chemicals called phytoalexins. The existence of such "antimycotics," now known to occur in a number of plants, was discovered about seventy years ago, and the discovery was made in an orchid plant. The phytoalexins control hyphal growth so that the orchid continues to be benefited without being damaged or destroyed. Knowledge of this odd situation of containment has led to the very interesting area in crop protection, of research on naturally produced substances of plants which effect resistance to fungal and bacterial attacks.

To return to the orchid seed: after it has developed a fungal association, cell divisions of the seed occur so that an onion-shaped mass of tissue, the protocorm, from 1 to 2 mm in diameter, is formed. Chlorophyll develops, as do absorptive root-like structures. The organism can now make it alone, although the fungal association normally continues, even into adulthood. Still later, roots and leaves develop and a seedling results. This pattern of development involving undifferentiated cell proliferation, then complex differentiation, offers a unique opportunity for the study of basic growth phenomena. Long ago, on the Ibadan site, we were able to show in classroom work that the seeds of an African *Angraecum* could be kept proliferating cells indefinitely with little

or no differentiation. This type of thing has since been utilized in so-called "meristem culture," whereby bits of shoot or leaf meristem, as well as the seed which may be thought of as pure meristematic tissue, are kept proliferating and periodically fragmented until from one tiny bit, or from dust-like seed, several hundred or several thousand cell masses are formed. Then, differentiation is allowed to occur, and we have several thousand genetically identical plants. This is now done on a commercial scale for orchids, and experiments are under way to apply the technique to various fruits and vegetables. Even more important, a great deal has been and is being learned about basic cell proliferation and differentiation, and about the effects of various wave lengths and intensities of light, gravity disorientation, O₂ tensions and chemicals on these processes. Some of this research is sponsored by cancer foundations because of the implications for basic cell behaviour.

Orchid seeds can be grown into seedlings without fungal invasion in aseptic cultures, provided that all minerals and a suitable carbon substrate are supplied. This offers a wonderfully precise way of studying the nutritional requirements of plants. A related area of particular interest, on which I have already done preliminary work with one of my students, is the possible presence of natural inhibiting and/or stimulating substance in tree bark and leaf leachates. These may, under natural conditions, control the epiphyte load in the tropical forest. (An epiphyte is a plant which grows upon another plant but does not take any of its nourishment from the living tissue of that plant. About 50% of the orchids occurring in Nigeria are epiphytes.) The possibility of population control by natural leachates was mentioned for orchids as long ago as 1940 (Went, 1940) but has only very recently become a burgeoning general field of research, concerning interrelationships of all plants and called "allelochemy" (Whittaker and Feeney, 1971). So far, we have some evidence that phenolic compounds in the barks of some otherwise highly suitable host trees prevent or reduce the establishment of epiphytes. We have also found extremely interesting quantitative differences in sugars barks of different tree species. (Falode, 1971). The technical

work of preparing aseptic culture flasks, innoculating them with sterilized orchid seed, transferring the seedlings and so on, requires considerable time and manual skill. Partly for such technical reasons, I am now collaborating with another botanist and a chemist in the United States of America who will do the microbiological work, while my students and I will be concerned with the trees, the bark and the overall ecology of the trees and their epiphytes.

So far, we have seen that orchids offer uniquely practical means of exploring host-fungal relationships, cell proliferation and differentiation mechanisms, organic and inorganic plant nutrition, and allelochemy. Besides these basic areas, another peculiarity of orchids opens up an even wider area of research.

As we know, evolution proceeds by mutation and genetic recombination followed by sexual isolation of the new forms so created. The usual breeding mechanisms, which prevent the new forms from being swamped by back-crossing onto the parental types are: structural and chemical incompatibility, and geographical or ecological isolation. The orchids are peculiar in that most often isolation is achieved through pollinator specificity instead of through the usual mechanisms. Orchids can almost never fertilize themselves but must have a transfer of pollen by insect from one flower to another. It is the uniqueness of the insect which can fertilize only a particular kind of orchid flower which isolates that flower sexually. In most orchids, then, the usual isolating mechanisms do not develop, because they are unnecessary; so that if we transfer the pollen manually from one flower to another, thus by-passing the specific pollinator, we can often obtain viable seeds when we cross different species and even when we cross different genera. In fact, so many hybrids can be and have been formed within the orchids that this family has played a major role in the breakdown of the Linnean system of classification, and its replacement by the Biological concept of Species. Because orchids can be so readily crossed, and because they have been horticulturally popular in Europe and Asia for some time, records of man-made orchid hybrids have been kept since 1854, a situation absolutely unique in the plant world.

Using these records together with my own crosses, I analyzed crossability among seven genera of tropical American orchids involving about 500 species. Manual analysis, followed by approximate spatial placement of the genera, together with a number of species, resulted in an ordination indicating probable genetic and evolutionary relationships, based as nearly as possible on the Biological concept of Species (Sanford, 1964). Subsequent very different work by others in the areas of chromosome analysis and morphological/anatomical studies have shown remarkable agreement in affinities with these placements. Scientists at the 7th World Orchid Conference in April 1972 felt that this approach would be especially useful if continued on a larger scale, with computer-aided analyses of the accumulated breeding records for other groups of genera. There is no other similar opportunity to put the Biological concept of Species to such practical test.

Unfortunately, no breeding of West African orchid species has been carried out so that no such records exist for them. Thus, a field that is interesting both horticulturally and scientifically is the hybridization of African species to produce commercial forms, to discover the genetic affinities between them and to investigate possible affinities with orchids of other continents, especially the Vandaceous orchids of Malesia, which have a number of anatomical/morphological similarities with the Angraecoid orchids of Africa. Such work would require laborious test-tube culturing of seeds and five to seven years of waiting for each cross to flower, so this project may depend upon students of the future. Meanwhile, Dr. Sowunmi of the University of Ibadan, her postgraduate student, Mr. Oyede, and I are cooperating on a numerical approach to relationships in African orchids. They will do palynological studies on all species, and then we will combine these results with morphological data and analyze through multivariate techniques. I estimate that once the research is completed, about eighty million mathematical calculations should give us an informative picture of all West African orchids—we may restrict our study to *some* West African Orchids!

Very general and basic concepts of geographical factors affecting plant dispersal as well as concepts of evolution are involved in

such work; and these do not concern only orchids but all plants. A question which pertinently unites these basic concepts is that of the place of the tropics in evolution. It has been commonly held that the tropics are the germinative centres of speciation. While an attempt has recently been made to question this so far as animal evolution is concerned (Van Valen, 1969), I know of no careful data analysis for plants, and can only say that I have indirect evidence plus an intuitive feeling that it is true that the tropics have been and still are evolutionary centres for plants. This begs the fascinating question, Why?

An attempt to explore this question leads one to attempt precise characterization of the tropical environment and the tropical plant community. It is with this rather expanded area of orchid play that I am now largely concerned. One part of this study is assessment of species diversity in the tropics together with assessment of the significance of such diversity. On one side, there is the question of whether or not all plant communities follow the Margelef (Odum, 1967) model for micro-organisms of increased species and biochemical diversity, accompanied by decreased productivity, as the ecosystem reaches climax, or stability. If we accept that it is ecosystems which evolve as systems, rather than individual organisms which evolve, this progression towards decreasing productivity is a seeming paradox, at least when viewed anthropocentrically. In nature, this is perhaps compensated for by the increased stability of the system, so that if productivity were measured over long time spans—and nature's time is long—the overall production might be greater, because the system had kept intact as a system, withstanding the ever-occurring perturbations that are found even in nearly optimal tropical environments. A major factor of this increased stability, which allows a system to endure in spite of vicissitudes, is species diversity.

Another interesting problem associated with species diversity is the question of how so many genetically similar plants can exist together without genetic swamping or without ecological elimination through competition. This situation again is especially pronounced in the tropics. The solution to the genetical part of the problem is breeding isolation. Besides pollinator specificity,

which we mentioned before, variation in blooming time may be important. If members of a closely related population vary enough in blooming time so that they cannot usually interbreed but that occasional overlap allows some gene exchange, we have a stable but heterozygous population. In my study of two years ago (Sanford, 1971) I found that about 66% of the West African epiphytic orchids flower during one fairly consistent period of the year, 21% during two or three periods and 13% over a long and variable period. At least 35% of the epiphytes and perhaps at least 27% of the terrestrial ones seem directly day-length controlled, even though day-length variation is little at our latitude. Furthermore, about 13% of the epiphytic species appear to include genetically controlled variant forms that bloom consistently at different times from the normal or "wild" species type. I also found evidence for influence of temperature fluctuation. These results indicate a varied, multidimensional control of blooming that generally favours population stability but leaves the door open for occasional gene exchange. I believe this is the general picture for forest and woodland plant communities in the tropics.

The occurrence of so many different kinds of plants over such a small spatial area such as over a few square feet in a tropical forest or, in the case of epiphytic orchids, along one limb of a tree, besides posing the genetic problem of breeding isolation, poses the ecological one of species competition. A crucial question is whether or not such a community is at climax, or steady-state. According to older views, still prevalent, if the micro-community were at climax, all but one most successful kind of plant would be eliminated. A more recent but somewhat controversial view is that even a very small area actually represents a number of microhabitats different enough from each other that a different species is best fit for each, so that considerable species diversity is found in a small area. A still more recent view is that several kinds of plants can actually exist in equilibrium in the same microhabitat (niche). I incline to the latter hypothesis; it presents the intriguing puzzle that you can prove it possible mathematically (Pielou, 1969) and thus can never prove that such equilibrium does not

occur in nature, but no one has yet been able to prove that it actually occurs.

The whole area of describing vegetation precisely enough to compare one place with another place, and the same place at different times, is very troublesome. And very vital. We need to be able to do this in order to assess what kinds of vegetation, what ecosystems, we have; which ones we want; in fact, which ones our continued existence depends upon; and how to maintain them over time. The most difficult of all vegetation to describe is the tropical, not only because most ecological work has been done in the temperate zones, but also because tropical vegetation is more complex. The problems of species diversity and apparent multi-habitation of the same niche contribute much to this complexity. One of the most astonishing things about studies in tropical ecology is that while the trees may be loaded with orchids, these plants are never mentioned, or if mentioned, they are referred to only as "epiphytic orchids." And yet they are among the most specialized of all plants as regards habitat, and so are potentially among the most precise indicators of environmental conditions. For example, being epiphytes with exposed roots as well as leaves, they are especially sensitive to moisture availability, which is the basic determiner of plant, and thus animal distribution, over much of the tropics. The reason why such potentially useful plants have not been used in ecological studies is pitifully simple: ecologists cannot identify them and orchid taxonomists do not know enough modern ecology to make use of them. Being neither an ecologist nor a taxonomist but rather only a botanist who plays with flowers, I have a certain advantage here.

I began using orchids in a modified Braun-Blanquet way to characterize orchid associations that were in turn associated with tree species, other non-woody plants and with environmental conditions (Sanford, 1969). This was a very good approach for trying to learn some of the 1000 to 1500 species of trees found in Nigeria and the perhaps 8000-9000 herbaceous plants, but it was not highly productive ecologically. It is interesting, however, that a paper now in press by another worker, who is an ecologist, cites this early orchid work as relevant to the distribution of sedges,

grass-like plants very different from orchids, in Nigeria (Hall, 1973).

Being eager to test the usefulness of orchids as ecological characterizers in more precise ways, I compared mathematically 31 large sites, some up to 100 square miles in area, scattered over Nigeria in regards to the 114 species of epiphytic orchids enumerated over these sites. (The site enumeration of the orchids began in 1964 and owes much to the help of my wife, who is not only a good bush driver, but an expert identifier of West African orchids.) On the basis of these comparisons, the sites were arranged in space, that is ordinated along 2 or 3 axes, using with some modifications the geometric methods of Orloci (Orloci, 1966). The resulting ordinations were remarkably informative; much more informative than comparable ordinations using tree species. Some of the environmental information which could be abstracted from, or related to, these orchid ordinations were: general vegetation types with more detail and precision than indicated by presently available vegetation maps of Nigeria (Keay, 1959; Charter, 1972); length of dry and rainy seasons; annual rainfall; one-peak or two-peak rainy season; biotic disturbances; major tree species (Sanford, 1972; 1973).

Ordination in the other direction, that is through comparing the orchid species on the basis of the sites where they occur, gives very interesting ecological and distributional information on the species and genera, and may allow the detection of particularly useful indicator species—species associated with specific levels of certain environmental factors (Sanford, 1973).

The expansion and refinement of this work is my most immediate concern. And somewhat surprisingly associated with this is the problem of weeds. The most useful definition of weeds, I believe, is that they are plants not purposefully planted which, in any particular geographic region, occur exclusively or almost exclusively in areas disturbed by man, where they form large contagious or nearly contagious populations. With the continued expansion of man and his use and improvement of the earth, it is not much of an exaggeration to say that weeds will be the only natural vegetation of the future. Orchids, in precise sense, behave

like weeds. Weeds colonize open communities; that is, communities where there are empty spaces. In the case of epiphytic orchids, the open communities are the barks of trees, especially towards the canopy; in the case of weeds and many terrestrial orchids, the open communities are the fields, burned-over grasslands, roadsides, and university grounds created by man's activity. The study of genetic systems, morphological and physiological characteristics and dispersal mechanisms of plants which make them successful colonizers, more successful competitors with their own kind than with other species, is another branch of playing with orchids, and one that encourages play with weeds as well.

It is by now probably fairly obvious that I have made up my mind that orchids at this time in this westernized culture are not directly of much practical use to man. It is also obvious that I have come to believe that the study of orchids may be of considerable impractical use to man. I have mentioned that, as objects of basic research, they are particularly suited for providing knowledge in the areas of plant nutrition, plant cell proliferation and differentiation, theoretical taxonomy, genetics and evolution, theoretical ecology, particularly problems of species diversity, ecosystem stability and productivity, competition and multi-species equilibria. Lastly, I have touched upon the use of orchids as general environmental characterizers and, because of their behaviour, as study subjects related to weeds—the plants of the future. I have perhaps neglected the area which most concerns me. As I consider myself primarily a teacher, I use orchids as teaching mechanisms. As actual objects of study they can be used to illustrate most aspects of botany, whether they ultimately refer to yams or to lichens. Furthermore, by forcing me into so many different study areas, orchids have forced me into some degree of preparedness for the continually unexpected directions of student curiosity.

All in all, I might close with a remark from an orchidologist friend of mine, a plant physiologist, who said, "Anything you can do with a plant—you can do better with an orchid."†

† Joseph Arditti (1972): personal communication.

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Review

The Exorcist: some thoughts on the film

There were two motives which drove me to see this film—a curiosity to discover why, out of so many people flocking to the cinema, some reacted by being violently ill—what was the secret of its box-office draw? Secondly, how would the film's portrayal of an exorcism match up with my own experience of one performed in Calcutta 40 years ago, and of a near-exorcism in Cambridge three years ago?

My companion was Cordelia Jones, an artist who writes and illustrates children's stories, and is closely connected with "travellers," the gipsies who run fairs. She wanted to see if the horrors in this film could give ideas for her friends to exploit in a new item in their fair.

The story begins with some shots of an archaeological dig in S. Iraq, in which groups of fellahin are shown demolishing with great and unparalleled energy the remains of a tell or artificial mound covering the ruins of an ancient city. A small carved round stone with a diameter of perhaps 2 inches is discovered and brought to the archaeologist in charge, who is also a priest of advanced years: it is the representation of a devil. The introduction ends with a khamsin dust-storm involving the 6-ft winged statue of a devil challenging across a ravine the figure of the archaeologist-priest-exorcist. Right at the beginning the point is made—this is the challenge of evil to a sophisticated Christianity.

Next we are shown in a series of very short shots life in the university of Georgetown, Washington D.C. Out of these

Theoria to Theory
1974, Vol. 8, pp. 271-274.

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fragments is built a growing tension. The twelve-year-old daughter of a successful film-actress is discovered playing with a ouija-board and already in touch with a discarnate person who answers her questions. She is a pleasant child by no means precocious (indeed her drawings and paintings are those of a six-year-old), but showing signs of incipient adolescence. A film-director is a great friend of the family, and intervenes in the child's bedroom when a number of poltergeist raps, noises and furniture shifting occurs. The mother searches for rats in the attic and the candle she holds is blown out. Horrors grow rapidly till the child at a grown-up party urinates onto the carpet.

There is a psychiatric unit in the university and the child is examined, given every test for brain-damage to no effect. The tension mounts again: "You'll feel a sharp prick, but don't move there's nothing to worry about." The experts are more and more puzzled. One of them is a young priest who has been seconded by his Jesuit order to take a course in psychiatric medicine at the Hudson clinic. He is a healthy young man who keeps fit by running round the university track in a track suit. Eventually, he is convinced enough to ask an audience of his bishop to obtain the necessary permission to conduct an exorcism. The bishop is rather young and gets the archaeologist-priest, now home, to be the chief celebrant. A very lengthy exorcism follows.

Years ago, when I first saw a "Science Horror" film, I was surprised and delighted that the audience screamed with laughter at the absurdity of the monster that pulled down ships into the depths of ocean or the crazy behaviour of half-human beings that survived the atomic war. I cannot understand why similar ridicule did not greet the cinematographic tricks of this "horror-film." The faked wounds on the girl's face and body, the green slime of tooth-paste pouring from her mouth, were so obviously contrived that they failed to produce conviction. The effort to show that the devil could imitate any charismatic sign of sancity—from the levitation scene to the opposite of a "weeping madonna" (the statue that menstruated), the speaking with tongues in Italian, tape run backwards in English in contrast to glossolalia—in the end defeated its own object.

In my personal experience of two exorcisms, I remember I was

filled with a great sense of peace and integration: in this film the successful exorcism of this twelve-year-old cost the lives of three men, two of them by falling from the bedroom window, and one by heart-attack—the older priest who was already suffering from that weakness.

The film failed to give any reason why this child was picked on by the devil. It is true she had been dabbling in ouija-board conversation: it is true that the 2-inch devil-face found in Iraq was “found” again outside the child’s house (how had it got there?): it is true the father was mysteriously in Paris (did this produce the poltergeist manifestations in the adolescent girl?): it is true the exorcism was finally successful and the girl was restored to normality, but was the length of the struggle partly caused by the translation from the Latin into modern English?

As to audience-reaction, it was difficult to assess; for there were only six persons (including our two selves) present at the session we attended. As we left the cinema, two St John’s ambulance men were waiting in the foyer to do their stuff at the next show.

Two reflections follow from this experience—first, what are the ideas underlying exorcism in the New Testament times and the early church? Secondly, what does exorcism mean today?

a) Exorcism from its very derivation, means a driving away of evil, by a solemn oath or confrontation, from persons or material things. Thus from the earliest times, Christian Baptism included a cleansing of the person to be initiated, and still today it involves a repudiation or renunciation of evil. Indeed, more generally, to be able to deal decisively with evil was taken so seriously that Tertullian says, “If a man claims to be a Christian and yet fails to cast out a devil, you should kill him as he is obviously a fake.”

b) Today, the phenomena which were explained up till quite recently as possession of a person by a spirit (or evil angel or an evil discarnate person) are usually recognized as projections of the mind or a disintegration of the personality. Sometimes a person finds that an action becomes not only a habit but an obsession from which he cannot escape, try as he will. These obsessions can be socially caused, as when public opinion or atmosphere exerts a pressure on the patient.

The film showed, perfectly soundly, that it should be assumed that the patient's illness has a physical or mental cause, and the case should be referred by his general practitioner to a competent physician in psychological medicine. But there are cases where this treatment proves a failure.

It is here that someone able to deal dramatically with the patient may be able to produce an expulsion of the block or check which is hindering his life. The exorcist (not necessarily a priest) must be in a state of recollection and confidence, relying, in all personal humility, on the power outside himself which is invoked. Treatment is more likely to succeed if it accords with the belief-system of the patient (or, in the example of the girl in the film a responsible person). The competence and personal impact of the exorcist, together with a trust in his abilities, is even more important for a cure than in the instance of an ordinary medical or psychological practitioner.

GEOFFREY KEABLE

CORRECTION "Kinds of retreat"

In Damaris Parker-Rhodes' "Kinds of retreat," *Theoria to Theory* Vol. 8, No. 1 (1974), I am referred to as "teaching and developing a special form of ballet notation (Benesh)."

i) I am sad to say I had nothing to do with the development of this notation; it was solely the work of Joan and Rudolf Benesh. I use it in my work and teach it.

ii) It is not just a "ballet notation" but a notation capable of recording human movements generally.

KATHLEEN RUSSELL

Sentences

Three ways of living in a Doomwatch world

I

IF—

If you can keep your head when all about you
Are losing theirs and blaming it on you,
If you can trust yourself when all men doubt you,
But make allowance for their doubting too;
If you can wait and not be tired by waiting,
Or being lied about, don't deal in lies,
Or being hated don't give way to hating,
And yet don't look too good, nor talk too wise:

If you can dream—and not make dreams your master;
If you can think—and not make thoughts your aim;
If you can meet with Triumph and Disaster
And treat those two impostors just the same;
If you can bear to hear the truth you've spoken
Twisted by knaves to make a trap for fools,
Or watch the things you gave your life to, broken,
And stoop and build 'em up with worn-out tools:

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Published by
Gordon and Breach Science Publishers Ltd.

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If you can make one heap of all your winnings
 And risk it on one turn of pitch-and-toss,
 And lose, and start again at your beginnings
 And never breathe a word about your loss;
 If you can force your heart and nerve and sinew
 To serve your turn long after they are gone,
 And so hold on when there is nothing in you
 Except the Will which says to them: "Hold on!"

If you can talk with crowds and keep your virtue,
 Or walk with Kings—nor lose the common touch,
 If neither foes nor loving friends can hurt you,
 If all men count with you, but none too much;
 If you can fill the unforgiving minute
 With sixty seconds' worth of distance run,
 Yours is the Earth and everything that's in it,
 And—which is more—you'll be a Man, my son!

RUDYARD KIPLING

II

A Hymn to God the Father

Wilt thou forgive that sin where I begun,
 Which was my sin, though it were done before?
 Wilt thou forgive that sin, through which I run,
 And do run still: though still I do deplore?
 When thou hast done, thou hast not done,
 For, I have more.

Wilt thou forgive that sin which I have won
 Others to sin? and, made my sin their door?
 Wilt thou forgive that sin which I did shun
 A year, or two: but wallowed in, a score?
 When thou has done, thou has not done,
 For I have more.

I have a sin of fear, that when I have spun
 My last thread, I shall perish on the shore;
 But swear by thyself, that at my death thy son
 Shall shine as he shines now, and heretofore;
 And, having done that, Thou has done,
 I fear no more.

JOHN DONNE

III

Contentment is a sleepy Thing

Contentment is a sleepy thing!
 If it in death alone must die;
 A quiet mind is worse than poverty!
 Unless it from enjoyment spring!
 That's blessedness alone that makes a king!
 Wherein the joys and treasures are so great,
 They all the powers of the soul employ,
 And fill it with a work complete,
 While it doth all enjoy.
 True joys alone contentment do inspire,
 Enrich content, and make our courage higher.
 Content alone's a dead and silent stone:
 The real life of bliss
 Is glory reigning in a throne,
 Where all enjoyment is
 The soul of man is so inclin'd to see,
 Without his treasures no man's soul can be,
 Nor rest content uncrown'd!
 Desire and love
 Must in the height of all their rapture move,
 Where there is true felicity.

THOMAS TRAHERNE

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1974, Vol. 8, pp. 279–280.

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MARTINE BROUZES, who designed the cover, is a student of plastic arts in the University of Paris (Pantheon-Sorbonne). She is especially interested in sculpture and architecture, and in helping children to do things for themselves in the plastic arts.

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THEORIA to theory

FEB 1974
The University
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Periodicals
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An International Journal of Science, Philosophy and
Contemplative Religion



Volume 8, Number 4 (1974)

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THEORIA to theory

An International Journal of Science, Philosophy and Contemplative Religion

Editors

DOROTHY EMMET, *Fellow of Lucy Cavendish College, Cambridge, England and sometime Professor of Philosophy, the University of Manchester*

ANTHONY APPIAH, *Clare College, Cambridge, England*

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Explorations in the sciences and technology that affect our understanding of religious and philosophical questions—these are the basis of this quarterly journal. *Theoria to Theory* holds that traditional religion has been primarily, and at best, concerned with mystical or contemplative experience; therefore it is important to a widened science in providing one source of insight. *Theoria* was the old Greek name for this insight; *Theory* here stands for an enlarged and revised scientific understanding. The journal represents an effort to keep the two terms with each other.

The journal was started in 1966, when this approach was outside current theological, philosophical and religious fashion, but times have changed, and the interests of *Theoria to Theory* have become those of an influential avant-garde. However, implementing the approach is not so easy. Real understanding proceeds at its own rate, and demands precisely the "waiting on God" that contemplatives should but do not always manage. Any other approach leads, on the one hand, to occultism, and, on the other, away from the spirit of adventure within science.

Editorial correspondence, submitted articles, and books for review should be addressed to The Editor, *Theoria to Theory*, 20 Millington Road, Cambridge, CB3 9HP.

Subscription Rates *four issues per volume*

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Individuals who warrant the journal is for their own personal use, per volume, postpaid: £3.95.
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Individuals who warrant the journal is for their own personal use, per volume, postpaid: \$12.50/£5.45.
Libraries, research institutions and others, per volume, postpaid: \$30.00/£13.00.

The subscription rates include a distributing charge of \$7.75 for postage and handling or airfreight to the U.S.A. and Canada.

Subscriptions may be sent to Gordon and Breach Science Publishers Ltd., 42 William IV Street, London, England or to Gordon and Breach Science Publishers, Inc., One Park Avenue, New York, U.S.A.

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Editorial

Philosophy and the sciences are individuated more by their methods than by the questions they ask. Together they exhaust our attempts at understanding and our ideas about the possibilities of changing the world. This journal is interdisciplinary because philosophical and scientific method and contemplative experience offer ways of discovering what the world is really like. Before the professionalization of philosophy, which began in the modern world with Kant, it would not have been necessary to see the enterprise as interdisciplinary; for discovering what the world is like has always been the task of philosophy. That it is necessary is a reflection of the fact that in a world of specialization, fewer and fewer people dare to pursue with vigour the central questions; while those that do often fail to draw upon the diversity and intensification of experience that specialization has made possible.

But the central questions must be pursued; and if our challenge is hubristic, it is a reasonable defence that it is based on a wide community of philosophical and scientific expertise and experience of a "religious" life. How the "religious" life is to be understood, is one of the problems we shall continue to discuss.

It is not, of course, enough to understand the world, we have also to act in it. We do not have a choice between understanding and action. Unless we know what the world is like, we cannot act in it. Unless we act, we cannot know. This is the key insight of pragmatism. Complementary, then, to a broader conception of philosophy as the pursuit of truth, is a conception of philosophy as a reflection on proper courses of action.

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It is here that the religious experience is crucial: for not only may contemplative experience teach us something about the possibilities of human experience (cf. T. to T. Vol. 7, iv, "Elementary Christianity from an Advanced Point of View"), it certainly offers insights into the possibilities of moral action. 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 as evidence in our search for understanding and their lives as exemplifying certain moral patterns.

One of the great discoveries of modern philosophy is the disjunction of fact and value: but the lives of the religious masters offer "models" of conceptions of the good, which derive from their claims to understand the *natura rerum*. That is, they offer "ways of life" that are based on a view of facts of life. What the fact-value disjunction shows is that nothing follows in logic from any view of the facts of life about the way of life that one must follow. But it is a consideration in favour of a moral view that it is "realistic"; appealing to truths about the world and the possibilities of human experience.

Our concern with understanding and our concern with action are parts of what we might call "applied philosophy": philosophy applied in the solution of "real" problems in the world of science, and applied in the critical analysis of views of the ends of action. What binds these tasks together is the truth that neither can be accomplished without "factual" evidence. And whatever they might claim, these are not the sorts of thing which academic analytic philosophers typically do. The Wittgensteinian slogan—"Philosophy . . . leaves everything as it is" (*Phil. Investigations*, 124, *et passim*)—and the view of philosophy as conceptual analysis lead in different ways to a sterile indifference to the world, because each method offers a justification for failing to come to grips with it. The Wittgensteinian view ignores the world because it claims that the philosopher's task is prior to an examination of the world; it wants to get us clear about language so that we can say what we want to say about the world. Conceptual analysis ignores the world because it is interested not

in what we *do* say but what we *can* say about it. In their search for meaning, the conceptual analysts have lost their feeling for truth. To say this is not to say that the tools of conceptual analysis are worthless—their development has been the profoundest of the contributions of modern philosophy. But tools are to be used in doing jobs—and doing jobs well involves more than knowing how the tools work. Perhaps the most hopeful feature of contemporary philosophy is that the logical positivistic distinction between conceptual and empirical enquiry is no longer much defended, even if it is often presupposed. The later Wittgenstein's insight that understanding a man involves sharing a part of his view of the world, and the development of this idea into the doctrine of the inseparability of meaning and belief; the discovery in the philosophy of science that the content of scientific debate is as essential as its logic in understanding the nature of science; the idea that descriptive terms are theory-laden; the realization that the common metaphor of the conceptual scheme undermines the rigid distinction of analytic and synthetic: all these entail a radical reassessment of the role of "fact" in the development of philosophical understanding. Later on we shall try and make a case for seeing "extraordinary facts" as essential evidence and seeing "common sense facts" as less relevant.

The Socratic conception of philosophy as maieutics, of the philosopher as midwife to ideas, has to be resuscitated. It is a cruel extension of the metaphor to see much of modern philosophy as the creation of abortionists; forced by a reactionary commitment to 'common sense' to the destruction *in utero* of the very ideas whose birth they should be facilitating.

* * * *

At this point an analytic philosopher might complain that what we have done is to make out a case for a certain sort of activity, which we have called "applied philosophy", which does not need to replace what he does but to complement it. What he tries to do is, in Strawson's language, descriptive metaphysics, analysing the conceptual scheme which we have. "If anyone wants to change it, he is welcome to do so, and he may offer reasons; but it is only

when descriptive work has been done that he can know what he is offering an alternative to.”

It is not enough to answer this with the (true) polemical observation, that very little attempt has been made recently at the revisionary task. What we can now show is that the very idea of a totally descriptive task is impossible. Conceptual analysis is not only—for many people—uninteresting, it presupposes something that philosophers already know to be false: that it is possible to represent the connections between concepts without reference to the beliefs about the world (possibly true, possibly false) which infuse them.

On the “descriptivist” view, a man who fails to assent to a conceptual truth is not failing to believe us, he is failing to understand us. For, it is said, conceptual truths—what the philosophical jargon calls analytic truths—are true in virtue of the meanings of the terms they contain; and if a man fails to assent to one, what he shows is that he doesn’t know what the words mean. A man who doesn’t know what the words mean doesn’t understand what is being said.

All this is very plausible. But the point here is not that the argument is wrong, but that the notion of a conceptual truth in this sense cannot be made good. We shall try and show why this is so.

The paradigm of an irreducibly conceptual connection is the so-called analytic truth. The examples that are generally offered—“A bachelor is an unmarried man” is the classic (and typically trivial) example—depend for their plausibility on the fact that the philosopher who offers them requires us to take for granted a background of beliefs that are to go unanalysed. Let us think for a minute about this case. If we were to invent a church and a ceremony of “marriage” which bore no relation to accepted western institutions would the men we “married” be bachelors? Is a man who has been living with a woman for many years, a so-called “common-law husband”, a bachelor? Any one who wants to answer yes or no straightforwardly to these questions seems to us to be failing to take them seriously. In some actual societies, in West Africa for example, the interaction of traditional marriage

and Christian marriage with the notion of a common-law marriage produces a situation in which our analytic truth begins to look pretty tawdry.

This example, theirs not ours, might be said to be unfair. For marriage is a complex institution. But the point can be made with complete generality. The possibility of public discourse depends on their being a public world which goes on enough as we expect it to for us to be able to consider certain usages naturally extensible; that our expectations fit in largely with the way the world does go on is a partial consequence of our having evolved in it. Some truths survive longer than others in the face of experience because the concepts involved are, in some sense, appropriate to our world. Analytic truths survive despite the fact we come across new cases because our concepts have fuzzy enough edges to let us build in these unexpected cases by something nearer to a decision than a recognition that in this case one way is the natural way to go on. If we never take account of the extraordinary—parapsychological, mystical, whatever—then we may fail to notice the vulnerability even of supposed “analytic truths” to the recalcitrance of the world. “(I)magine”, says Wittgenstein (*Phil. Investigations* xii), “certain very general facts of nature to be different from what we are used to, and the formation of concepts different from the usual ones will become intelligible.”

Our concepts presuppose the world in which we take them to apply: without a continuous interaction between experience and conceptualization, conceptualization would be impossible.

Now if a factual claim is a claim about the world, if factual sentences are the ones we use to try to speak of what we experience, then facts are essential to understanding the conceptual world. Furthermore it is the extraordinary fact that we must seek out: for that is the one that will guide us in our continual reformulation of our view of the world.

This is only the sketch of an argument. But if these considerations are followed up they lead to a rejection of the rigid descriptive-revisionary disjunction. And that makes a purely descriptive metaphysics impossible.

In a sense, this argument is otiose: for it is an attempt to refute

a case that many conceptual analysts fail to make. They assume certain facts about the way language works, taking, at the same time, no interest in the considerable problems faced (and often not faced) by the linguistic sciences. They work out the consequences of unconstructed theories about language, which remain inexplicit and unanalysed.

Von Neurath is responsible for an oft-quoted metaphor which presents the task of philosophy as the rebuilding of the boat of language bit by bit at sea. At each stage enough of the boat has to be left alone, enough of the conceptual framework left unanalysed, for us to avoid sinking into silence or mutual incomprehension. If we take that boat into the rough uncharted seas of the extraordinary her design may be so inappropriate that all we can salvage is a raft. And we have the best chance of making of that raft a better vessel if we keep the waves of the world always in mind.

* * * *

What, then, does the applied philosopher do?

In his exploration of the real, he is always conscious of the contemporary debates in the areas of science he chooses to study. Here it is not enough that he tries to tidy up the conceptual world of Kuhnian “normal science” (see T. to T. vi “The Case for Way-Out Research”). For if he works always within the prevailing orthodoxy he is for ever trudging behind the advancing front line of research—and leaving the difficult problems to the scientist. It is, of course, important that philosophers immerse themselves in current scientific theory, looking at its internal articulations and their successes and failures. But where they are really needed is at the side of the scientist who has a new vision of the part of the world with which his science deals. Kuhn’s great insight is that scientific orthodoxy is fashion-ridden, that a man’s ideas may not be accepted not because they are wrong but because they are unfashionable, outside the prevailing paradigm. The post-Kuhnian philosopher has to face the fact not only that there is such a thing as a paradigm-shift, but that there is a difficult task to be done in

making the exponent of the paradigm-shift comprehensible. Normal paradigm scientists inhabit a shared world, using a shared language. Experiments occur in the light of the core of existing theory and various developments and extensions of it. At the end of most of them, the ones that “fit”, it is possible for the scientist to present the theory and then produce the experimental result with a flourishing “that’s how it is”. The way-out scientist with the philosopher at his side says something more sophisticated. He asks us not to look plainly at the world, but to look at it in a new way. He is nearer to the metaphysician and the mystic who ask us to look at the world in their way because our experience is made more coherent and intelligible in so doing.

The approaches of scientist and metaphysician shade off into one another. They differ in generality and in the extent to which they ask us to look again.

But this is but the one side of applied philosophy. For the applied philosopher has also to explore the moral world, to discuss and consider patterns of life. So little work has been done in this area that the concept of a way of life—a life-style—as offering a moral pattern is rather opaque. If a man’s way of life is just the way he lives, then every man has a different way of life. What individuates a way of life is the set of principal goals and the central beliefs about human happiness and suffering—and above all about death—that play their part in determining choice and motivating action. The “religious” claims about death are central not only to our understanding of the world, but to the way of life we adopt. (The problem is whether or not they are true.)

The distinctively moral features of a way of life have to do with our relations to others. Ultimately in determining our goals we are faced simply with a decision. It is a matter of preference. The mistake that Kierkegaard made in presenting the issue was to see the choice as about what one should believe. The real choice is about what one should value.

It is often argued that we do not “really” choose what we value; that the fact that we value whatever we do is a causal fact about us. But if we are interested in our own moral education we can teach ourselves to value things; this is the essential content of the notion

of an acquired taste. Of course it may be claimed that it is a causal fact about us that we choose to educate ourselves morally. And so it is; but that is another issue. If we *can* set about our own moral education, then clearly we can do it in two ways: by learning the sorts of facts about human life that are relevant to taking moral decisions, and by changing our systems of preferences. It is in the latter area as well as the former that moral example may be crucial.

We are convinced that the fact-value disjunction involves giving up any attempt to see one's priorities as related to the world in the way that one's beliefs must be if they are to be rational. But it is a fact of moral psychology that some ways of life have an attraction that others lack. And to present a way of life in which a system of priorities is embedded is sometimes enough to bring a man to realign his priorities with those of that way of life. This is what happens when a man discovers a vocation—and if the word “discover” suggests an illicit reintroduction of an idea of moral knowledge, it also reflects the power of the experience that many men and women have described. The compulsion of a sense of vocation is not that of logical entailment: but a vocation is compelling nevertheless.

An editorial is not the place to develop in detail any of the themes we have considered. What we have tried to do is to show how our conception of the task of T. to T. is developing. If we can contribute to the growth of applied philosophy—in our dual sense—we believe we shall have done something eminently worthwhile.

Discussion

Where the map is the territory

FRANCIS HUXLEY with
TED BASTIN and CARMEN BLACKER

(This is a revised version of a talk given by Francis Huxley at a colloquium on "Anthropology and Para-Anthropology" held by members of the T. to T. group last May. The anthropologists were asked how far their data suggest psychic powers not normally allowed for in their accounts of the societies they study. The talk is followed by a shortened version of the discussion, in which Ted Bastin, Carmen Blacker, and various members of the T. to T. group took part.)

Francis Huxley. It is natural for one who is interested in ESP to turn his eyes to shamanism as it is still practised by tribal peoples. For the accounts of shamans abound in stories of the miraculous, and the tradition in which a shaman operates must have much to tell the inquirer, not merely about how shamanic powers are attained, but of what nature these powers might be. It is therefore natural for the inquirer to ask anthropologists to describe and explain these matters, which are clearly within their province.

As a subject for anthropological study, indeed, shamanism has much to recommend it. It exists on the borders of society, psycho-pathology and religion; it allows much to be known about healing, and the use of suggestion and exorcism; and it employs a battery of poetic and rhythmic aids towards inspiration that are of the highest interest. Anthropologists have pronounced to con-

Theoria to Theory
1974, Vol. 8, pp. 289-301

Published by
Gordon and Breach Science Publishers Ltd.

siderable effect on such topics: but it must be said that they have failed to pass judgement on the crucial problem, namely, whether there is anything in shamanism that requires taking the traditionally known powers of the spirit world into account.

This is understandable enough, on several counts: one being the difficulty of checking up on a shamanistic feat; another having to do with the tricky nature of coincidence, where it comes to dealing, say, with a successful divination; and a third, that an anthropologist is trained in the habit of deductive scepticism, his aim being to define individual behaviour as far as possible in terms of social relations. His aim is therefore to reduce a shamanistic performance to a level of reasonable understanding, unlike the shaman, whose success lies in projecting his understanding so that it becomes theatrically effective.

If we hark back to the European tradition, we shall find that we need not limit our appreciation of the word *projection* to the meaning given it by Freud. For there is frequent mention in alchemical texts of “the powder of projection” which brings the Opus to its golden conclusion:¹ this being the ability to transform matter by the disciplined use of the spirit. It is, apparently, a kind of thought-form, or what Cyrano de Bergerac called both “the language of the birds” and “the energetic idiom”. As will be seen, both these phrases are of especial interest to the student of shamanism, and Cyrano gives the following description of the second one:

“As this idiom is the instinct or voice of nature, it is perforce intelligible to all that lives under nature’s control. That is why, if you had command of it, you could communicate your ideas and hold forth upon them to the beasts and they could tell you theirs, because it is nature’s own medium of communication with all the animals”.²

This is a high claim, which I shall briefly try to substantiate. We may take for a start that the energetic idiom is innate in all human beings, though it is lost with the acquisition of a mother tongue. It can, however, be regained, if shamanism is any guide: for shamans too speak with the language of the birds, though this only comes to them after that radical deconditioning known as the shamanistic crisis.

We can, however, begin our argument with a more common and less radical form of deconditioning, that which occurs during sleep. For this we may cite the Naskapi of Labrador³ and their practice of divination. To determine where they should go hunting on the morrow, they first invoke the spirits with songs, drumming, and by concentrating their thoughts upon the matter in hand. Then they sleep and dream, perhaps, that they are hunting and killing caribou. On waking, they take the shoulder-blade of a caribou and heat it in the fire: cracks then appear in the bone, and parts of it are burnt. The hunter then treats the shoulder-blade as a map of the countryside, the cracks being interpreted as rivers or trails, the burnt patches as camp-sites or caribou herds: and he then goes to hunt for the caribou he has dreamt of in the direction the divination indicates.

That this method has something to be said for it may be taken for granted, since the Naskapi have practised it for centuries under the constraint of absolute necessity: for they depend on hunting to keep themselves alive, and the caribou are relatively few in a land notably inhospitable. Naturally, they already know the country they hunt over: and what the shoulder-blade divination does, at the lowest estimate, is to transform this knowledge into a cartographic diagram, in which their knowledgeable intuitions about the habit of caribou may be given direction.

We may see here the main requirements for an intuition to be given divinatory expression: first the lulling of the mind into a state free of anxiety and wilfulness; second, its incubation under the sway of a powerful directive; and third, its decoding, which here is made possible by the idea of a map. And to this we must add a fourth, which is often forgotten: namely, a constant effort to perfect the art, which is as important to a hunter as is his ability to shoot straight.

Tribal peoples have efficient methods for inducing dissociation, and incubation; their techniques are well known, and do not here need to be spelt out. Many of them are also astonishingly adept at finding their way round their territories, and some, such as the Naskapi and the Eskimo, can draw accurate maps on demand. Rasmussen⁴ found that the Eskimo made maps for themselves, that were carved out of wood: moreover, he stated that the maps

they drew for him were much more accurate than the Admiralty charts of his time. True, the proportions were not always exact, but the relative position of bays and headlands, islands, and the general topographical lay-out, was more than adequate for his use when travelling.

I would like to stress this point, not only because the ability to draw a reasonably accurate map is one of the early symptoms of intelligence that psychologists and anthropologists tend to ignore, but because it gives us our first clue as to what “an energetic idiom” might be based upon. In this case it has plainly to do with a keen sense of observation, which, married to the memory of a physical activity, produces an abstract, showing direction, distance and relative position. The shoulder-blade divination shows how this abstract is, as it were, given life by the twin instruments of hypnosis, dissociation and a clearly directed intention.

The manipulation of intent which all this necessarily deals with is of prime importance for the study of shamanism. The character of a shaman is generally paranoid, for the obvious reason that most of his practice is the tracking down of the causes of illness, complaint and misfortune. These are always seen either as failures of morality—namely breaches of tabu—or as underhand intentions, namely witchcraft. The paranoid tendency is also encouraged by competition between shamans, and most importantly by the complaint that is at the bottom of a shaman’s vocation. However we may diagnose this complaint—and diagnosis has ranged all the way from hysteria to schizophrenia, from neurosis to epilepsy—the fact that his vocation is always marked by a crisis tells us that the complaint may usefully be understood as a repression of psychic and bodily aptitudes. The repression is broken down by means of the crisis, and the energetic habits thus released are given form as spirit helpers, who must continually be exercised if only to keep the original complaint at bay.

The rationale for this state of affairs can be found in the tradition started by Bergson, who stated that perception is the result of putting the muscular apparatus into relation with the sensory and intellectual ones. In the same tradition are Scherner, Roheim, Schilder and Piaget, to name but a few. Scherner is of

interest in having given Freud his first real insight into the problem interpreting dreams: his simple view being that any image in a dream can always be traced to a certain part of the body undergoing untoward stimulation, and that at the end of a dream the organ in question is apt to show itself unambiguously to the dreamer. One of his examples of such an image was of two rows of boys, thirty-two in number, dressed in white and fighting together: these turned out to be an experience of the teeth.⁵ Roheim showed the value of this method of interpretation in his anthropological study of Australian aborigines, and I have tried to do the same for Haitian voodoo.⁶ After some additional research, I found that there are a large number of images, such as those of trees, serpents, birds, mountains, rivers, geometrical forms, and so on, that are quite archetypal: that is, that they frequently occur in different people when undergoing typical psycho-physical experiences. This can only mean that the numerous patterned activities comprising the body are naturally made conscious in the energetic idiom of a dream-image.⁷

It is therefore no great matter to interpret the ritual symbolism of any practice such as shamanism in this manner: and the first result merely confirms what shamans have always held, that shamanistic crisis is experienced as a dismemberment of their own bodies, with particular emphasis being laid on the disarticulation of the skeleton. As I have said, it is by this crisis that knowledge of the energetic idiom is regained, which shows it to have the closest connection with the natural use of the physical body.

This correspondence disappears only because it is transformed into what is generally called a spirit or a god. Such a disembodied entity has curious properties: it is apparently independent of its temporal vehicle, and it often has extra-perceptual sources of information. It may therefore usefully be understood as being at that place where a map such as the Naskapi use in divination refers as much to the world outside man as to that within him. That all schools of psycho-analysis view such an entity as a split-off part of the personality is therefore of some importance, for this means that when it is activated it will possess the most obvious and yet paradoxical function of psychic life, namely self-consciousness.

therefore comes into the category of those intellectual functions that Coleridge stated could be their own objects, and that we may define as being self-reflective.

It is worth pausing a moment to consider just what the word "self" means in this context. With Freud's help, we may profitably assume that the first form of self-consciousness in children is fantasy. This is a mode of inner play in which the mind gains a dream-like satisfaction by personifying various parts of the body, the energy in such parts being then felt as pleasure. There are three zones which appeared to Freud to be of particular importance in creating that network of fantasy known as the personality. To these we must certainly add a fourth, that of the skeletal musculature which we may remember Freud called the agent of the Death Instinct. His conclusion is undoubtedly correct, though we must add that the skeletal musculature is also the principal agent that gives perception its orientation, not only in terms of distance and direction, but of the difference between an object and its image. Without going into all the consequences of this, our necessary conclusion is that the ancient doctrine of the correspondence between the microcosm and the macrocosm is wonderfully supported by the findings of modern psychology; and that the Bergsonian hypothesis is largely correct in holding that our perception of the outer world goes hand in hand with those feelings that come from within. What we call the self is therefore something like an interference pattern between these two sources of information.

If this be so, then a most interesting state of affairs will arise when the dissociated mind is no longer just seeking for immediate sensory gratification within, but is using the inner psychic referents of imagery to project itself into the outer world, and to perceive what is there without the normal use of the senses. It is because a mental faculty in this state coherently reflects the inner and outer worlds upon each other that we may legitimately call it *self-reflective*, and as being its own object—though by this definition its objective part must include that part of the real world upon which it acts.

Such a self-reflective faculty often goes by the name of a *spirit*

in anthropological writings, and the only real difference between the accounts found there of such an entity and the one offered here is in the meaning given to the term "projection". Anthropological explanation is such that projection is used in the Freudian sense alone, as the imputation of one's own wishes and intentions to figures in the outer world. This is a good beginning, for shamanism cannot be appreciated outside its psychological and social contexts. But it is only because of some hygienic superstition that we assume that spirits can be explained away in this fashion. That they are nothing less than projections everyone will surely admit: and the question then is whether there is anything more to them. If we take seriously what shamans tell us, it must be more: for they plainly say that they have learnt the art of giving their projections independent life, and demonstrate to the best of their abilities what powers come with this art.

It is only by some such formulation, in which the idea of projection is pushed to its limit, that we can make sense of certain shamanistic experiences—for instance, such as a man being able to see through his closed eyes and the wall of his igloo with the inner light, or of travelling the world in spirit and coming back with a truthful report of what is occurring in certain quarters. When a man has reached such a stage, the intellectual map of the world he carries in the experience of his own activity appears to be in the most intimate of correspondence with the state of the world itself—so close, indeed, that he can project his spirit where he wishes, and by using the energetic idiom may even be able to bend reality to his will, without using his body.

Ted Bastin. In spite of your obvious reticence, is there anything you could say about the self-reflective faculty, and what it does for you? What are its formal properties? I'd be grateful for any vision of it that you can provide for you've said enough to convince me that you have a hypothesis which brings together the right ingredients for a realistic cybernetics of organisms (as distinct from facile essays in that direction as I fear we must regard general systems theory). However, to have the ingredients is not to have the hypothesis, let alone the vaguest idea of the process. To start

crudely, is self reflection a feedback process? How do things work which have this self-reflective property which wouldn't work otherwise?

FH. It must indeed be a feed-back process, if only because consciousness reflects the inside and the outside upon each other, and lets us act accordingly. So consciousness is self-reflective to begin with, though we are in the habit of calling one part of this self the object, and the other the subject. By living in society, a man learns the various conventions by which objects and subjects can be referred to, so that he knows a cup from a saucer and can usually distinguish an illusion from a reality. Moreover, he will have something like a map of his experience of the social world, the natural world, and the subjective one. At some stage they will appear to refer to different things, to emphasise the difference between subject and object. But when these maps are in coincidence and the same process is known to order all of them, then the whole self-reflective capacity of the human being comes into play and, seemingly, will produce results quite abnormal to those who continue to separate subject from object.

Ted Bastin. Is the self-reflection a symbolic awareness of the image of the functioning of some part of your body?

FH. Can we say that symbolic awareness is the perception of other things in relation to one's body and all its functions? The self-reflective faculty will then come fully alive when you put the real world together with our map of the real world, and also with the map of the sense of yourself, to make an energetic map. My supposition then is that you are reaching the place where autoscopy and astral travelling is possible, and other curious matters. There seems to be no doubt that in a state of autoscopy people see what they should not be able to, if walls and doors are as opaque as our senses tell us. Nowadays we talk as though a symbol is a pretence, something not true. It is difficult to remember that this is not really so, and to give the term its proper weight.

Ted Bastin. How does this then provide you with some means of knowing or perceiving differently things other than your own body? Presumably it is not just the functioning of your own body that comes up in this way, but your own body in relation to the outer world.

FH. There are many ways in which the relationship between what we call mind and world can be experienced. That of the Naskapi is of course just one, and its interest lies in seeing how a man can train himself to imagine the environment in such detail that this is of practical use to him when hunting.

Ted Bastin. Are these maps literal maps, or are they maps of the relationship between mind and world?

FH. They are both literal and phenomenal, and the relationship between body and mind should, in the case of such as the Naskapi, be understood in terms of animism. There is, for a start, the common assumption that killing a caribou is in some sense the equivalent of sexual intercourse. The soul of the dead animal has therefore to be propitiated so that it will be reborn in the near future. The men do this on the occasion of the kill: but the women have their part to play in this cycle of reincarnation, by observing numerous tabus on the use of caribou flesh, hide and sinew. The breach of these tabus is felt to be on a par with adultery in our society: the social and natural orders are put out of joint, and misfortunes occur as a consequence. The animistic experience is therefore one in which sexuality, hunting and social observances are all on the same map, and in which an action on one level entrains consequences on others. Symbiosis is a good word to describe the relation between man and nature in many tribal societies—a symbiosis that is symbolic as well as ecological.

Carmen Blacker. The intuition which you get is very much the one found in Chinese medicine, that the body is a microcosm of the shape you imagine the universe to be. So you don't bother to cut up the body and look at it, because you know that the heart has five lobes because there are five stars in the constellation

Major; in fact the body is a small replica of the cosmos as you envisage it. Healing takes place with this in mind.

Ted Bastin. Does the heart have five lobes? Are there any animals which don't have five lobes?

Carmen Blacker. You knew there were three hundred and sixty bones in the body because there are three hundred and sixty degrees in the circle. When western medicine came, they found that the organs were quite differently shaped.

FH. I find it very interesting that Chinese medicine has had such success in certain fields, even when their symbolic imagery was not also literally exact. What would have been the result if they knew what our scientific medicine has told us, and yet used symbolic imagery that took account of it? One can imagine a state when the symbol for something becomes as detailed as one's observation shows it to be—when the territory and its map become coterminous.

Ted Bastin. Is this connected at all with what is called the "body image", which is an image of the way the body ought to be and which to some extent dictates or should dictate, the way it grows?

FH. It is indeed: it seems there must be an idea before there can be a body.

Ted Bastin. What is it that self-reflects—is it a particular organ of the body, which, having itself been endowed with some form of consciousness reflects on itself, or what is it?

FH. It is the organization composed of a mental faculty with a sensory faculty and a motor faculty which are linked by experience. When you have them in their totality, the organization apparently has a definite form, which also reflects what is happening outside at the same time.

It is like the body image in being the organization in which mental, motor and sensory faculties combine, and it seems that it is this combination of different faculties that gives rise to the experience of self-reflection. It has a typical pattern of growth,

and tends always to picture the world as a cosmos—as an organization where different aspects of reality combine in consciousness. Since shamanistic experience is typically cosmic, that is, it knows a lower world and a higher world, and the methods of descent and ascent through these worlds—it seems that the more sophisticated feats of ESP connected with it are features of experiencing reality as a cosmos. So self-reflection and what we may deduce about its properties is a function of a man's experience when he treats reality as a cosmos.

This is in some ways a very common and basic experience, which, since it is usually not made use of, is often thought to be childish and trivial. For it is nothing less than the basic product of fantasy, which is continually using the body as a stage-set for its active desires. Something of its spontaneity can be seen in an example quoted by Roheim concerning an American woman who used to watch herself falling to sleep, and note the images that come to her mind. Like Scherner, she found that she could always associate the image with a feeling-tone in a certain part of her body. Thus an image that came to her, of climbing Lichfield Hill, she found to have its physical location in her knee, that she had kept bent upwards while dozing.⁸

Ted Bastin. I think we are thinking the same sort of thoughts, but they are widely separated. From a sort of exceedingly primitive and crude systems-theoretic or cybernetic point of view, I'm always profoundly interested by the fact that we have got this inner experience which is perhaps very complex and perhaps mystical and we have no natural way of communicating it: on the other hand we have a very adequate objective level which is for describing external events, and we have to decide how these two interlock. Your hypothesis is that this self-reflection is the thing which fills the gap. Somehow, the identification of an internal image with an external image then becomes a two-way process, a feedback between the two, which reinforces itself and generates something new which one can use in the intervening territory.

To give an example of what I mean. I wondered if the intervening image could *stretch*—as in the case of Herrigel's Ze

archer.⁹ The archer's image changed, didn't it, as he began to learn to relax to that bow, and he was asked to set as his ideal the archer who practically could hit the target in the dark. He had to transcend the vagaries of athletic form, so that he could be reliably and instantly on form (and you know that the business of coming on form is itself a very extraordinary experience). I wonder whether the structure in your map extends itself to include actually hitting the goal. Would such a going-on-form structure count as your map, even though its boundaries are no longer within the body?

FH. Yes, I think one can well think of the zen archer with all this in mind, if one wishes to make so bold. One could say that if one's body schema is so clear that it includes the scene outside, the projection of an arrow will naturally succeed in finding the target.

Carmen Blacker. This seems to be linking up with what you might call the religious intuition of the kinship between our bodies and the external world around us; many philosophies have reduced this to systems of correspondence—the five so-and-sos within us and the five so-and-sos outside us; this is not a mechanical causation, but it has happened in so many different cultures that one can't help feeling that it is an intuition which we have lost sight of. I'd like to go back to this shape of the cosmos; if you have a definite conception that the universe has a shape, that above there are either seven or nine layers of heavens, below there are so many layers of hells, your out-of-the-body experience is going to take that particular form. We don't have interesting ascents to heaven or descents to hell these days, we just go down the road. This sense that the universe, the wholeness, the cosmos in the Greek sense of the word, may also be relevant.

FH. Can we take a cosmos as being a canonical approximation in which the relation between the soul, the spirit, the body the society and the environment can always be found? It is expressed by traditional songs, by rites and by stories: it is figured in images, built into the form of temples and houses, and endows number

and geometrical forms with meaning. It is, in fact, symbolic, which means that it is a kind of universal explanation. One may learn a great deal from how a cosmos is described by a traditional society: I would say it is the clue to the development of consciousness as culture. One of its main features is the classification of experience into different realms, which each contain their own classes of experience. The second main feature is that it describes in figurative language how something in one class of experience can be translated or transformed into another. I think we can say that this change when it concerns two basically different classes of experience, is felt to be under the sway of a guardian spirit.

There are of course, many different kinds of spirit, but we are lucky enough to have a generic name for them all: we may take it from the Greeks, whose title for it was Hermes. Hermes is the god of boundaries, of termini, of death and resurrection; he is also a healer, a giver of treasure, a magician, a trickster, and the god of thieves. He even steals from the other gods, whom we can take to be no less than representatives of the various cosmic orders, because he is always the first to taste offerings made to them. It would therefore be rewarding to think of these figures of speech in terms of how consciousness works when organized as a cosmos.

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Mind and matter: monism or dualism ?

DUNSTAN McKEE S.S.M.

I am an Australian, and if there is any one philosophical position in which Australian philosophers may claim a priority interest, it is surely Central State Materialism—the Identity Theory of Mind. The Australian philosophy schools gained considerable attention, even notoriety, in the sixties by their consideration, often advocacy, of this position. The “father” in Australia of this theory was J. J. C. Smart, at the time professor of philosophy in Adelaide, who developed and popularized the seminal work of U. T. Place and H. Feigl in America.¹

My reasons for returning to a consideration of Central State Materialism have nothing to do, however, with jingoism. The identity theory is an attempt to resolve the mind-body problem and I agree with Smart² that the resolution of this problem is one which will involve a person’s whole philosophy. Also, Central State Materialism has been given as an example of so-called “persuasive” science as against “revisionary” science in this journal.³ This in itself justifies a more extended examination of the theory.

The argument for the Identity Theory of Mind may be stated briefly as follows.

i) The only satisfactory theory of mind will be a causal theory, that is, a theory which understands the mind as that complex of conditions which gives rise to human behaviour. Or, put another way, statements in which we describe events in our mental life are

Theoria to Theory
1974, Vol. 8, pp. 303-315

Published by
Gordon and Breach Science Publishers Ltd.

indeed descriptions of inner states, and these states are, typically, causes of bodily action.

ii) The dualist theory postulates two sorts of entity, physical entities whose behaviour can be described in physical laws, and irreducibly non-physical entities, which somehow affect the physical entities, but whose role in the explanation of human behaviour is by definition non-mechanistic. Such a theory leaves us with “nomological” danglers, either in Feigl’s sense of laws from which non-physical entities dangle,⁴ or in Smart’s sense of the dangling entities themselves.⁵ Either way, there are loose ends left; laws which are supposed to explain the connection between physical events and some other events not subject to the same laws, viz. “mental” events, or mental entities (thoughts, volitions, sensations) which are not themselves to be considered part of the system to which physical laws are applicable. The objection is not solely that this is an untidy theory. Smart, for instance, finds it unbelievable that “everything should be explicable in terms of physics . . . except the occurrence of sensations”.⁶

iii) The identity theorist makes certain assumptions about method. First, he believes that theory construction is basically a matter of postulation rather than induction. In the present context, the question to be asked is “Which postulated entities best account for the observed facts?” and, if we have more than one entity, “Which hypothesis, arrived at by postulation rather than induction, best accounts for the observed connections?” Secondly, the principles of parsimony and simplicity are in point. That is, if we have to decide between competing theories, then that which is simplest is to be preferred. Thirdly, there is the appeal to Occam’s Razor, that entities should not be multiplied unnecessarily.

iv) The theory, assuming that the nervous system has no non-physical properties, thus states that the mind, the cause of behaviour, happens to *be* the brain. Or in other words, reports of sensations, which are all “topic neutral”, happen to *be* in fact reports of brain processes.

“The brain process doctrine asserts identity in the *strict*

sense.”⁷ That is to say, reports of mental states are in fact reports of brain states, mental processes are in fact brain processes. It is not an identity of meaning; statements about mental states, e.g. “I am in pain”, do not *mean* the same thing as brain statements, e.g. “My brain is in state X”. A lot of discussion has taken place about this notion of identity, and perhaps Max Deutscher in a paper read at the meeting of the Australian Association of Philosophy in 1964⁸ has at least limited the area of discussion. He distinguished between identity statements and identification statements. An identity statement asserts that an entity, identified in two different ways, is in fact one, and only one, entity. Thus “The morning star is the evening star” is an identity statement in this sense. On the other hand, “an identification statement need not require that something be first identified in at least two ways.”⁹ Deutscher goes on to argue that it is this sort of identification about which Place and Smart were talking, and that, inasmuch as they talked in terms of identity statements, they have confused the issue. As Deutscher goes on to say, “Their theory of the identification of mind and matter is a theory expressed in terms of something known in part, but not identified, by the subject, and known more fully and identified as a brain state, by an observer. Theirs is not a theory that something is first identified in one way and then in another.”¹⁰

The identity theory has, to my mind, one outstanding advantage, namely that it requires the existence of only one kind of entity. Against a theory that requires more than one kind of entity, e.g. Descartes’ dualistic mind-body theory, there is, I believe, a conclusive theoretical argument, both epistemological and ontological. Briefly, the argument is as follows. It is claimed that there are in fact two kinds of entity, e.g. bodies and minds, which have no properties in common, or only common temporal properties (e.g. interacting in some way at a given time). Such a dualistic theory has no explanatory value. Either the relationship between the two kinds of entity is described as occasionalist, i.e. an event in the history of one kind of entity happens to be contemporaneous with an event in the history of the other kind, which is to restate the problem rather than offer an explanation.

Or interaction between the two kinds of entity is supposed to occur, in which case the entities must be of one kind, or it still needs to be explained how entities of different kinds can interact, and I do not see how this can be done. I am therefore favourably disposed towards any entity-type monist theory.

However, it is generally agreed that there are certain events which would disprove the identity theory of mind. I have stated that the identity theorist is committed to the belief that the nervous system has no non-physical properties. This belief is obviously in conflict with beliefs about survival of death and parapsychological phenomena. For example, in a discussion of extra-sensory perception, pre-cognition, clairvoyance, telepathy, psychokinesis and the survival of death, Keith Campbell states that "if even a single example of any of these types of paranormal phenomena is genuine, Central State Materialism is false."^{1 1} For a person like Campbell, it would not be sufficient that the theory should be "cooked" to accommodate any repeatable and verifiable occurrences of paranormal events. He argues "the fact that some neomaterialism might survive the establishment of paranormal truths would not vindicate Central State Materialism. For Central State Materialism is a materialism based on our present physical and chemical science. If that science is inadequate, the materialism based on it is false."^{1 2}

But the question is not quite as simple as that. First, there is the question of how far any experimental evidence would be decisive as between the identity theory and any other theory. Kurt Baier first raised this in an article in the *Australian Journal of Philosophy*.^{1 3} where he gave an account of a supposed experiment in which an electro-encephalograph gave evidence contrary to a first person report of a sensation. On the face of it, this seemed to be a crucial experiment, if indeed the identity theory was proposed as a factual identification, open to falsification. Smart accepted the possibility of such an experimental result, but claimed "I can still believe *that this will never in fact happen*. If it did happen I should doubtless give up the brain process theory."^{1 4} However, he did take the argument further, by arguing that since the sincere reporting of a sensation is one thing and the sensation reported is

another, then it is logically possible for someone sincerely to report a sensation without that sensation having occurred. All I want to conclude from this is that he who wishes to present experimental refutation of the identity theory will have to exercise some sophistication in the choice of his experiment.

But will anyone take an experimental refutation of the theory seriously? I take it that Kuhn is somewhere near the truth when he remarks "One of the things that the scientific community acquires with a paradigm is a criterion for choosing problems that, while the paradigm is taken for granted, can be assumed to have solutions. To a great extent these are the only problems that the community will admit as scientific or encourage its members to undertake. Other problems, including many that had previously been standard, are rejected as metaphysical, as the concern of another discipline, or sometimes as just too problematic to be worth the time."¹⁵ This is, of course, the strength and the weakness of "normal" science; the strength, because science can make rapid progress by the concentration of scientists on "puzzles" which are capable of solution, its weakness, because new and unsuspected phenomena may be overlooked or ignored. Furthermore, if the practice of "normal" science is linked with a metaphysical doctrine such as the identity theory, the ignoring of new or unsuspected phenomena may acquire a methodological justification. For example, Campbell again. "For any result in physical research which can be explained either by an appeal to paranormal power or by the hypothesis of fraud, the explanation by fraud is the more rational one."¹⁶ And although Campbell does go on to consider more seriously the possibility of repeatable experimental results in parapsychology, his comment does indicate the sort of disinterest there is in questions which are not readily answered within the terms of the regnant paradigm. Indeed, what sort of experiment could be set up which would be both convincing to the sceptic and capable of repetition? It has been objected that one of the troubles with card guessing experiments is that the experimenter is not given "material that the E.S.P. faculty, as we know it from observation, is fundamentally interested in."¹⁷

I want now to turn our attention to another question raised by the proponents of the identity theory. It is assumed that we know what we mean by "physical". It is assumed that the only way we know what is going on in another person's mind is by our observation of the person's behaviour (including his first person reports) or other people's report of his behaviour. Therefore, if we were to discover by some non-sensory means what was going on in another person's mind, and this discovery were repeatable, and open to experimental control, then we would be in the way of having evidence to counter the identity thesis. My question is whether this is a tenable understanding of what is meant by "physical". Further, in the current situation of "gedanken" experiments, electron microscopy, sub-atomic physics and questions about ultimate particles, we are a long way from the beam balance, the thermometer and the light microscope. In former days, it was obvious that what was physical was what could be touched, seen, measured. But in what sense is that so today? Add to this the crudity of some philosophers who take an interest in science, and who tend to talk about "unified science" and the "consensus view of total science", and it seems to me that we have a situation in which the terms in which a metaphysical dogma, C.S.M., is expressed may be in process of being evacuated of the meaning assumed by the metaphysician, and this by the practitioners of even "normal" science.

But I do not want to reinstate an entity-type dualism. I do not think it is helpful to replace one set of questions, to which there may possibly be some answers, with another set of questions, to which there can never be any answers. It is for this reason that I find the identity theory of mind attractive. But my question remains. What does "physical" mean? What is the actual distinction we are trying to make between the physical and non-physical? Of course, the distinction can be maintained on the crude level. But might it not be the case that the battle is really over? Does it make sense to maintain the physical/non-physical distinction in science? What cutting edge does it have? And if there is none, then let us stop the argument, and get on with the question we are all interested in, namely, "What is reality like?"

However, it has been argued, for example by Spinoza, that any entity-type monist theory implies entity monism, that is, there is only one entity or substance, and so-called discrete particulars are but modes of the one substance. Such a monist theory can seem mighty strange. The views of those who, in the history of philosophy, have argued for such a monist position are not very attractive. But then, the views of dualists such as Descartes and, perhaps, Plato are equally unattractive.

There is, however, a particular entity-type monist in the history of philosophy who may perhaps deserve further attention. It may be strange in this context to suggest that it is worth spending time on Berkeley, but that is what I intend doing. For if ever there was an entity-type monist, Berkeley was one. Equally, Berkeley was interested in science. One might refer to, for example, his *Essay towards a New Theory of Vision, Siris*, or the numerous entries in his *Philosophical Commentaries* which suggest an enquiring mind. For example, “Enquire concerning the pendulum clock &c, whether those inventions of Huygens &c be attained to by my doctrine.”¹⁸ “Writers of Optics mistaken in their principles both in judging of magnitudes and distances.”¹⁹ Or modern sounding entries such as “If you take away abstraction, ‘How do men differ from beasts?’ I answer, by shape, by language.”²⁰ Or one might refer to *De Motu*. Popper drew attention to this in his “A Note on Berkeley as Precursor of Mach and Einstein.”²¹

Now, as anyone who has tried to come to grips with Berkeley knows, there are difficulties in the interpretation of Berkeley. But equally, we know that Dr. Johnson’s stone-kicking episode was no argument against Berkeley. Also, Berkeley does not deny the possibility of scientific investigation, nor does his argument render it pointless. True, Berkeley was a phenomenalist. The fascination of his argument is the way in which he avoids his own Scylla and Charibdis, namely Locke and Malebranche. The world as perceived really does exist, as perceived. On the other hand, there is no physical world behind the world of physical appearances. “So long as we attribute a real existence to unthinking things, distinct from their being perceived, it is not only impossible for us to know with evidence the nature of any real unthinking being, but even that it

exists . . . But, all this doubtfulness, which so bewilders and confounds the mind and makes philosophy ridiculous in the eyes of the world, vanishes if we annex a meaning to our words, and do not amuse ourselves with the terms *absolute*, *external*, *exist* and such like, signifying we know not what. I can as well doubt of my own being as of the being of those things which I actually perceive by sense: it being a manifest contradiction that any sensible object should be immediately perceived by sight or touch, and at the same time have no existence in nature."²²

At the same time, he is an entity-type monist. "From what has been said it is evident there is not any other Substance than *Spirit*."²³

These quotations from Berkeley are not intended to obscure the fact that there are problems in the interpretation of Berkeley. In some places, Berkeley seems to argue that the mind and its ideas are quite distinct. And so an interpreter like Luce can argue "A world existing prior to your mind and mine (Berkeley) affirms, and he more than once affirms its externality and independence, and because he believed in that external, independent world, he made testamentary dispositions about his body."²⁴ Further, in his discussion of Berkeley's statement that "the mind is not any one of my ideas, but a thing entirely distinct from them", he concludes that these words are "incompatible with monist or panpsychist immaterialism, and they mark off Berkeley's immaterialism as a dualist system, under God, of sense and spirit."²⁵ We may call this the "distinction-principle" interpretation of Berkeley.²⁶

But there is another side to Berkeley. After remarking in Principle 2 that by the words mind, spirit, my soul or myself, "I do not denote any one of my ideas, but a thing entirely distinct from them", he then in Principle 3 goes on to state that of sensible things "their *esse* is *percipi*; nor is it possible that they should have any existence out of the minds or thinking things which perceive them." "For my part, I might as easily divide a thing from itself." We may call this the "identity-principle" interpretation of Berkeley.

I think it may be argued that Berkeley would have liked to have

been a commonsense realist, whose thought exemplified the distinction-principle. However, as a metaphysician, he operated on the identity-principle. And he was not unaware of the difficulty of this. "Mem. To allow existence to colours in the dark, persons not thinking, &c.—but not an actual existence. 'Tis prudent to correct men's mistakes without altering their language. This makes truth glide into their souls insensibly."²⁷

Berkeley then, at least on one interpretation, emerges as an identity theorist, but rather different from Smart *et al.* As a metaphysician, Berkeley argues for only one kind of entity or substance, and to this he gives the name of spirit. Yet it is not to be supposed that in doing so Berkeley had to deny the validity of scientific investigation. As a philosopher of science, he was a phenomenalist. That is, he understood the task of the scientist to be that of "reducing the phenomena to rules."²⁸ In defending the argument in the Principles, he argues, "You will say there have been a great many things explained by Matter and Motion; take away these and you will destroy the whole corpuscular philosophy, and undermine those mechanical principles which have been applied with so much success to account for the phenomena. In short, whatever advances have been made, either by ancient or modern philosophers, in the study of nature do all proceed on the supposition that corporeal substance or matter doth really exist.—To this I answer that there is not any one phenomenon explained on that supposition which may not as well be explained without it, as might easily be made appear by an induction of particulars. To explain the phenomena, is all one as to show why, upon such and such occasions, we are affected with such and such ideas. But how Matter should operate on a Spirit, or produce any idea in it, is what no philosopher will pretend to explain; it is therefore evident there can be no use of Matter in natural philosophy."²⁹

Thus Berkeley, like Mach, provides a phenomenalist account of science. Mach, however, settled for "complexes of elements" and denied that there was anything behind the appearances. For him, science was the discovery of regularities, and that was the end of the matter. Since Mach, the field of criticism of a purely

phenomenalist philosophy of science has been well ploughed. Science is equally concerned with theory construction, and here I agree with the identity theorists that theory construction is basically a matter of postulation rather than induction. Berkeley postulated spirit, and it is in this that he differs from the identity theorists previously mentioned.

Why does Berkeley talk about God? He was faced with the supposition of inert matter; instead, he substituted the supposition of God, but not as a conceiving perceiver, who by perceiving keeps things in existence when “no-one’s around in the quad.” Berkeley’s argument, presented in Principles 25-33, is as follows.

- 1) Beings perceived by sense are passive.
- 2) Spirits when perceiving are passive.
- 3) What marks off spirits from ideas is that spirits are also active, e.g. when I imagine or will.
- 4) We distinguish between ideas of sense and ideas of imagination.
- 5) Spirit is not both active and passive at one and the same time in relation to one and the same idea.
- 6) Therefore, whereas I am active when imagining and ideas of imagination are causally dependent on me, when I am perceiving I am passive and ideas of sense are not causally dependent on me.
- 7) Therefore, there must be another spirit who causes ideas of sense. This Spirit, or God, is will, causing ideas of sense, not perceiving them.

Berkeley distinguishes between his position and that of those who “believe that all things are known or perceived by God, because they believe the being of God”.³⁰ He claims that that to which he refers by the word “God” is that which must be concluded from the existence of anything at all. God is the source of unity and existence of all things. Individuals are discrete centres within this unity, communicating primarily through a network of ideas of sense, to which God gives stability and order, and of which God is the creative source. In *Siris*, Berkeley goes further. He allows that God may be said to be All, and attempts to spell

out what this might mean, e.g. as cause and origin of all things, or again that which “comprehends and orders and sustains the whole mundane system.”³¹

It is just at this point that we begin to feel the force of Spinoza’s argument that entity-type monism implies entity monism. However, Berkeley has his own reply to make. In general terms, he argues, “Few men think; yet all have opinions. Hence men’s opinions are superficial and confused. It is nothing strange that tenets which in themselves are ever so different, should nevertheless be confounded with each other, by those who do not consider them attentively.”³² Negatively, he argues that when any entity monist position is examined, it is found either to be unintelligible or to lack explanatory power. Positively, he argues for what we might call different levels of organization. In *Siris* he distinguishes between the levels of “the vulgar” (i.e. man in his daily round), “the maker of experiments or mechanic” (i.e. the scientist) and “he who ascends from the sensible to the intellectual world” (i.e. the deep thinker or contemplative). It is on this third level that we perceive that “the Mind contains all, and acts all, and is to all created beings the source of unity and identity, harmony and order, existence and stability”³³

What conclusions can be drawn from this discussion? First, Berkeley argues for only one kind of entity, spirit, but he distinguishes between spirits; that is, he is an entity-type monist. Although Berkeley’s position is not compatible with Central State Materialism, it is in fact an immaterialist identity theory of mind, which, in addition to overcoming the difficulties of a dualist resolution of the mind/body problem, does not rule out the possibility of those paranormal phenomena which are incompatible with doctrinaire Central State Materialism. For Berkeley the usual means of communication between spirits is the “language of sensations”, that is, the usual means with which we are most familiar. The additional strength of Berkeley’s position is that while he argues for an understanding of reality which leaves open the possibility of communication between spirits, that is, between individuals, by means other than those perceivable by sense, he also, in his philosophy of science, allows for scientific

examination of such a way of communicating. Thus, with Berkeley the way is open for us to admit the possibility of phenomena which a Central State Materialist denies without retreating into either dualism in philosophy or irrationalism in science.

Secondly, in Berkeley's terms God is not some extra entity over and above other entities which we experience, except only in the sense that by "God" we refer to the cause, origin, and source of unity and existence of all things. He is prepared to say that all things are "in God", but attempts to explain what he means by this without either lapsing into abstract language or denying the reality of individuals. What I am not yet clear about is whether Berkeley, or indeed anyone, can succeed in showing what this means. However, I am sympathetic with his view that any unifying concept, any deep understanding of reality, must be expressed in terms not of mere existence but of activity.

Notes

1. See especially Place, U. T. "Is consciousness a brain process" in *The British Journal of Psychology* 47 (1956); H. Feigl "The 'Mental' and the 'Physical'" in Feigl, H. et al. eds. *Minnesota Studies in the Philosophy of Science* Vol 2 Minneapolis 1958; Smart, J. J. C. "Sensations and brain processes" in *The Philosophical Review* 68 (1959).
2. Presley, C. F. ed. *The Identity Theory of Mind*. Brisbane (1967), p. 87.
3. Emmet, D., Masterman, M., Bastin, T. and Munro, R. "The case for way-out research" in *Theoria to Theory* 6, no 1, 10 (1972).
4. Feigl *op. cit.* p. 428.
5. Smart *op. cit.*, reprinted in J. O'Connor ed *Modern Materialism: Readings on Mind-Body Identity*. New York (1969) p. 34.
6. *ibid.*
7. *ibid.* p. 37.
8. M. Deutscher "Mental and physical propertirs" in Presley *op. cit.*
9. *ibid.* p. 71.
10. *ibid.*
11. Campbell, K. *Body and Mind*. London (1971) pp. 91-2.
12. *ibid.* p. 97.
13. *Australian Journal of Philosophy* 40 (1962).
14. Smart, J. J. C. *Philosophy and Scientific Realism*. London (1963) p. 99.
15. Kuhn, T. S. *The Structure of Scientific Revolutions*. Chicago (1962), p. 37.
16. Campbell *op. cit.* p. 95.
17. Beard, P. in Owen, G. and Beard, P. "Personal factors in E.S.P." in *Theoria to Theory* 6, no. 3, 13-14 (1972).

18. Quotations are from A. C. Fraser's edition of Berkeley's Works, Oxford 1901. I have preferred Luce and Jessop's title "Philosophical Commentaries" (PC) to Fraser's "Commonplace Book." PC I p. 14.
19. PC I. p. 43.
20. PC I. p. 29.
21. Printed in *Conjectures and Refutations*. New York (1962).
22. *Principles* 88, I. p. 306.
23. *Principles* 7, I. p. 261.
24. Luce, A. A. *Berkeley's Immaterialism*. London (1950), p. 27.
25. *ibid.* p. 51.
26. I owe this terminology to Professor S. A. Grave. See his "The Mind and Its Ideas. Some Problems in the Interpretation of Berkeley" reprinted in C. B. Martin and D. M. Armstrong eds. *Locke and Berkeley* (London, no date).
27. PC I. p. 71.
28. *Siris* 295 III. p. 265.
29. *Principles* 50, I p. 285.
30. *Second Dialogue between Hylas and Philonous* I p. 424.
31. *Siris* 328, III p. 2.
32. *Second Dialogue between Hylas and Philonous* I p. 427.
33. *Siris* 295, III p. 265.



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Eternal life

CHRISTOPHER CLARKE

1. THE PARADOX

A misconception of eternity is widespread among modern writers. It occurs in Bergson;¹ it is formulated, in a different and independent form, by Kneale² and it is reiterated by Lucas.³ Its presence can even be seen, in a strange inverted form, in McTaggart.⁴ The view which I believe these writers have engendered, if not espoused, and whose contrary I wish to argue here, runs roughly as follows:

The early Eleatic philosophers regarded the highest principle as eternal, meaning "outside of or unconditioned by time". Plato (driven, according to Koestler,⁵ by disgust at the surrounding social disintegration) took up this concept; from there it passed to Plotinus and thence to Augustine and Christianity. Christian philosophers, these writers hold, were anxious to reconcile Biblical, Platonic and Aristotelian ideas of eternity. Thus, they claim, lacking the philosophical apparatus available to us they allowed themselves to be misled by an erroneous picture of time as a spatial array like a line. From this the Christian philosophers contrived a concept of eternity as the timeless omnipresence of all times, in which God was supposed to be both historically active and yet non-temporal. According to these modern writers this concept is nonsensical: we must now acknowledge the inconsistency of the ancients' approach and relinquish it as unhelpful.

But the modern view is totally wrong. Plotinus, Augustine

Theoria to Theory
1974, Vol. 8, pp. 317-332

Published
Gordon and Breach Science Publishers Ltd

their followers were, as has been abundantly demonstrated by many recent accounts, trying to express something that they had actually experienced; a concept which, though hard to formulate, is as relevant to us as it was to them and which can now take its place as part of our picture of the universe as a whole. For them Eternity was a "Theoria";⁶ it may be for us to continue their work of compounding it into theory.

It is particularly hard to understand how Plotinus⁷ can have come to be regarded as a mere schematizer, when he describes how "Many times it has happened: lifted out of the body into myself; becoming external to all other things and self-centred; beholding a marvellous beauty; then, more than ever, assured of community with the loftiest order; enacting the noblest life, acquiring identity with the divine; stationing within it by having attained that activity; poised above whatsoever within the Intellectual is less than the Supreme: . . ." ⁸

And with Augustine too, as Guitton⁹ has shown, the doctrine of eternity is founded on his direct experience at Ostia when he "in a flash of thought had made contact with that eternal wisdom which abides above all things".¹⁰ Then subsequently the theory which developed to expound this concept found endorsement in the experience of innumerable contemplatives; such as Ruysbroek, for whom the coming of God "consists beyond time in an eternal now, which is ever received with new longings and new joy."¹¹

In negative terms, what was experienced was the absence of change and succession. This negative aspect, the easiest part to state, has led modern writers to conceive eternity as a frozen immobility, a cold aloof state which can have nothing in common with human action and passion. And yet it is clear from accounts such as Ruysbroek's that this is just the opposite of what is meant. Indeed all the older writers from Plotinus onwards couple the concept of eternity with that of *life*. When Aquinas defined eternity in Boethius' words as "interminabilis vitae totae simul et perfecta possessio"¹² he stressed that it really is a matter of life, not mere existence. So it was that Christian philosophy came to regard eternity, the timelessness of God, as synonymous with *eternal life*, in the clear understanding that what was meant was "not the succession of Time without end, but a fixed now."¹³

It is this linking of life with unchangingness that leads to the utterances that modern writers consider inconsistent. The concept of eternity is indeed presented in paradoxical terms. For instance, life requires some sort of movement, and this is insisted on by Plotinus, the author who is most firm on the absolute lack of change¹⁴ in eternity. For him, life requires action, and for this to be reasonable there must be motion.¹⁵ This is presupposed in his argument for the multiplicity of the realm of Nous:

“nor could a universal unity find anything upon which to exercise any act; all, one and desolate, would be in utter stagnation; . . . If there be no distinction, what is there to do, what direction in which to move?”¹⁶ So, most paradoxically, “we must include [among the Primals] also Motion and Rest”; not as static absolutes (theoretically Motion need not move) but as the perfection of their material counterparts, in that “Motion provides for the intellectual act, Rest preserves identity as Difference gives at once a Knower and a Known, for, failing this, all is one and silent.”¹⁷

At face value this appears meaningless: Plotinus is simultaneously denying time and asserting time’s concomitant, motion. It is this paradox, when transmitted to the Christian tradition, that Lucas finds unintelligible: “A timeless deity may be the Truth; it may possibly provide us with the Way, or at least with a Goal; but it cannot ever be the Life.”¹⁸

Let me briefly digress to say why I find Lucas’s solution to the paradox inadequate. He proposes that the eternity of God differs from our time only in that His *now* encompasses the whole of time, whereas ours covers only the tiny interval of present awareness. It would at first seem as though this concept really succeeds in having one’s cake and eating it. Certainly God’s *nunc* is in this case *stans*; for, being already the whole it cannot be other than it is. And yet the problem is still there, for what exactly is this time of God, if it is a single now? If time is deprived of the *nunc fluens*, the mobile now,¹⁹ then it is only a directed line; and to say that God’s awareness has the structure of a directed line does not make it clear why it thereby has life; any more than my instantaneous apprehension of, say, a downhill railway line should necessarily have life. The problem is thus not solved by the infiniti

now: the essence of life seems to lie in the finitude of the now, where each new moment brings new creations and discoveries.

The paradox can be expressed as a tension between the two incompatible pictures that are simultaneously evoked by the phrase "eternal Life". One picture is *counterfeit eternity*, the image of something totally static; this arises because we must think in time and therefore the only way we can think of the absence of change is as something that is statically fixed. The other picture is of *corporeal time*, the time in which we imagine life; time with all its (often inconsistent) properties intertwined; a structure not only linear and directed, but linked to dynamics, to coming-into-being, discovering, remembering, decaying . . .

The task before us, on which I want to take the first tentative steps, is that of plucking the concept of Life from what appears to be its usual context in corporeal time; taking the positive and true aspects from counterfeit eternity; and joining them into a workable concept of eternal life.

If eternity were exclusively a divine attribute, we might have thought it quite ineffable; its understanding granted only in occasional visions whose contents were beyond description. But the division between time and eternity is not so rigorous, and ordinary physical events can have a foot in both orders. Thus, although the full concept may derive from deep experiences that we do not have in our ordinary states of consciousness, it can still be worked out and formulated in terms of our decisions and actions in the material world. Indeed, it must be so worked if we are to relate fully to the world. Then, as I shall try to show, it appears that the most puzzling aspects of physics and their relation to life can only be understood "in the light of eternity". So we can first try to understand how the paradox is resolved in the material world accessible to ordinary physical investigation.

2. ETERNITY IN PHYSICS

Thought in physics has swung between the two images of counterfeit eternity and corporeal time, and at each reversal physicists

have learnt a little more about the relation between them. The first, counterfeit eternity, was firmly instated by certain practitioners of relativity theory, notably Weyl, who emphasized the way General Relativity fused space and time together in a single geometry. In the vision which this engenders time is “spatialized” into a geometrical coordinate.

This picture had to be reconciled with time as we experience it, requiring a deep analysis of time which showed how the conflict between corporeal time and counterfeit eternity was in many respects a superficial one. For many of the traditional properties of *time* were shown to be really properties of *events*, capable of complete description within an “eternal” picture.

The key to this analysis²⁰ was the realization that matter was arranged in space and time in a way that is unsymmetrical between past and future. This imparts a characteristic “polarization” to all processes involving the emission or absorption of light and other electromagnetic waves, so that they carry signals from past to future, but not vice versa. This in turn could explain most of the other properties of the universe, mainly thermodynamic aspects, that are associated with an “arrow of time” and were traditionally attributed to a “flow” of time.

This polarization of time, which I have already discussed at length elsewhere,²¹ can best be thought of in terms of the growth of the idea of *causation*. Here I shall merely summarize the main line of argument.

I take as a paradigm for causation the behaviour of the electromagnetic field in General Relativity. This field is governed by differential equations which link its values at any point in space-time with the values of the field and the motions of charged particles at neighbouring points. These equations, the laws of the field, are symmetric between past and future: they say nothing about causation, a non-symmetric idea, only about a lawlike connection between behaviour at neighbouring points. Causation arises when we try, so to speak, to join together these links into a chain of connections relating the field at a certain point to the fields and particles at points that are distant in space and time. It turns out that if the matter in the universe is not static, but has

the sort of large-scale kinetic structure that we observe our own universe to have, then this joining-together can only be done in one direction in time: the present state can be simply written in terms of past motions of charges which “cause” the present field, but cannot be so written in terms of future motions.

The direction in time which causality thus introduces polarizes the neutral form of the timelike/spacelike structure with which general relativity starts. So important is this electromagnetic phenomenon that all other processes are subordinated to the direction of causation which it defines, from past to future. Any event is thus regarded as the future tip of a cone of connections branching out into the past, constituting the causal chain giving rise to that event; a chain which, in classical (non-quantum) physics with a standard cosmology, can be pushed back arbitrarily far into the past until one comes to the creation of the universe, the primal cause of everything.

The picture was swung back to a basis in corporeal time by the growth of quantum theory. Here, on almost all modern presentations of the theory,²² the large-scale laws of the universe as we observe it are regarded as essentially non-deterministic. In this case an event’s antecedents constitute only its partial causes; there remains an element which is spontaneous and uncaused.

Indeterminate events, stemming from the microscopic level, are seen when a macroscopic system, such as a Geiger counter, is in a *critical state*, able to be triggered one way or the other by a quantum process. Such situations are, in Everett’s terminology,²⁸ points of branching in the universe where the system must, by a spontaneous act, take one or other of the possible ways ahead. The directionality of time which I have already analysed enters into the thermodynamics of the critical system²⁹ (its passage to a final stable state is an increase in entropy), and this directionality is in turn attributable to the electromagnetic “arrow of time”. Because of this we can speak of a branching of the universe at these critical points, a dividing of the ways ahead, but not of a confluence.

These spontaneous events sever the deterministic link between future and past so as to alter the asymmetry between them: the

distinction between prediction and retrodiction enters the picture. Both processes are statistical, not deterministic, and they are linked together by the laws of statistics in a way that demands that there be some sort of asymmetry between them.²³ Perfect retrodiction is normally impossible because much of the necessary evidence has been lost,²⁴ while perfect prediction is impossible because one cannot anticipate the direction which this spontaneous element will take. This element contributes to the uncertainty of both; negatively to the uncertainty of retrodiction, by obliterating past traces,²⁵ positively to the uncertainty of prediction by bringing about the new and unanticipated. (It is this last that characterizes the "durée réel" of Bergson,²⁶ without which time would be "otiose", because in a deterministic world the future would be entirely contained in the present condition.)

The inclusion of the idea of spontaneity in the relativistic picture that I have developed creates a conceptual conflict identical to that posed by the idea of eternal life. In the deterministic picture with which I started the universe throughout all time seemed to be an omnipresent static whole. We are then confronted by the concept of the spontaneous event which, though perhaps logically compatible with this picture, seems quite foreign to context. Two different images are evoked that cannot be fit into a single vision of the universe.

Both with physics and with eternity, there is one school of thought that advises us to "take time seriously" and, in the case of an apparent conflict between time and eternity, to place oneself firmly within time and reject any pretensions to see with the eyes of God. In the context of physics, this is done by replacing the static "block universe" by the dynamically evolving picture that has been developed for quantum cosmology.²⁷ Until quantum theory, with its indeterminism, is brought in this dynamical picture is formally equivalent to the static picture; but the dynamical model can comfortably accommodate spontaneous events. The relativistic analysis of time as a single whole is rejected in favour of corporeal time, the time of one's ordinary experiences, in which evolution and coming-into-being take place within a strictly linear flow. But I believe that there are many reasons why this is a

wrong approach, and why physics must grapple with the problem of eternity, the consideration of the spatio-temporal whole which contains spontaneity as an essential part.

Some of these reasons are purely technical; but there is one which is essential for our present considerations, which stems from the nature of the spontaneous event itself. On the evolutionary view such an event must be describable in terms of some definite process acting in time (as can indeed be done,³¹ shedding interesting light on the way spontaneity acts in the universe). But one finds that this can only be achieved at the expense of introducing a new force into physics *which has no effect other than that which it was invented to explain*. Remembering the history of science which is littered with concepts like the aether whose failure was betrayed by just this property, I become suspicious. The only alternative³² lies in an approach which considers the entire history of the universe as a whole. From this viewpoint the spontaneous is not a new force which intrudes into the universe within the time-flow of its evolution, but rather a kind of reality condition that constrains the universe as a whole from outside time. It is then not sensible to ask *when* the state of the universe chooses one or other of its potential branches: all that can be said is that after a critical system has settled down to a stable state the results of a choice are manifest. The effects of the choice are in time, but it itself is not.

There is another, technical, reason for locating spontaneity outside time. If each choice is in time, then we have to explain why their results, in experimental situations, conform to certain statistical laws with unshakable rigidity. But this follows naturally on the viewpoint where choices are in eternity. I shall be returning to this point later on, when I consider the nature of these statistical laws.

3. SPONTANEITY AND LIFE

Arguments against “eternal life” tend to be based on the notion that “life” requires succession. But this puts one in danger of

misunderstanding the nature of life. A multitude of physical processes require a "succession", in the sense of a particular linear ordering of events. But the mere fact of ordering is irrelevant here; it can be an aspect either of time or, contingently, of eternity (as in Lucas's model). Life is associated with something more: a particular quality of that ordering which makes it in some way dynamic and active. It is this dynamic quality, and not the bare structural fact of succession, which is incompatible with counterfeit eternity.

The dynamic quality is seen in human terms in the experience of free will; in physical terms in the closely related concept of spontaneity. Indeed, from my point of view free will might be expected to emerge as a participation in one of the spontaneous acts of the universe. So it follows from the discussion of the last section that, although free will is linked to corporeal time (because of the need for a "critical state" to evoke spontaneity), yet the act itself is to be thought of in the context of eternity.

For this approach to be valid there must be a real distinction between spontaneous events and those that are merely random;³⁴ a distinction presupposed in my terminology so far. At least one philosopher³³ has argued that there is no such difference, and has concluded that free will is therefore illusory, one's choice being analysable entirely in terms of random events within the context of causal laws which dispose these events to happen according to certain probability distributions. If this were true, the concept "Life" would disappear, and our problem with it. For there are few conceptual difficulties in incorporating randomness into eternity: the elements, rather than being connected by the rigid bonds of determinism, are instead thrown together more loosely, only their average arrangement being constrained. But this is not spontaneity, and it cannot have life.

What we require, then, is this third possibility, beyond determinism and randomness. Its first indication is a negative one; a spontaneity-shaped hole, so to speak, in current physics.

To describe this, consider first the ground on which we represent the outcomes of quantum processes as merely random events governed by the probabilities given by quantum mechanics.

Observationally, this representation rests on the performance of a very large number of *independent* experiments of a certain type, in which the quantum state is amplified by a Geiger counter, bubble-chamber etc. so as to become visible on a large scale. In the technical terms of quantum mechanics, these sorts of amplification are characterized by saying that the information about the state that is represented by the phase of its wave function becomes lost.³⁵ One can show theoretically that in this situation the outcomes of experiments will indeed be representable by random variables obeying ordinary probability theory.³⁶

For a long time it has been conventional to assume that biological processes are of this same sort, an assumption so far confirmed by the success of a molecular biology whose chemistry requires little more in the way of basic concepts than the billiard ball atoms of Dalton. But this need not necessarily be so: as has often been pointed out³⁷ biological molecules are eminently designed to register and respond to phase information, expressing it in terms of long-range order. Moreover, it is likely that the successive events in a living system should not be considered as independent: the human system is precisely such as to learn from experience, building up a memory in consequence of which no two events are ever the same: the second occasion is always modified by the memory of the first; this is an essential part of the human experience of time.

In circumstances where the destruction of phases and the independence of events no longer holds, the theoretical argument for a conventional probability system breaks down; and there is no experimental evidence to take its place, if by "experimental" we refer to the sort of situation described above.

I have already alluded to accounts³¹ of a mechanism whereby ontaneity could operate *in time*. While they are inadequate, for reasons already given, they provide further insight into the breakdown of ordinary random-variable theory. When my own proposal for such a mechanism, for instance, is examined more closely it is seen that the state of the universe is governed by a probability measure only in very simple cases. In complex systems the equations of evolution appear to give only a *promasure*.³⁸

this results in conventional statistics for sequences of experiments of the sort described above in well-defined systems, but in general it would seem that within the theory no consistent set of probabilities can be assigned to sequences of *different* experiments which are correlated through the phases of their quantum states.

When probability theory fails to provide sufficient guidance one must turn to experience for positive information. If it is viewed strictly in this context, it is likely that the study of the paranormal may provide us with the concepts needed to talk about spontaneity, and so understand how it exists in eternity. For it is characteristic of experiments in the paranormal that the effect being sought seems to outgrow any clear system defined for it at the outset. After a while the phenomena start taking place just outside the area, both physical and conceptual, originally set aside for them. This is noticeable, for instance, with the experiments with Uri Geller at the Stanford Research Institute, which were plagued by phenomena occurring just outside the designated "test platform" region. Moreover the *repeatability* which Geller undoubtedly exhibits seems to be not such as to enable one to define a closed experimental system: on the basis of the arguments just given I would expect that he could not bring about a given effect *in the same way* indefinitely often; and there is indeed evidence that the metal fractures which he produces are of many different kinds. On a more commonplace level, in ordinary work on E.S.F. it is usually possible to achieve repetition of an experiment up to a significance of about four standard deviations within a given sequence with a fixed experimenter. But when completely *independent* repetitions are attempted by other experimenters at other laboratories, then the phenomenon is almost invariably slightly different: an expected "direct hit" effect becomes a precognitive one, or a positive correlation changes to a negative. This is just what one would expect from the considerations of the preceding paragraphs: an experimental method which bases itself on repetitions of events which it tries to make as identical and independent as possible will tend to produce only conventional probabilities. Only a method which can continually expand the

range of possibilities anticipated will be able to encompass the effect.

On the negative side, then, there is room for a third mode of behaviour, the spontaneous, in biological activities which, by continually changing their scope and building up their memory, fall outside normal probability theory. Moreover, this sort of activity is already being studied in parapsychology, but from the viewpoint of ordinary random processes. One must now try to bring new ideas to such studies so as to enable the phenomena themselves to suggest the nature of spontaneity. Only after this has happened can we define the concept and discover how to speak about it.

Three ideas may be helpful in this. The first, which I draw from Bergson, is that of *creativity*. A spontaneous act may find its direction in the creation of something new (in accordance with the idea that the merely random is defined in terms of the repetition of old material). This novelty may be the conception of some new organization within a given system, or it may be the expression of an existing pattern of organization in a totally new way in an enlarged system.

A second possible concept that might find a use is *significance*. This is in the first place homocentric: an event is significant *for me* when it accords with the patterns of association in which I structure the view of my life at that particular time: the event may have “meaning” because of associations of ideas in my mind. Many striking examples of the paranormal are characterized by just this sort of significance, and most people can cite “extraordinary coincidences” which rely on the concept. The idea may be useful in a general context if it is regarded as the human—perhaps the fullest—manifestation of a pattern which does not itself depend on humanity. The introduction of a primitive concept which at the human level corresponded to significance would then fit naturally into the picture of a principle of spontaneity moulding the universe from outside time: one can imagine an implementation of quantum theory in which the primary ingredient was not “macroscopic states” or even space-time, but rather a *relationship* of affinity between states which so influenced

the dynamics that space-time, macroscopic-states and significant patterns emerged as a result. This would generalize the way random events with conventional statistics emerge from taking “macroscopic states” as the moulding reality principle.

The third idea which may be needed takes me even further from conventional scientific methodology into a wider context altogether. Usually the goal of scientific enquiry is thought of as “prediction” or “understanding”: prediction being reached within a formal system that can be defined in advance and so subjected to statistical laws; understanding in terms of a fixed model of the universe. But eternity is infinite, and so any such finite model must be outstripped by a truly creative act. This raises the possibility that the “understanding” of the spontaneous which I am groping towards is of a different sort, to be realized not in the assimilation of a certain formal model, but in a trained ability to make a creative jump at the right time from one model to a wider one. Consequently, spontaneity becomes a *meta*-scientific concept, in the sense of “meta-mathematics”: a concept not within a theory, but in a theory (or praxis) about theories.

This conception places a much greater weight on the role of the particular individual observer involved than is customary in science. Thus by some criteria it is non-scientific—but not because it is not testable: its test lies simply in the effectiveness of the individual’s responsiveness to his changing circumstances. A concept which focused on the individual like this would link both with the idea of significance and with that of free will. The significance of an event is the meaning it has *for me*, expressed in my day-to-day decisions. And spontaneity can only be “understood”, in the sense just described, by being *done* in a free act of will which is not conditioned by a *fixed* logical process but flows from a disciplined sense of the “rightness” of an act in the context of this pattern of significance.

An act is most free when it penetrates back (a religious exercise) to the life of eternal spontaneity—when it stems from a deep responsiveness of the whole organism to the continually enlarging patterns of the surrounding world. Yet, while this basic grasp of eternity is being sought, a study through a comparatively

normal scientific methodology can proceed in parallel, within a temporarily fixed formal system, “theoria” and theory developing together.

ACKNOWLEDGEMENT

The idea of spontaneity has grown out of conversations with Jamie McCullough, to whom I am indebted for several of the ideas in the latter part of this paper.

NOTES

1. See, for instance, Bergson, H., *La perception du changement*. Oxford (1911), especially p. 6.
2. Kneale, W., “Time and eternity in theology”, *Proc. Aristotelian Soc.*, LXI 87-108 (1960-1).
3. Lucas, R., *Treatise on time and space*. Methuen, London (1973).
4. I am thinking particularly of McTaggart, J. E., *The relation of time and eternity*. University of California Press, Berkeley (1908).
5. Koestler, A., *The sleepwalkers*. Hutchinson, London (1969).
6. Emmet, D., *Theoria to theory* 1, 10-18 (1966).
7. A standard work containing an account of the experiential element in Plotinus which I have found useful in Inge, W. R., *The philosophy of Plotinus*. Longmans Green & Co., London (3rd. edn. 1929) especially pp. 125-163.
8. Ennead IV, 8.1. Quotations are from S. MacKenna’s translation: *Plotinus: the enneads*. Faber & Faber (3rd. Edn. 1962).
9. Guitton, J., *Le temps et l'éternité chez Plotin et Saint Augustin*. Librairie philosophique J. Vrin, Paris (3rd. edn. 1959).
10. Augustine of Hippo, *Confessions*, IX, 10. Quotations are from R. Warner’s translation: *The confessions of St. Augustine*. New American Library, New York (1963).
11. Ruysbroek, Jan van, *The adornment of the spiritual marriage*. III 2, trans. Wynschenk, C. A., Watkins, London (1951).
12. Thomas Aquinas, *Summa Theologica* I, x, 1; quoting Boethius, *De Consolatione Philosophiae*, V. 6.
13. So it was stigmatized by Hobbes (Leviathan 46). The “fixed now” comes from Boethius, *de trinitate* IV: “quod nostrum nunc quasi currens tempus facit et sempiternitatem, divinum vero nunc permanens neque movens sese atque consistens aeternitatem facit”.
14. See *Ennead* III, 7.3. E.g. “that which enjoys stable existence as neither in process of change nor having ever changed—that is eternity”.
15. For instance “where we see life we think of it as movement” (*Ennead* III, 7.3).

16. *Ennead* V, 3.10.
17. *Ennead* V. 1.4.
18. Lucas, R. (see note 3a.) §55.
19. This abuse of words denoting motion to talk about *time* or *now* (which I shall do repeatedly) exemplifies what D. C. Williams called "The Myth of Passage" (*J. Phil.* 48, 457-472 (1951)). It undoubtedly is an abuse, but one which seems necessary if certain aspects of time are to be expressed at all. The goal of the investigation which I am describing is to isolate these aspects and find a way of expressing them with propriety.
20. There is a more detailed discussion in my article "Revision in physics" in a forthcoming book to be edited by Sheldrake, R. and Emmet, D.
21. See note 20, and also my article "Time in general relativity", to appear in *Minnesota Studies in the Philosophy of Science*.
22. The exceptions are "hidden variable" and related theories; a radical approach in this general category which is compatible with determinism but avoids the paradoxes and inadequacies of the more naive theories has been proposed by E. W. Bastin in a forthcoming article in *Synthèse*.
23. Watanabe, S., *Suppl. Progr. Theoret. Phys.*, Extra number: commemorative issue for the 30th anniversary of the Meson theory, p. 135 (1965).
24. Reichenbach, H., *The direction of Time*. California University press, Berkeley (1971 reprint).
25. This is manifested in the entropy increase that is due to quantum measurements derived by von Neumann in his *Mathematical Foundations of Quantum Mechanics* (translation by R. T. Beyer). Princeton University Press, Princeton (1955).
26. Bergson, H., *Matière et Memoire*. Albert Shira, Geneva (1946).
27. Wheeler, J. A., "Superspace and the nature of quantum geometrodynamics" in Wheeler, J. A. and deWitt, C. M. (eds.) *Battelle Rencontres*. Benjamin, New York (1968). The Philosophical basis of the idea is given in Graves, J. C., *The Conceptual Foundations of contemporary Relativity Theory*. M.I.T. Press, Boston (1971).
28. Everett III, H., *Rev. Mod. Phys.* 29, 454 (1957).
29. Daneri, A., Loinger, A. and Prosperi, G. M., *Nuovo Cim.* B 44, 119-128 (1966).
30. See note 21.
31. Schmidt, H., "Eine makroskopisch reale Quantentheorie", *Z. Naturforschung* 18a, 265-275 (1963).
Clarke, C. J. S., "Smoothing the Quantum Collapse", *Int. J. Theoret. Phys.* 8, 231-235 (1973).
32. Clarke, C. J. S., "Quantum theory and cosmology", to appear in *Philosophy of Science* (Dec. 1974).
33. Gruenbaum, A., "Free will and laws of human behaviour", *l'Age de la Science* 2, 105-127 (1969).
34. By a "random event" I mean the occurrence of one event out of a set of possible ones in circumstances where nothing can be said a priori about which event of the set will happen, except that a probability (a number between 0 and 1) is assigned to each event and it is asserted that there is a sequence of random events in which all constructible relative

frequencies of occurrence tend to the values given by probability theory on the basis of the assigned probabilities. I include also generalizations of this idea to non-independent random events.

35. Daneri, A., Loinger, A. and Prosperi, G. M., *Nuclear Physics* **33**, 297 (1962). See also note 29.
36. See note 32.
37. The sort of effects that could come into play were first described by W. A. Little, *Phys. Rev.* **134 A**, 1416 (1964). See also Fenton, E. W., *Phys. Rev.* **174**, 517 (1968).
38. Bourbaki, N. (pseud.), *Intégration Chap. IX* (Eléments de mathématique fascicule XXXV), *Actualités Scientifiques et Industrielles*, **1343**, Hermann, Paris (1969).

Iceberg or island?

NAOMI MITCHISON

At times of rapid historical change it is clearly an advantage, or at any rate a convenience, to be able to believe two things at once. This is markedly so in areas which have for a long time, as nearly "always" as one can imagine, had one kind of belief, but have then been overrun by a different ideology. I happen to have lived in two areas where this is still in process, Southern Africa and the Western Highlands of Scotland. Naturally as a writer of fiction one is constantly at it; people who have read my historical novels dealing with Christianity tend to be surprised that I am not myself a Christian. But in what country did Tolkein live? Surely not at his Oxford address.

I am going to suggest that possibly these areas of belief represent two layers or depths, not certainly of consciousness but of being. "Belief" is not conscious thought. It is rooted too deep for that. Inevitably in discussing it one uses metaphors to make it seem easier to get hold of. If one doesn't—if, that is, one uses the professional philosopher's jargon words—one tends to become unintelligible except to other users of the jargon and, what is worse, dull. I shall therefore tend to use metaphors of a kind which seem to me to convey meaning. I am also suggesting that in a historical period such as ours with different sets of ideas whizzing like mad across millions of minds, one may get at something by considering contradictions in belief, what sort of actions they may lead to and whether it all makes some kind of pattern.

Take the African situation first. In Botswana there is a Bantu

Theoria to Theory
1974, Vol. 8, pp. 333-342

Published by
Gordon and Breach Science Publishers Ltd.

culture all the more marked because people have, certainly over the last two centuries, tended to live in quite large tribal capitals, moving out seasonally to look after crops and grazing cattle further still. There was a certain amount of fighting, but one becomes more and more convinced that earlier warfare between relatively small communities was more a matter of male (and sometimes female) boredom and showing off than anything which a Marxist historian would recognize. A reading, for instance, of *The Tain* (recently re-translated by Thomas Kinsella) certainly gives this feeling. The death of an enemy might often be regretted if it left one without a worthy opponent. The modern attitude “no good gook but a dead gook” was certainly not there. Football has to some extent taken the place of early warfare. Modern warfare is, as far as one can see, an entirely new phenomenon. The idea that “men have always fought one another” used as an excuse, appears to be a complete mis-statement, which leaves one with some faint hope that modern warfare may turn out to be a temporary break in the progress of history.

Tribal culture is extremely intricate, with a network of custom, of checks and balances, which gave sufficient stability for life to go on in hard climatic conditions—though probably not quite so hard as today, since, a century back, there was a smaller population and more territory, so that there was always the possibility of moving off to fresh woods and pastures new. You might have to trek a long way, but at least there were no national boundaries nor private property in land or water. This tribal intricacy clearly goes back a very long way in time, and some of it is no longer relevant. But it formed a system of belief.

All this was altered by the coming of the whites. It is an old story with which most of us are familiar. It ended with the acceptance of the missions, followed by the traders, of advertising, of forms of government, both central and local, copied from those of Europe, a European-based education, and above all the idea of the acquisitive society. Tribal land is still not the property of the individual, but this is getting very near. The importance of redistribution of money or other goods when “the king was a bracelet-giver” has gone. One difficulty in Africa has been that

there was a thin dividing line between gift giving and so-called corruption. In fact the same thing is true in other countries nearer home and has led to some curious disparities between legal and moral decisions. Is one right in the usual human feeling that moral decisions come out of a slightly different layer from that in which legal decisions are made?

Let us have a look at a few people involved. I asked my dear friend A. why he was reading the Bible. "All those beautiful battles", he said. Certainly the Old Testament doings of the Banu Israel, unpleasant as they are, make familiar patterns. But A. is a good man, in the sense that goodness means the qualities of mercy, generosity and sympathy, courage and ability to face new situations without becoming lost. He is one of the last age group to go through full Kgatla initiation. Even by that time, at the very beginnings of the century, the influence of the Dutch Reformed Church mission, which unfortunately was the one which had got a grip on my own tribe and its land, was beginning to affect people.

Often mission influence divided tribal opinion sharply. But those who did not accept it could not have the benefit of trade, including firearms. Better, then, to accept, but with inner modifications, which might include a whole set of concurrent beliefs. These, I suggest, normally continue, but on a different level of feeling and possible action. When they rise to the surface, as they may at moments of stress when the outer envelope cracks, the mission may be extremely upset. One senses this in many old mission reports and letters.

Most of the older people among the baKgatla baKgafela would almost certainly call themselves Christian, but all would, I think, also believe in the Badimo, that is the interceders between mankind and Modimo—the central power equated with God which in the mission sense is of course the Judeo-Christian God-figure of the Old Testament and occasionally of the New Testament. The Badimo, the "children of God" are to some extent ancestors, but not I believe entirely. They are certainly the socially valuable part of the past—that which gives continuity. Now, without continuity we are lost and the more the generation gap is stretched the

thinner and more easily snapped this continuity is. If history were interestingly taught in schools it might provide this, but instead it is taught in the spirit of "look how backward (stupid, unprogressive, wicked, bloodthirsty, sheeplike, oppressive, oppressed) these ancestors of ours were!" Anthropologists such as Margaret Mead have recognized this break in continuity in America. The meeting of past and present was and is a most deeply important aspect of initiations into manhood and womanhood all over the world. Naturally the relations between men and women played their part as between the ancestors and the as yet unborn of the future. Sex was looked upon somewhat differently from the way it is looked at in today's Euro-American world, but however it is seen, the missions were against it and did their best to stop all that side of initiation. The more credit to Trevor Huddleston, who in his diocese, when he was Bishop of Masasi, held services of praise for those coming back from initiation as adults to adult responsibilities.

Now the belief in the Badimo means belief in the past and its power to help the present, or indeed to correct it when and where it has gone wrong. This may happen through dreams. If so, what are they? We are surely wrong either to sweep them aside or to interpret them as merely the individual's troubles. Is the dreamer alone with his dream, or has he submerged deeper than the isolated individual? Dreams are also taken seriously as message bringers in rural Europe, including the Highlands and, for example, Denmark. Some day the dreams recorded in the Mass Observation archives may be found to yield a pattern and this pattern may be recognizable in unrelated Africa. If every man is an island, the island does not just float; it is rooted. I am sure that Western individualism and the concurrent idea of individual salvation may be believed in with part of the mind, but in another part belief covers a much more generalized aspect of living, in circles of intensity: immediate and extended family, tribe, nation, perhaps even further. We Europeans also have these feelings but they often need some kind of stress situation to call them up; otherwise we act in accordance with our acquisitive individualist motives, which are so encouraged by all our surroundings. It seems likely at young Africans who have undergone a more Western type

education and conditioning will act in the same way, but the undercurrents will come up more quickly.

What are these undercurrents? As far as socio-religious ideas go, apart from the highly respectable (to my mind) belief in Modimo and the ancestor figures and the generalized animism—the concept of some kind of life in everything which is so ably described by Tempels in *Bantu Philosophy*—what other socio-religious ideas are believed in by many, if not most, Southern Africans who are nominally Christians, with allegiance to some particular mission? There is a belief that any misfortune or illness has been caused by the life force of some other person, probably an ill-wishing neighbour or relation, possibly a dead and aggrieved ancestor. This must be averted and if it is the result of witchcraft the witch must be found and purged or punished. Of course there are a number of variations on this, but the primary idea of illness being caused by some human or occasionally superhuman agency is basic.

It is not completely erroneous. A great many illnesses and misfortunes are caused by people—normally the people who experience them, the accident-prone as we say. But fear, suspicion, lack of confidence, resentment and jealousy can cause some kind of injury to others. We are probably incorrect in saying that all illnesses are psychosomatic (or alternatively that they are caused by viruses so we can do nothing about them except perhaps to alleviate the symptoms). But we have gone some distance from the germ theory of my young days. I do however remember an earlier generation yet ascribing illnesses to “the drains”, while mountain air was supposed to and sometimes apparently did, do wonders for tuberculosis.

What one has against all this is that it led to considerable and massive cruelty towards often entirely innocent people and also gave power to a rather nasty class of witch finders. I would only remind readers that the penalties for poisoning in mediaeval Europe were extremely severe and horrible and that appendicitis, common enough, would until quite lately have been diagnosed as poisoning. The convicted poisoner would often be a near relation, entirely innocent, but the one who did the cooking. We are always very censorious of habits which we ourselves have just grown out of. Certainly there is at present a response by many Westernized

Africans towards illness which is not compatible with their expressed Western ideas.

This is clear from the way, in Botswana for instance, it is usual for a patient to be taken first to a *ngaka*, an African doctor or healer who almost certainly is also a diviner. If that does not work he may be taken to hospital, but if that does not work either the next step is to go back to the *ngaka*. Any experienced African nurse who may be perfectly competent in hospital routine and who "believes in" antibiotics, inoculations and so on, will also have stories of patients who were apparently critically ill being taken from hospital for treatment by *dingaka* and later came back cured, sometimes to apologize for the trouble they caused in the hospital by being so ill. One hears less of those who were taken out for such treatment and in fact died, but if even a few of the other stories are true they can scarcely just be explained away.

Let me recall B, a friend of mine who is an African doctor. He is certainly a competent healer and chiropractor; it was in this connection that I first met him and was able to watch his methods. He always took off one shoe in order to make a better earth conductor; when I was his patient I was barefoot. He then threw the *ditaola*, nuts, bones and other symbols, and according to how they fell decided on whether he could cure. At first I thought that the bone-throwing was there to give him a chance of watching the patient and making the kind of intuitive diagnosis that all doctors make. I wondered how much he believed in the *ditaola* himself, but later I was convinced that he believed thoroughly. He tried to teach me to throw them, but found I was too wild and threw them anyhow. He did, however, convince me that I also had healing powers, something which I had suspected, and he gave me a tin of powdered herbs to make up, which I use. Nothing comes from an analysis, but this is not surprising, as it is a mix of eleven wild plants or roots, dried and powdered. It—or I—have had some rather interesting successes, but I know that I cannot always do it and only if the patient asks me, which demonstrates a degree of belief and, as my *ngaka* friend said, "faith is half the cure." He is very conscious both of Modimo and of the Badimo through whom he works, whom he honours. The bag with the *ditaola* is lifted

reverently to the forehead and breathed on before throwing. Morning and evening, in honour of day and night, are the best times.

However, I keep an open mind about all this, or endeavour to. As well as this open mind I also keep a stock of antibiotics, antihistamines, painkillers of one kind or another, quick actors, and in fact the usual European household range of medicines. I doubt if I could deal in any less orthodox way with anything other than muscular or nervous disturbances.

I could not possibly have gained love and understanding among the Batswana, as I believe I have done, if I had not been willing to suspend a certain amount of disbelief and accept, temporarily at least, other values. Yet in so far as these values may have come from a common lower layer, they may well be universal. Some anthropologists and other interested people seem able and willing to make this suspension, others not. Verrier Elwin did it supremely among the Gonds. My people are in many ways far more "civilized" than his, at any rate in externals. They wear European clothes, though sometimes cast-offs; they go to church or send their wives and children. They have a local government system closely based on the now discarded British one (replacing quite a good one of their own). They produce, at the top, lawyers, economists, doctors and of course politicians. Perhaps half the population are literate to some degree. The surface is easy, but we are all icebergs, only the top showing. There must be many among my Botswana friends who feel a certain tension between top and bottom. I remember how upset an extremely intelligent friend was when I picked up a beautiful chameleon. He was convinced it was poisonous—or perhaps just unlucky.

Let me now turn to West Africa, which I know less well. Once I was taking photographs; I was with an Ibo friend who, I fear, disappeared in the civil war as I have not heard from him since. He said that if I tried to get pictures of the very odd Ibibio funerary sculptures they would not come out. Nor did they, though the other pictures on the film were clear. Did I in fact without conscious willing do something to fuzz the negative? One doesn't know.

Talking with the curator of the collection of Ashanti antiques at

the Kumasi Cultural Centre, I said that I thought the British Museum would need better security before sending back the gold objects looted so systematically by Sir Garnett Wolseley during the first Ashanti war. He said that they would be quite safe; nobody would touch them because they would know that the ancestors would catch them. I don't know how totally serious he was; it was probably half true, but would the ancestors function in, say, New York, if a gold object were quickly to cross the Atlantic? Perhaps. There is a fine modern cathedral in Kumasi built mainly by local subscription and well attended. At the same time, when the head Fetish Priest is carried round, sprinkling luck as he goes, everyone will also eagerly collaborate on that.

Again, at the dancing for the ancestors, a splendid bare-chested dancer flopped down for a moment beside me, and panted that he was an anthropologist, as no doubt he was. One cannot dance in a serious way without being wholehearted, which may mean a suspension of some kind of scepticism, though not of attention. This is surely the right attitude for an anthropologist. From time to time I find myself dancing with other women of my *Mophato*—my nominal initiation group—and suddenly I feel that the dance and the song that goes with it has changed meaning, has achieved a sudden importance. The special dance song for the *Matshego* may in fact only be repetition of a phrase which has little outside meaning, but a considerable inner one. The essential is to go with the wave. It brings you—well, luck.

Luck is a very odd thing, differing from culture to culture, but real enough. We try to make it more respectable by the use of words and concepts like “accident-prone”. Who isn't pleased to find a four-leaved clover? In my own west coast fishing village in Scotland it used to be thought unlucky to have a woman or a minister on board, nor would a man sail if he had seen something or someone ominous before setting out. No fisherman on board would refer to rabbits except as “the grey fellows”. Nor did one whistle at sea. No doubt they could laugh about it, or can nowadays, but there it was. The young ones are no doubt so keen on the big money one gets at the fishing nowadays that they let it verride all this, but I suspect that it is still there, only lower down the iceberg.

We have plenty here in the west coast in the way of ghosts, bogies and what-have-you. It is possible for the sceptic to say that this comes of no street-lighting, or alternately of the highland facility for storytelling and putting a good flourish onto the bare boughs of an incident. I think myself that there is more fact to it than that. On the whole these visions or perceptions are unpleasant and frightening; those who have actually had a visitation of "the sight" may be laid out for a day or two. But among the older people at least there is a certain expectation that something of the kind ought to happen if there is going to be a serious accident.

I would also add that there is a certain amount of sorcery still going on, at least in the Outer Hebrides and especially where there is much Free Presbyterian heavy-handedness. I doubt if people think of it consciously as a reversion to pre-Christianity but presumably it is more or less that. Of course, like the Missions in Africa, the Kirk in the Highlands did not hold with anything which smelt of other beliefs. It is a pity in a way, because St. Colomba was much more understanding and carefully turned the more amiable local gods into saints. But people are still not very willing to let it be known that they have been seeing or doing unchristian things. One may not hear of them until years later when perhaps the protagonists are dead. Yet one can be fairly sure that something did happen, although perhaps the story has grown a little. All this seems to me to be in the iceberg below sea level.

In the upper part of the iceberg are all the clever things, the economics, the machinery, the accurate scientific work, the mathematics (or does that, like music, root from below surface level?), the mental or manual precision working of all kinds. But unless we can live happily with the lower part of the iceberg we are in for a bad time. The iceberg may suddenly overturn and when the bottom surfaces we are likely to find ourselves waking up in a mental hospital. Or if we think of ourselves as islands they are very definitely volcanic islands and an eruption from far below may spread a terrible lava over the surface.

Are we then icebergs or islands? Do we have some common ground very far down? There is considerable evidence to point in this direction yet it is not factual or so to speak visible evidence. It

is rather an interpretation or series of interpretations of human actions. We are perfectly justified in making these interpretations and if we are not competent to spend a lifetime developing them (one thinks for instance of Jung and his universal archetypes) we can at least point towards what in our own experience would be best answered by one hypothesis or another. This is what I have been trying to do.

How the Zulu see their diseases

HARRIET SIBISI

In this article I shall be concerned with certain Zulu notions about the nature and causation of disease and in particular the context in which people are happy to have recourse to Western medicine and the context in which they believe the traditional medicines are appropriate. (See also Sibisi 1972.)

There are diseases that happen not because of any malicious external factors or because of the patient's fault, but happen because all natural things have a tendency of breaking down from time to time. Some such diseases are epidemics, fevers, common cold, all of which present themselves in somatic symptoms. The generic term for diseases of this type is *umkhuhlane*. The medicines used for cure are believed to be potent in themselves, and their administration is accompanied by no rituals as this is an empirical level of treatment, where one medicine may be discarded for a better one—this including the Western type of medicine.

Sorcery, ancestor wrath and ritual pollution, are some of the concepts which are associated with the ideas of morality of a Zulu society and these concepts are therefore believed to be less understood by non-Africans. For this reason, diseases which are related to such concepts are said to be African diseases (*ukufa kwabantu*) as they are based on African cosmology. Diseases of this category may present themselves in misfortunes only (e.g. conflict within the family, unemployment, loss of property, etc.) or in both misfortunes as well as physical illness in which case the last mentioned is viewed as part of a series of misfortunes.

Theoria to Theory
1974, Vol. 8, pp. 343-351

Published by
Gordon and Breach Science Publishers Ltd.

In curing diseases of this category people say “they are restoring order”, *siyazilungisa*, “we are putting ourselves in order”. The medicines used are symbolic and are by no means potent in themselves outside the ritual context. If improvement is not realized the same type of treatment is repeated over and over again—for medicinal substances in this context are used in religious framework and are calculated to treat the whole person rather than the symptoms, and to restore the correct (social and mystical) equilibrium with his surroundings.

If such a disease presents itself in misfortunes only, it is treated with symbolic medicines only, but if physical illness is also regarded as part of a series of misfortunes, there will be two levels of treatment, i.e. symbolic medicines to treat the whole person in an attempt to remove the cause of misfortunes, as well as empirical treatment with non-symbolic medicines to cure the somatic symptoms.

The symbolic medicines are characterized by their colour and as a “class” of medicines they are referred to as “black and white” medicines (*imithi emnyama nemhlophe*). The distinction between the colours is so illuminating as to the ideas behind the medicines that I shall take the rest of this article discussing it.

The main opposition is represented by “black and white”; but there are also the in-between symbolic colours—these being red (*bomvu*) and green/blue (*luhlaza*). Since green/blue medicines are less prominent and are virtually identified with white; and since their special significance is not the theme of this article, I will focus my attention on the more prominent colour symbols—i.e. black, red and white. Ideally they are used in a rigid sequence in the order as mentioned above. However, in practice it so happens that in many rituals a short-cut is used to avoid using all the three colours in a sequence. This is achieved either by discarding black, and using red and white symbols only, or by discarding red and using the black and white symbols only, or by discarding both black and red, and using white symbols only. The rule is that whereas white symbols can be used alone in a ritual, neither black nor red can be used without being superseded by white symbols. I want now to look at the logic behind this rule.

In order to understand this logic let us consider that the Zulu thought regarding colour symbols is among other things strongly influenced by the observation of relations in the cosmic order of day and night.

The darkness of the night is *umnyama*. *Umnyama* (or *isinyama*) is also a term used to mean (ritual) pollution, and the polluted people such as the bereaved, menstruating women, women who have given birth, or homicides, are said to be “without light and are in the darkness” (*banomnyama*—they are with darkness), and the people who continually experience a series of misfortunes consider themselves as with *umnyama*—a condition of being without good things of life—a condition which may therefore require treatment with medicines.

A Zulu term for “black” is *mnyama*, but in fact a correct translation for the term “*mnyama*” is dark, which suggests that there is no terminology in Zulu which discriminates between dark and black.

“White” is associated with “light” but unlike *mnyama* (dark/black) the terminology discriminates between light and white, white is *mhlophe* (*inkomo emhlophe*—a white cow). Light is *ukukhanya* as a noun (the light), and *khanya* is a verb which means “to be light”, “to be bright”, “to shine forth” and “to be white”. “White” and “light” (*mhlophe* and *khanya*) in certain contexts are used to mean the same things.

Good things of life—good health and good fortune—are in speech associated with light which is usually represented by white. For instance, in wishing someone well on departure, people usually say “Go well—may your pathways be white, may there be light, may you see well”. (*Hamba kahle, izindlela zakho zibe mhlophe, kukhanye, ubone kahle.*)

It is during the day that people participate in social life as they depend on the daylight to see. The white symbols represent life, eating and light—which all epitomize the society and provide the canopy of social action; while black symbols represent excretion, death and darkness, all of which is anti-social, the antithesis of the society. However, even though the darkness of the night spells danger, it is nonetheless necessary to enable people to withdraw

and rest in order to be fresh for their life activities on the following day. Herein lies the notion of the equivocal power of black symbols which in spite of their strong negative attributes have some positive attributes as well (e.g. in healing, black medicines are said to remove the evil from the system and strengthen the patient against future attacks).

The day and night are, however, divided by the twilight of sunrise and sunset. The twilight is seen as a reddish dim illumination which at sunset becomes progressively dimmer and at sunrise becomes progressively brighter (*Libheje ezansi*). It (the sun) turns red in the East, down below. In this process of transformation the red sun's rays are seen as representing something of darkness as well as something of lightness.

Red (*bomvu*), however, is not used as a figure of speech in its moral sense to describe the day to day misfortunes and fortunes as is the case with black and white. This is understandable in that life situations are thought of as either good or bad. In such a thought structure the reddish twilight represents the "between" position. Because light/white is regarded as pure and unambiguous, red is more often identified with black even though black and red do not represent the same things. Red if compared with black represents less evil and more good.

To be (mystically) ill is likened to moving away from the daylight into the dimness of the sunset and into the night. The healer endeavours to drive the patient out of the mystical darkness by black medicines as indeed this notion is expressed in the Zulu idiom of speech: "It takes another thorn to remove the thorn that pricks you" (*Iva likhishwa ngelinye*), meaning in this context that even though black medicines emphasize darkness, and therefore evil, such medicines are nevertheless necessary to remove the evil from the system. The red medicines propel the patient forward through the twilight of the sunrise, and return into the daylight, and life is symbolized by white medicines. This explains the rigid sequence in usage of colour in medicinal symbols as this sequence represents the pattern of the process.

Perhaps a case of treatment with black and white medicines will help to further elucidate what I am saying.

There is a special type of sorcery which only operates within a lineage segment i.e. the descendants of one grandfather. This type of sorcery involves invoking the ancestors by one of the agnates to favour him and abandon others. Without the protection and good favours of the ancestors the victims and their dependants experience a series of misfortunes. To correct the condition a treatment with black and white medicines is performed.

A black sheep (or chicken these days) is killed by suffocation and placed unopened in a hole dug outside the home premises, preferably in secluded bushy surroundings. Black medicine which consists of chopped-up roots, barks, stems and leaves, is prepared by the ethno-practitioner. The mixture is boiled in water to produce a darkish liquid stuff which is placed in a clay pot. Before dawn, all the adult members of the homestead drink their fill and vomit over the dead sheep. This is repeated for three days. During the three days the patients withdraw from the society, observe silence, fast, and neglect their appearance. They are considered as having pollution (*umnyama*) or "darkness". They are said to have reached their weakest point in their lives; and in their weak state they are vulnerable to all sorts of misfortunes and illnesses, and they are dangerous to other people as their condition is transferable. In the last dose of black medicine on the third day a little bit of white medicine is added. The black clay pot along with the remnants of black medicine is broken over the sheep in the hole, and the whole thing properly covered up with earth and stones. The treatment with black medicine is complete.

On the fourth day following the three-day course of black treatment, a white goat is slaughtered as in any sacrifice. In the morning of the same day when the sun is out after dawn, the patients use white liquid infusion to vomit within the home premises. This is done every morning for three days. During the three days of "white" treatment the patients share the sacrificial meal, join in the society by shedding all the abstinence behaviour they had practised during the three days of "black" treatment.

I was told that the black medicines remove the evil, the misfortunes, the darkness (*umnyama*) that enshrine the patients,

and cast these on the black sheep in a scapegoat fashion. I was also told that the suffocated sheep, the black medicines, and the withdrawal of the patients from the society all symbolize “death”. What I want to stress here is that such symbolic death is thought of as a “state of being dead” which is the opposite of “a state of being alive”. This came through forcefully when one of the diviners gave reasons for mixing the last dose of black medicines with some white medicines. She said, even though the *umnyama* has been removed from the patients by black treatment, the patients are not necessarily “healthy” as this is not automatic—it must be achieved by white medicines which bring in light, life, and good fortunes (*ukukhanya, impilo, nezinhlahla*). This notionally means that a day between the completion of a course of “black” treatment and the beginning of a course of “white” treatment, the patients are “neither dead nor alive”. There is therefore need to bridge this gap—hence the introduction of white medicines into the last dose of black medicines. The mixture of black and white medicines introduces a good dose of positiveness within the negativeness of black medicines. It is a means of transforming “death to life”—it is a beginning of growth, a rebirth of life.

What I must stress here is that if red medicines are used in certain types of treatment (e.g. *ubulawu* to correct repulsiveness, or *igobongo* which is a baby treatment for protection) all of which are followed by treatment with white medicines, no white medicines are added to the last dose of red medicines. The red medicines are said to contain enough goodness which links up easily with white treatment. Red in this sense strongly emerges as a colour symbol which symbolizes transformation, transition, and re-birth.

In explaining the tendency to abridge the usage of colour symbols into pairs either of black and white or of red and white, Professor Victor Turner suggests that among the Ndembu of Zambia black is often left out because it is a negative while “white and red on the contrary are associated with activity. Both are considered ‘to have power’” (Turner 1970, p. 79).

While I tend to agree with him with regard to the “danger” associated with black symbols, I find it difficult to accept that

black symbols are conceived of as having “no power” since their very negative attributes among the Ndembu suggest that they are thought of as having a negative influence, which in itself is “power”.

However, this is neither here nor there. The point that I want to add regarding the tendency to use a short-cut method is that it is rather significant that among the Zulu life crises situations which are connected with birth or death (such as bereavement, homicide, parturition, menstruation, gestation, and lactation) are treated only with red and white symbols. In such situations the very biological action is said to weaken the patient and bring different degrees of “darkness” or pollution (*umnyama*) which represent death. There is therefore no further need to simulate death by black symbols—but there is need to transform the dangerous situation to “life”. Hence the bereaved are treated with red medicines (*amakhubalo abomvu*) which are followed by white medicines (*izintelezi*). Women during post-partum emissions smear their exposed parts with red ochre, so do the pregnant and the nursing mothers who smear the soles of their feet with red ochre which is later removed with white symbols, e.g. water in which tambootie grass (sweet smelling grass) is added.

When white symbols are used alone the idea is to emphasize the state of goodness, as with the symbols used by the diviner to promote her purity and her special contact with the ancestors.

What this material highlights is that the Zulu see red symbols as mainly representing transformation or transition while black and white symbols represent static situations of “death” or “life” respectively. Professor Victor Turner, in his analysis of the colour symbols of the Ndembu of Zambia regarding the conditions of transition from one physical state to another, shows how they can be bound up with each other. He says “Undoing, dissolution, decomposition are accompanied by processes of growth, transformation and the reformulation of old elements in new patterns . . . It is interesting to note how logically antithetical processes of death and growth may be represented by the same tokens This coincidence of opposite processes and notions in a single presentation characterizes the peculiar unity of th

liminal: that which is neither this nor that, and yet both” (Turner 1970, p. 99).

The Zulu usage of symbols in healing *does* make a distinction between those symbols which stand for “undoing, dissolution and decomposition” (black medicines) and those which stand for “growth, transformation and reformulation” (red medicines) and the symbols which stand for desired things in life (white symbols).

Because the Zulu colour symbolism is particularly prominent in healing situations in which the sequence of colour symbols is insisted upon, it is perhaps difficult to tell whether the Ndembu red symbols also mean transition, since their symbols are more connected with hunting and initiation rituals rather than with the situation of illness. Nonetheless, I am persuaded to believe that the Ndembu also seem to regard red symbols as particularly symbols of transformation. Professor Turner tells us of the ambivalent nature of red symbols which in certain rituals may be identified with black while in others with white symbols (p. 74).

It is this very unique quality of red symbols which makes it possible for them to represent the end of the negative state or “death” and the beginning of the positive state—the state of life. It is precisely this ambivalence which enables red symbols to represent transformation and transition.

In this paper I have focused attention on one particular aspect of the structure of the “marginal” or “liminal” phase in the “rites of passage” (Van Gennep 1960) and have tried to illustrate how such a “marginal” phase contains within itself a further dimension of marginality which is crucial, as in fact it is this internal marginality which represents the “true passage” or transformation.

I may perhaps appear to overstress the importance of this structural pattern of the “marginal” phase but I find it necessary in order to indicate the importance of red symbols among the Zulu as notionally representing the change from sickness to good health, from the undesired state to the desired, because after all, this is what medicine and cure is all about. In this case the symbolism of the medicine is related to the reunion of the sufferer with his society, and this indeed can have a therapeutic power. It

is an attempt to effect a desired situation in life whether this is social, biological or spiritual. Indeed this is what life is about.

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Comment

Faith Healing

The Faith Healing article by Brian Inglis (*Theoria to Theory* vol. 8/3) perhaps does something less than justice to the work of Arthur Guirdham whose conceptual spectrum is so much wider than “messages from the unconscious” that he is surely the first highly qualified consultant psychiatrist to opt out of that paradoxical word—as far as possible.

Instead he sees normal personality (consciousness) as this side of the mind-barrier, while on the other side is the greater part of one’s character and identity: the matrix (unconscious). Within the matrix is far more than could be dreamed by Freudians, or even Jungians; for there is the reservoir of permanent experience, filled up through many lives.

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Theoria to Theory
1974, Vol. 8, pp. 353

Published by
Gordon and Breach Science Publishers Ltd.

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Review

The Challenge of Chance, by Professor Sir Alister Hardy, Robert Harvie and Arthur Koestler, Hutchinson. \$3.00

The Challenge of Chance is concerned with the phenomena of "coincidences", including those that seem to be well beyond the likely range of "chance fluctuations" as normally conceived. It can be viewed as a sequel to Arthur Koestler's previous books on this theme, *The Case of the Midwife Toad* and *The Roots of Coincidence*. Some of these phenomena arise in the context of parapsychological experimentation, while others happen in the course of everyday life, but, wherever they occur, the authors conclude, they seem to point to something much deeper, to some mode of operation of events in the universe which differs drastically from both of the scientifically recognized categories of causality and randomness. "Coincidences", therefore, appear to have not only normal but also paranormal and transcendental aspects.

The book is divided into four parts, each corresponding to a different aspect of its subject matter.

The first part, by Sir Alister Hardy and Robert Harvie, discusses some telepathy experiments, using drawings and coloured symbols and projected lantern slides as targets, conducted at the Caxton Hall, London, during seven sessions in the autumn of 1967. In each of the 140 experimental trials, during which a target was displayed, most of the 200 participants viewed the target, while either 20 or 12 of them, screened off in cubicles, attempted to guess the target. Analyses were made, not only of the possible "direct hits" between responses and corresponding targets and

Theoria to Theory
1974, Vol. 8, pp. 355-359

Published by
Gordon and Breach Science Publishers Ltd.

“precognitive hits” between guesses and targets displaced one to five trials ahead, but also for possible telepathic correspondences between responses by different percipients in the same trial. A “control” experiment was then set up by rearranging the responses, according to a randomizing procedure, into control groups. Analyses were performed on the control group “guesses”, to test for correspondences between “guesses” in the same groups, also to match these “guesses” with the “mock-targets”. It was found that the degrees of correspondence between responses in the same group were comparable for the actual experiment and for the control “experiment”, though the scoring on “mock-targets” was at a rate somewhat less than that on actual targets. The authors concluded that the experiments did not succeed in demonstrating telepathy but that they showed “coincidences” striking enough to justify further investigations. They include illustrations of all the pictorial matchings that they considered to be hits or correspondences.

In the second part, Robert Harvie discusses probability and randomness, including a brief consideration of the work of Spencer Brown, who claimed that many apparent cases of “significantly high” scoring in ESP experiments were due to failures of probability theory to apply to reality. As some preliminary experiments, to test Spencer Brown’s hypothesis, had shown some unexpected results, Robert Harvie decided to simulate some ESP experiments, by using tables of random numbers to generate both “guesses” and “targets”. Again, although paranormal effects had seemingly been excluded, strange departures from the predictions of probability theory occurred, for example the numbers of “hits” tended to be below those expected by chance. He considered in turn the possibilities that these results were due to errors in scoring, nonrandomness in the “guesses” or “targets”, and parapsychological effects. He concluded that they were most likely to be attributable to some queerness in “chance”. The second part ends by discussing some curious findings by other researchers.

In the third part, Arthur Koestler presents a selection of anecdotal cases of “coincidence”, collected from various sources. They were chosen so as to resist explanation, not only in terms of

physical causality, but also by ESP and other parapsychological phenomena. The cases were grouped into several categories of “coincidence”: those involving books, crossword puzzles and other verbal material; those involving people, names and places; clusters of related events; those appearing as if caused by the practical joker; those relating to machines and engineering; those including strange physical occurrences. There is also a brief discussion of some remarkable poltergeist cases not involving “coincidence”.

In the fourth part, Arthur Koestler speculates on several topics related to “coincidences”: convergence and clustering, in relation to probability theory; some recent trends in physics and parapsychology; some speculations on the emergence of order from disorder; the idea that the “hidden variables” of some formative principle may lie behind the manifestations of “randomness”.

What can we conclude from the observations of “coincidences”, described in the book? Certainly, some very interesting indications have appeared, in several different contexts, which need further investigation and which suggest that the authors’ tentative view of “coincidences” as the manifestation of a fundamentally new causal category might be true. *If* this view is correct, the scientific implications would be enormous, as completely novel types of scientific theory and model would have to be postulated even to begin to explain them. The universe would be very different from what science has hitherto supposed it to be like.

My own personal intuition, backed up mildly by my own experience of moderately striking “coincidences”, is that the authors’ view is probably true. Thus I am interested in any collection of evidence put forward that is relevant to this viewpoint. But I am disappointed that the contents of this book do not seem to advance the status of the concept of “coincidence”, as a fundamental new category, very far *beyond* its previous position of being based mainly on private, anecdotal evidence, *towards* the position of being supported by good or even conclusive scientific findings. I feel that the experimental results, obtained by Sir Alister Hardy and Robert Harvie, do not provide much more than

preliminary indications, while the cases quoted by Arthur Koestler, interesting as they are, have degrees of coincidence notoriously difficult to assess quantitatively by accurate statistical methods. Much more work clearly needs to be done to develop the scientific methodology needed for the investigation of "coincidence", in order to disentangle any basically new effects that it may show, as distinct from those of true randomness and of parapsychological and parapsychical phenomena.

In the Caxton Hall experiments, the methods of assessment used were rather subjective, both because "matching" was done by direct judging by the investigators and because no objective measurement was obtainable of the degree of chance fluctuation that would be needed to bring about the observed "matchings". This situation could be at least partly remedied by designing new qualitative ESP experiments that would allow objective statistical analyses to be applied from the outset, by combining "blind" and "double-blind" matching methods with assessment by independent judges *and/or* by using a category method where both targets and guesses would be assigned to categories and where the categories corresponding to the targets would be chosen strictly at random. Perhaps the former of these techniques could also be applied to obtain a more objective analysis of the full data of the Caxton Hall experiments.

Similarly, I do not feel able to draw conclusions from Robert Harvie's tests on random number tables. Some of those that he used are based on pseudo-random numbers, that are known to be produced by a deterministic mathematical process; others have been derived by different methods, which are supposed to be effectively random, but about whose complete randomness I have some doubts. Apparently, pseudo-random numbers were not matched with each other in these tests; this would be a useful experiment, and one which could be carried out fairly simply and very accurately with the aid of suitable computer programs; furthermore, any queer results that it produced could be ascribed to quirks of the *mathematical* process producing these numbers and would thus *not* be due to anything other than a deterministic process (assuming, of course, that the computer itself was not

“jinxed” by PK!). For true sources of randomness, the situation is more complicated, because there are now possibilities for the interference of PK with the output of a randomizer. However, by special measures, such as using the carefully compounded output of several independent sources of randomness, the risk of such interference can be progressively reduced, and the quality of the theoretical randomness increased, so that, *under those circumstances*, any sufficiently strange results probably *would* demonstrate the existence of a genuine new “coincidence factor”.

ALAN MAYNE

†Sentences

We are, as it were, to think ourselves into Time. I call this taking Time seriously. Our guides of the seventeenth century desert us here. Besides the infinite, two things entranced their intellects. One was Space or extension; the other was Mind. But entranced by mind or thought, they neglected Time. Perhaps it is Mr. Bergson in our day who has been the first philosopher to take Time seriously.

Empirically Time is a continuous duration, but it is also empirically successive. Physical Time is a succession from earlier to later. As Mr. Russell points out, the succession from past through present to future belongs properly to mental or psychological time. But so long as we take care to introduce no illegitimate assumption we may conveniently speak of past, present and future in physical Time itself, the present being a moment of physical Time fixed by relation to an observing mind and forming the boundary or section or cut between earlier and later which then can be called past and future . . . Now if Time existed in complete independence and of its own right there could be no continuity in it. For the essence of Time in its purely temporal character is that the past or the earlier is over before the later or present. The past instant is no longer present, but is dead and gone . . . If it were nothing more

† From Samuel Alexander, *Space, Time and Deity*, Vol. 1, pp. 44-45, 66-67, 75; Vol. 2 pp. 353-354, 429.

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Theoria to Theory
1974, Vol. 8, pp. 361-363

Published by
Gordon and Breach Science Publishers Ltd.

than bare Time it would consist of perishing instants. Instead of a continuous Time, there would be nothing more than an instant, a now, which was perpetually being renewed. But Time would then be for itself and for an observer a mere now and would contain neither earlier nor later. And thus in virtue of its successiveness it would not only not be continuous but would cease even to be for itself successive . . . The real existence is Space-Time, the continuum of point-instants or pure events . . .

With this conception of the whole Space-Time as an infinite continuum of pure events or point-instants, let us ask what the universe is at any moment of its history . . . Space-Time or the universe in its simplest terms is a growing universe and is through and through historical. If we resolve it into its phases, those phases must express its real life, and must be such as the universe can be constructed from in actual reality, they must be phases which of themselves grow each into the next, or pass over into each other. We are to take an instant which occupies a point and take a section of Space-Time through that point-instant in respect of its space or time. The point-instant in question we may call the point or centre of reference . . . When we take not the section of the world through a point but its perspective, we shall have the whole of Time occupying not the same point but points of Space at all manner of distances from the central point of reference. That is, just as a perspective from an instant is spread out over the whole of Time and presents all variety of dates, a perspective from a point is spread out over the whole of Space and presents all varieties of locality . . .

Since Space-Time is already a whole and one, why, it may be urged, should we seek to go beyond it? Why not identify God with Space-Time? . . . The speculative failure of the answer is patent. It neglects the development within Space-Time of the series of empirical qualities in their increasing grades of perfection. The universe, though it can be expressed without remainder in terms of Space and

Time, is not merely spatio-temporal. It exhibits materiality and life and mind. It compels us to forecast the next empirical quality or deity. On the one hand we have the totality of the world, which in the end is spatio-temporal; on the other hand the quality of deity engendered, or rather being engendered, within that whole. These two features are united in the conception of the whole world as expressing itself in the character of deity... In the hierarchy of qualities the next higher quality to the highest attained is deity. God is the whole universe engaged in process towards the emergence of this new quality, and religion is the sentiment in us that we are drawn towards him, and caught in the movement of the world to a higher level of existence.

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ALAN MAYNE is a D.Sc. of Oxford in Mathematics. He is a member of a research group in Traffic Studies at University College London, and has worked extensively in Mathematics, Statistics, Computing and Physical Research.

NAOMI MITCHISON, in the course of a long life as writer, farmer, politician, mother and grandmother, has seen plenty. Her own education was poor but she hopes she has learnt through communication with others and by thinking about such things as justice. She has been around in most European countries and India and the U.S.A., usually staying with people and tuning into their cultures and prejudices. For the last twelve years she has spent part of her time in Africa and especially Botswana where she is at home, is a full member of her tribe and has many friends.

HARRIET SIBISI, a member of the Zulu people, studied Anthropology at the University of Natal and did field work among her people. The present article is one outcome of this. She has recently, as a member of Lucy Cavendish College in the University of Cambridge, completed a Ph.D. thesis on "Health and Disease among the Zulu". At present she holds a Research Fellowship at St Anne's College, Oxford.

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