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THE REFORM OF THE JUDICIAL PROCESS IN ALBERTA  
A DISCUSSION OF BASIC PRINCIPLES

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## THE REFORM OF THE JUDICIAL PROCESS IN ALBERTA:

### A DISCUSSION OF BASIC PRINCIPLES

Because this paper is concerned with basic principles, it has been used as an opportunity to explore the philosophical foundations on which the principles rest as fully as possible. The objective of the paper is to present a logical structure which is consistent and which will provide a basis for a judicial process that would provide justice for the people of Alberta.

This may seem to be a reasonable ambition, but we should remember that, according to Bertrand Russell, "no one has yet succeeded in inventing a philosophy at once credible and self-consistent".(1). If we take it that a judicial system which provided justice would be credible, and if it is assumed that the logical system which provided the intellectual underpinnings for such a process could reasonably be called a philosophy, the objective of this paper, far from seeming reasonable, instead seems to represent nothing but the overweening ambition of its author. Before accepting that conclusion, however, it is worth asking if anything can be said at this early stage which could give grounds for hoping that what has not previously been done will be done here. Has anything happened which has made consistency and credibility easier to come by? The answer is Yes, but before we can see why this should be, we should first look again at the statement of Russell's, just quoted, in order to see what it means.

All philosophies, as Russell is using the word, have three elements. First, there is a presupposition, or set of presuppositions, about the nature of the universe; then there is a series of logical deductions which take the presupposition(s) as their starting point; lastly, there are a set of general conclusions, reached by way of the chain of deductions, about the nature of the everyday world. When Russell describes a philosophy as being self-consistent he means that there are no errors in the train of logical deductions connecting presuppositions and conclusions, and also that the presuppositions, if there are more than one, are not logically incompatible with one another. Credibility, on the other hand, is concerned with whether or not the conclusions correspond with the knowledge of the world which we have acquired through experience.

Although this seems simple enough, there are, in fact, sufficient possibilities for complexity that the 2,500 years of recorded philosophical debate have not led to any single system of ideas gaining general acceptance. So long as the debate continues, there can be no hope of obtaining a consensus as to why a consensus is lacking. So the suggestion which follows must be treated as tentative. That being said, I suggest that the basic reason why philosophers have not been able to achieve their ambition of arriving at a self-consistent, credible view of the world is that they have tried to ground their philosophies on foundations which are not merely secure, but absolutely immovable. At first sight, this seems reasonable enough, and that is, indeed, the very difficulty. It is precisely because it seems reasonable to make sure that the starting point for an inquiry is the right place to begin that people who have committed themselves to the task of being reasonable start there. Until the Sixteenth Century, there were few grounds, and none which carried any weight, for considering any alternative. Since the rise of modern science, however, the situation has changed. We now know, with as much certainty as we know anything, that the nature of the physical reality which surrounds us is not at all what it appears to be as we perceive it through our senses. My proposition then, set in the form of a question, is this: If the world around us is so different from what it appears to be, is it certain that the presuppositions on which a philosophy which can encompass both the world of sub-atomic physics and the everyday world we perceive with our senses must be ones which can be shown to be reasonable, apart from their role in the philosophy itself?

### Formal Assumptions

In the philosophy which is set out here, there are three assumptions which are necessary to it in the sense that they are not explained by the trains of thought which flow from them, and without them the trains of thought cannot begin. No claim is made, however, that these assumptions are self-evidently the ones which should be chosen. Indeed, only two claims are made for them. First, they are not incredible; -- in particular, they are not inconsistent either with each other or with any evidence which is provided by science. Second, they make possible conclusions about the world which, on analysis, are more credible than those reached from other starting points.(2).

## The First Assumption

The first assumption which underlies the philosophy presented in this paper is: reality exists.

This assumption requires some commentary. This will be provided in two stages. The first follows immediately; the second comes after the presentation of the other two assumptions.

The meaning of the term reality as it is used in the first assumption is, unless I have misunderstood him, that given by K. R. Popper in Conjectures and Refutations, in particular in Chapter Three.(3). In that chapter, Popper presents three views concerning human knowledge. On examination, it turns out that these three views of knowledge also point to corresponding views about the nature of reality. According to the first view, there is a distinction between the world as it appears to be to our senses, and the world as it really is. This view was virtually universal in Europe in the days when belief in God (as presented in the main stream of Christian theology down to at least the Nineteenth Century) prevailed. God had true knowledge, whereas human beings had, at least as a normal rule, knowledge which was incomplete (or opinion, as it is often convenient to call it). We know only the appearance of things, not their essential reality.

The second view maintains that there is no world other than the world of appearances. This view has been widely accepted among scientists and social scientists in recent decades. It is widely thought that Einstein's theory of relativity compels us to adopt this view, as does the discovery that matter does not exist absolutely of itself but can be dissipated by being transformed into energy. Social scientists are also tempted to feel that an analogous situation prevails at the social level of reality, with the norms of human behaviour being conditioned by the structure of the society within which they occur, with the implication that they have only relative (as opposed to objective) value. According to this view, scientific theories are not statements about reality, but are instruments which allow us to predict behaviour with a useful degree of accuracy.

In opposition to both these views, Popper presents a third. According to him, reality exists, but instead of consisting of some essence hiding behind the surface appearances, it is simply everything which is. The

outstanding advantage of this view, at least as it seems to me, is that it allows us to assume that we can make statements which are objectively true. A statement is true if it corresponds to reality. Consider, as an example, the statement: I dreamed, last night, that the house in which I am living burned down. If I did have such a dream last night, that statement is true, and it remains true even if the contents of the dream are false (my house is still standing, untouched by fire).

Once we have accepted the assumption that reality exists, the question arises as to what kind of knowledge we can have about it. To this, Popper answers that we can have opinions, and it is also possible for us to have true knowledge, but what is not possible is for us to decide which of our pieces of knowledge are opinions and which true knowledge. No matter how strongly we may feel that we are right on some point, and no matter how much evidence we can bring forward in support of our view, the possibility always exists that, with respect to our knowledge of the external world on that point, we are mistaken.

This answer does not drive Popper to the conclusion that all views are equally valid, because it is also part of his "third view" that it is frequently possible to show that a particular opinion is false. For example, the opinion that the world is flat can be shown to be false; once the flat-earth hypothesis has been shown to be false, no one concerned with the truth on this point will continue to hold it.

Whether all opinions can, in time, be subjected to tests which will allow false ones to be refuted is a question that is not dealt with explicitly in Conjectures and Refutations. We will return to it after we have dealt with the remaining assumptions.

### The Second Assumption

The second assumption is that a satisfactory understanding of human beings can be obtained by looking on ourselves as being organisms (or systems, for those who prefer that concept) who have to solve problems in order to live. It is not Homo sapiens who functions as the model of the human person in this view, nor yet economic man, but the person as problem-solver.(4).

A definition of a problem is useful at this point. A problem is anything which leads a person, on meeting it, to change their pattern of behaviour (intellectual problems present a special case; tentatively, I suggest that an intellectual problem is anything which makes a person think, and that, if there is no resulting change in behaviour as the result of the process carried out by the central nervous system, whatever that process may be, the problem was, for that person, purely an intellectual one). On this definition, all behaviour resulting from the finding of solutions to problems is learned, and, conversely, all behaviour which is learned resulted from meeting with a problem. The point of this elaboration is to establish that, in this terminology, a problem is not necessarily something negative, something which would leave us better off if it had never existed.

It should also be noted that any solution to a problem, providing only that it does not lead to the immediate death of the person attempting it, is, in a certain sense, a successful solution. In the light of comparative analysis, some solutions to a given problem may appear to be more efficient than others, but, at the time the problem is faced, any solution which allows the person to continue living deserves to be classed as successful. Such a classification corresponds to the subjective appraisal of the person attempting the solution, at the time of the attempt.

### The Third Assumption

The third assumption is that the problems we face are not all of one kind, but belong to three classes, to wit, those presented by (a) the physical environment, (b) other people, and (c) the non-material dimension of reality.(5).

This assumption, too, calls for some commentary. We can begin by taking the first two problems to be reasonably self-evident. The phrase non-material dimension of reality is not, however, one which can be expected to result in a consensus of interpretation today.

What is meant by non-material? The easiest way to answer the question is to define what is meant by material. Something is material, if, on being measured by two different individuals, they arrive (despite any and all differences of nationality, ideology, religion, or colour of skin which may separate them) at the same conclusion as to the characteristic measured.

Two asides are called for here. First, it is probably this consistency-of-measurement of matter which provides everybody, except the skeptical philosopher, with their chief grounds for believing that matter is real. Second, this definition of matter allows us to by-pass discussion of such things as ESP and mental telepathy. If research into these and similar phenomena reveals some consistency of behaviour, then we can assume that we are faced with some aspect of matter. The fact that we are ignorant of the mechanism by which, for example, telepathy takes place is not a source of serious concern. If so great a scientist as Newton did not know that communication by radio was possible, why should we be surprised if some other form of communication within the universe should still be largely hidden from our knowledge?

The last aside brings us to the next step in the discussion. Defining matter as that which can be measured (successfully) leads on to the conclusion that science can be defined as the study of matter (with the proviso that the study is carried out according to certain rules and not just anyhow). The conclusion follows because it is one of the prerequisites of scientific research that at least some form of measurement is possible.(6). Or, to use the words of George Lundberg,

"the above conclusion (Lundberg's; not mine) directly raises the question as to whether scientific generalization is always and necessarily quantitative. I contend that it is. Those who find otherwise must mean something different by the term generalization (from what I do), and they have failed to explain in operational terms what they do mean by it (the meaning of operational is explained in a moment). I mean by the verb generalize the process of determining from less than all the relevant data the probable relevance in a universe of a given datum or configuration of data. I mean by the noun generalization a statement arrived at by the above process. That is, I define the concept in terms of the operations by which I arrive at it, in conformity with the accepted requirements of science\*. Is this or is it not what every scientist today means by generalization? If this definition is accepted, the question as to whether all scientific generalization is necessarily quantitative at once disappears, for quantification is implicit in the definition. If this definition is not accepted, let us have some other definition. But let us have it in operational terms, i.e., in terms of the steps involved in arriving at it. If it cannot be so defined, all argument as to its nature again disappears, as anything said by an individual regarding his private mental operations must necessarily be accepted as final and not subject to check, and therefore outside the pale of science."(7).

The quotation from Lundberg is long enough to show that he writes with vigour and self-confidence. Despite his confidence, however, there are some problems which face those who wish to practice science. The one which is of most interest in the context of this discussion can be discerned in the views expressed by F. S. C. Northrop in The Logic of the Sciences and the Humanities.(8).

To understand the difficulty, it is first necessary to know that the generalizations by which Lundberg lays such store are subjected to rejection or confirmation through what Northrop calls a "deductively formulated theory of the hypothetically designated type"(9). Now, Northrop is quite explicit:

"a deductively formulated scientific theory must be constructed quite independently of one's operational definitions. Every concept must be postulationaly prescribed as to its meaning, with all other concepts in the theorems derived from the primitive ones in the postulates by the method of definition. The specification of epistemic correlations and the designation of the specific empirically given operations is an addition to the theory and to all its concepts by postulation, not a substitution for some of them. It is the independence of the concepts by postulation from the operational definitions of which they are the epistemic correlates which permits the theoretical scientist, by means of his concepts by postulation, to designate novel and previously undreamed of operations and experiments."(10).

As Northrop has been developing a chain of ideas for over one hundred pages by the time he makes this statement, its point may not be immediately obvious to the reader. In simple terms, what Northrop is saying is that every scientific theory (as Lundberg, for example, would use that phrase) is based on presuppositions (the primitive concepts by postulation of Northrop); on the basis of these presuppositions the scientist develops, through the use of deductive logic, a hypothesis. To test the hypothesis, it is necessary to translate all its concepts (the presuppositions and those derived from them) into operational concepts (which Northrop elsewhere calls concepts by intuition). Northrop calls this translation the process of epistemic correlation.

Before we try to reach an understanding of the last-named process, we should note that among the least difficult sentences in the book are the following pair:



Utter confusion and nonsense enter into scientific discourse when concepts by intuition are put in the same proposition with concepts by postulation.(11).

and

When concepts belonging to two different worlds of discourse are treated as if they belonged to the same world of discourse, nonsense is the result.(12).

Furthermore,

One additional point is to be noted. It is customary for those who emphasize the operational definition of concept to insist also upon objectivity. The question one must ask with respect to objectivity is whether it is an empirically or a theoretically designated item of scientific knowledge.(13).

There follows a paragraph of argument leading to the following conclusion:

All these considerations indicate that it is the theoretically designated concept, not the empirically given operation which designates objectivity in science. Empirically given operations become a criterion of objectivity in science only by way of the epistemic correlations which join them to objective entities and relations designated by concepts by postulation.(14).

Which brings us back to epistemic correlation.

If readers had to depend exclusively on my efforts to fathom what Northrop means by this phrase, they would go away as wise, or ignorant, as they were at the beginning. Happily, others have gone this way before us, and at least one has given his conclusion in simple language. In the words of Hubert M. Blalock, "Northrop essentially argues that there is no method of associating the two kinds of concepts except by convention or common agreement"(15).

To someone hoping to find in science a reliable standard of objectivity, this admission of dependence upon "convention or common agreement" is a matter of great concern. It seems to reveal the flaw of human subjectivity in the very foundation of science. Is this the case? The best answer available at present seems to be a qualified no. I think it can be shown that the qualification can be reduced to insignificance if we (a) limit science to the study of matter, i.e. that which can be measured, and (b) admit, as a hypothetical possibility, the existence of non-matter. As the

former step is agreed to by all authorities, let us consider what is meant by the latter, and what its implications are.

### The Non-material Dimension of Reality:

#### The Search for Clarification

In the discussion that follows, I shall start by adopting the position that there is only material reality. Only when this starting point leads to inconsistencies is it abandoned.

As a starting point for the discussion, let us consider what, if anything, is meant by the word courage (or bravery -- the two words are treated here as synonyms). Is there anything in the world of matter which corresponds to this word? Taking Lundberg as our guide, we must begin by seeking an operational definition. To make the task as easy as possible, let us suppose that we wish to test some hypothesis such as the following: children brought up in the country are braver than those brought up in cities. Let us also suppose that we have no difficulty in providing operational definitions of country and city.

In order to reject or accept the hypothesis we will, presumably, have to subject comparable sets of country - and city - raised children to some experience which will test their "bravery". If we were to find a significant difference between the two groups we would be tempted to accept the hypothesis as sound. On the other hand, it is conceivable that not everybody would be convinced. For example, someone might argue that we had not taken sufficient care to see that the children of our two groups were equal in all respects other than their place of upbringing.

To see why a criticism along these lines would carry considerable weight consider the case reported by Anthony Barnett in a discussion of the relative importance of heredity and environment in determining behaviour. He holds of

one set of experiments (in which) goats were used: uniovular twin kids were selected, and, of each pair, one was brought up normally and one subjected to some maternal deprivation. The deprived kids showed a profound disturbance of behaviour, including failure to eat normally and agitation when put in darkness.(16).

There is little reason to doubt that children can be affected in similar ways by equivalent experiences. That is, children who are deprived of normal emotional support in infancy can be expected, when older, to show patterns of behaviour which depart from the normal.(17).

This observation raises considerable difficulties for anyone who wishes to maintain that there is anything in the world of matter which corresponds to the words courage or bravery. The chain of reasoning which leads to this conclusion is as follows.

If we are faced with the observation that, in particular cases, specified conditions of upbringing in early infancy lead to predictable patterns of behaviour later in life, we will be tempted to generalize it: all patterns of behaviour, other than those resulting from differences in genetic endowment, are the consequence of infantile environment.(18).

Faced with such a generalization there are a number of responses we can make. Let us start by observing that, as a generalization, the statement is, properly speaking, a hypothesis. Before accepting it, therefore, it is reasonable to consider ways of testing it. This brings us to an immediate difficulty. At present, we have no direct way of measuring genetic endowment. The difficulty is not absolute, however. To begin with, we could choose to work with uniovular twins (their genetic endowment being, of course, identical). Furthermore, it is legitimate, for the sake of discussion, to suppose that one day we will be able to measure genetic endowment. What situation might we find ourselves in then?

We can answer that question, at least in part, by considering once again the case of the young goats, as reported by Barnett, above. If we were to obtain similar results with human experimental subjects, we would know, beyond reasonable doubt, that the experiences of the infant condition its later behaviour. But if that is the case, then to attribute praise or blame, as the use of the words bravery/cowardice would imply we were doing, is folly.

For our next step, let us accept the hypothesis that behaviour is conditioned, and consider the ways in which parents, in practice, condition their children. It is not necessary to have read the works of B. F. Skinner to know that much use is made of words such as bravery, -- "Johnny must be a brave boy and stop crying". These words have been spoken by many a mother.

Whatever the mother may believe, it is difficult for a proponent of the hypothesis that all behaviour is conditioned to deny that such behaviour on the part of a parent must tend to induce in the child a belief that the word brave corresponds to something with an identifiable existence in the same sort of way that the word red refers to a colour which can be seen. This "real" thing is, of course, bravery. So we see that language can easily condition children to believe in things that may not exist independently of the belief in them.

To make this observation raises the question of why there should be some people who do not believe that there is such a thing as courage: -- is it just that their conditioning took a different form?

Rather than try to answer that question directly, I want to raise the related question of how the word brave first came to be used. Clearly, we have no direct evidence on this point, so we are driven to speculation. It seems reasonable to suppose that the word was first used by a member of a Stone-Age band whose life was saved, when it was threatened by some carnivore, by a fellow member of the band. Presumably, emotive words expressing general approval were already in use at that time; what was added was the specification of a particular type of act which summoned a response of approval. The person seeking to express approval wanted to distinguish the particular way in which the benefactor had behaved. Once used, the word would be available for use again. Through repeated use, it would become established as part of the language (we presume).

Implicit in the foregoing description (hypothesis) is the mechanism of evolutionary selection. If, as seems reasonable to suppose, brave behaviour promoted not only the survival of the group, but also the status, within the group, of the one who was brave, the use of the word would be part of a general pattern of behaviour associated with strong, positive feedback.

If it is easy to see how brave could be established in the language, what of the generalization bravery? In particular, is it possible to identify, admittedly in a speculative way, a positive feedback process which would encourage the use of the word bravery? It is not difficult to do so. If we accept the contention that there is no significant difference between the physiological/psychological structure of Homo sapiens today and 10,000 years ago,(19) then we can argue that basic methods which have favoured the

evolution of successful cultures in the recent past are likely to have been those which operated long ago. There can be little argument with the contention that the deliberate use of the scientific method has been one of, if not the most important, factor in the emergency of modern cultures. Although it has been argued in some quarters that there is more than one scientific method(20), it seems that they are all united at the level of their starting point. This starting point is to be found in the fundamental fact of human curiosity coupled with the innate propensity we have to create patterns of concepts from the data provided by our five senses(21). It is the ability to connect individual observations which makes science possible. Every animal observes; it is the ability to create patterns of interconnections through the use of cerebral system which distinguishes Homo sapiens. It is, of course, true that science is more than creating such patterns in the abstract, but as this ability is a prerequisite to science, it obviously has immense potential for selection in any evolutionary competition.

Granted this point, the question then arises: could this ability have conferred an evolutionary advantage in the long ages before the deliberate use of the scientific method was adopted? Given the notorious fact that the human species came to dominate the entire animal kingdom, despite its relative lack of biological weaponry, either offensive or defensive, precisely because it was able to use its head, the answer seems to be self-evidently Yes. And that answer suggests forcibly that those who formed speculative hypotheses about what to do in the face of difficulty, providing that they also selected one hypothesis as the basis for action (as distinct from remaining inactive), were the most likely candidates for survival.

It might be argued that there is a great difference between those who think quickly in a time of crisis, and those who think in a more philosophical fashion; furthermore, only the former method of thinking would have survival value. While it is possible that this is true for all societies where the main supply of food comes from the hunt, as soon as farming became the mainstay of society, the reflective thinker would be at an advantage.

With the beginning of farming, or shortly thereafter, archaeology provides us with evidence which is relevant to this discussion. Paul Wheatley has recently shown that in all those early, farming communities which were the birth-place of early towns, the dominant class was the

priesthood.(22). In case it should not be obvious to everyone, one of the functions of the priests, as priests, will certainly have been that of explaining why things were the way they were. Now, unless we are to suppose that the priests were the beneficiaries of divine revelation, we must give them the credit for devising the explanations which they offered.

It therefore seems that we can safely conclude that the kind of thinking which would go from the observation that there were acts which could suitably be called brave to the inference that there was something called bravery would have been favoured by the conditions of the past. We have here, therefore, an explanation of how people might have come to believe in things which may have no objective existence.

It is also interesting to note, however, that the making of the discovery that there is nothing irrational in asserting that there is nothing in the reality external to the conceptual system of Homo sapiens which corresponds to the concept bravery will not necessarily lead people to cease from using the word. Parents and others responsible for the raising of children may well continue to use it as part of their kit of conditioning techniques. And if those children who have been conditioned by its use survive in greater numbers than those, if any, who have no association with the term, then we may expect its use to continue.

We thus find it reasonable to suppose that use (and useful use at that, supposing that we accept the survival of our species as a basic criterion of utility) of a word does not depend upon there being anything in the world outside our heads, the world of matter, for it to correspond to. The only thing that seems to be necessary is that we abandon any connection between the concepts of bravery and of justice. The disjunction appears to be necessary because the latter term is associated with the concept of voluntary action. It is held to be unjust to punish someone if they were not responsible for the act for which the punishment is being proposed. But if we are interested in behaviour, and only in behaviour, then we might well be prepared to use punishments (or rewards) as conditioning techniques. For example, we might find it "justifiable" to execute soldiers guilty of desertion in the face of the enemy, "to encourage the others", even though the soldiers deserted because of some conditioning to which they had been subjected.

We now find ourselves in the following position. With respect to the concept of bravery, we have a hypothesis concerning human behaviour which allows us to dispense with it. Under normal circumstances there is no doubt that the appropriate response would be to wield Ockham's razor. But we also find that, if we do that, our sense of justice is affronted. Under these circumstances it seems necessary that we examine the concept of justice with some care.

### Justice

As we found it useful to distinguish between the adjective brave and the generalization bravery, we can begin this stage of our discussion by making the corresponding distinction between just and justice.

Confining our attention to just acts for the moment, we see that they are distinguished from brave ones by, among other things, the fact that a brave act can be carried out by a single individual acting in complete isolation; a just act cannot. For an act to qualify as just, there must be at least two people involved in its consequences. Of these two, one will have the power to act justly, or otherwise, and the other will be in a position of dependence. If there is no dependence, no act will qualify as just.

If the reason for this is not clear, the following elaboration may help. A just act can only take place where there are people who have rights but who through some circumstance are unable to exercise them. It is then a just act for some other person to provide those deprived of their rights with them. Unless people have rights, no unjust act can be committed against them. A right, in its turn, is something which people have whether they have the power to exercise it or not. When I exercise my rights, it occurs to no one that I am acting in a just manner:-- I am simply doing what I am entitled to do.

It follows from this, that I can never act justly on my own behalf. I can, of course, infringe on the rights of others (then I am doing what I have the power to do even though I am not entitled to so use that power); or, I can appeal to someone else to let me do what I have the right to do but they have the power to prevent me from doing. If my appeal is granted, that

other person has acted in a just way. Without both the concept of rights and also the fact of the unequal distribution of power between individuals, the concept of the just act would not exist.

To understand what is meant by justice, it is first necessary to clarify what is meant by the concept of right (in the substantive sense used above). If we seek to do this through the procedure of scientific analysis we run into considerable difficulties. For there to be an operational definition of a right, there has to be something which is consistent under measurement, or, if other words will help, there must be something there which has an effective presence. It takes only a little knowledge of either history or current events to realize that the possession of rights provides the individual with no defense against being robbed, beaten, raped, or killed. If rights exist, then for a large number of people, perhaps the great majority of the human species who have yet lived, they have done so only in theory.

It is clear that in terms of human behaviour, both as it has been and as it is, there is a gap between the theory and the operation of the concept of a right, and with that also of justice. But that is exactly the gap which the instrumentalists either declare to be non-existent(23), or admit to be unbridgable by instrumentalist means(24).

How do those who admit the gap propose to cross it? So far I have found only one answer, though there are two words used to identify the means: they are the nouns faith and belief (associated with both nouns is the verb to believe).

To see the way in which these words are used, consider the following quotations. The first is taken from the writings of Karl Popper.

I think I have said enough to make clear what I intend to convey by calling myself a rationalist. My rationalism is not dogmatic -- I fully admit that I cannot rationally prove it . . . To put it another way, my rationalism is not self-contained, but rests on an irrational faith in the attitude of reasonableness. I do not see that we can go beyond this. One could say this perhaps, that my irrational faith in equal and reciprocal rights to convince others and be convinced by them is a faith in human reason; or simply, that I believe in man.(25).



The next series of quotations are taken from a book by Norbert Wiener, the founder of cybernetics.

Without faith that nature is subject to law there can be no science. No amount of demonstration can ever prove that nature is subject to law . . . . What I say about the need for faith in science is equally true for a purely causative world and for one in which probability rules.(26).

Unlike Popper, Wiener was unhappy at having science rest upon a foundation of faith. His unhappiness shows in his effort to strengthen that foundation by distinguishing between two types of faith: "I have said that science is impossible without faith. By this I do not mean that the faith on which science is based is religious in nature . . . ."(27) In other words, there is a faith on which religion is built, and the faith on which science is built, and they are different. Moreover, by implication, the latter is good (i.e., it can be accepted by a person who is both intelligent and honest), and the former is not. This position is weak. It rests on the simple assertion by Wiener that there are two types of faith. Is his assertion sufficient authority to lead others to agree with him?

Wiener anticipated such an objection by providing a criterion by whose use the two types of faith can be distinguished. He wrote: "Science is a way of life which can only flourish when men are free to have faith. A faith which we follow on orders is no faith . . . ."(28) Again there is a clear implication: the kind of faith which leads people to accept a religion is coerced. This seems to have satisfied Wiener, because he says no more on the subject. But is it true that religious faith is always coerced? I cannot see that the answer to that question must be Yes. But unless it is yes, we get no help from Wiener on the question of what distinguishes the faith on which science rests from that on which (at least some) religion rests.

If we have to live with faith, what can we say about it? At least this much. If faith is a prerequisite without which science cannot be carried on, it cannot itself be the subject of scientific analysis. That is to say, in effect, that it cannot be measured. But if it cannot be measured, it lacks the fundamental property of matter.

It seems that our assumption that there is a non-material dimension to reality is legitimate.

Not only is it legitimate, but once we have made it we can clarify certain problems of scientific methodology, notably that concerned with the means of connecting theoretical and operational definitions (i.e., the process that Northrop called epistemic correlation). If the analysis carried out above were left without further commentary, it might seem that we not only need this mysterious something to which we have given the name faith as a prerequisite to science, but we must also have recourse to it within the scientific procedure itself. Rudolph Carnap has sought to deal with this problem in his book, Philosophical Foundations of Physics. In Chapter 24, "Correspondence Rules", Carnap takes up the question: what is an electron? He does so because "it is the kind of question that philosophers are always asking scientists"(29). He then stages that, with respect to things that cannot be observed directly (such as electrons), our knowledge of them can only be presented in terms of theoretical laws. These laws are related by correspondence rules to observations we can make directly. In the discussion which Carnap provides of these correspondence rules, there is nothing mysterious. It is true that a young child might find it mysterious that, while its question, What is an elephant? can be answered by its being taken to see an elephant, an equivalent answer cannot be given to the question, What is an electron? But if that young child is provided with an education in physics; i.e., if it is led through and subsequently masters the rules governing the use of the abstract concepts which we call mathematics, then the mystery disappears. Only one proviso is needed. The apparent mystery lies in the world outside the individual; the rules governing the manipulation of concepts in mathematics are inside. If we can associate a mathematical concept, for example a number, with an event (i.e., something outside us), and can do so without ambiguity, then we can explain the events (i.e., we can draw up general statements which allow us to predict their behaviour).(30). But that is simply to say that, as long as we limit science to things we can measure, we have no problems. Exactly. Our problems begin when we assert that everything can be measured.

It thus turns out, not merely that that assertion is an assumption, but also it is an assumption that introduces immense difficulties in all philosophical systems which rest upon it (or at least in all that have been constructed so far). When we limit science to the study of things that which can be measured, the difficulty of relating empirical observations to theoretical concepts is

one which repeated experience reduces to triviality.

### Alternative Grounds for the Establishment of Justice

Having now satisfied ourselves that, in our efforts to establish principles upon which a system of justice can be erected, we may have to deal with things which cannot be measured, let us proceed to that task.(31).

The task turns out to consist of making a choice between two alternatives. We can take society as the norm; in that case we accept that principle which is recognized by some such name as the "common good" as fundamental, and our system of justice will be devoted to bringing it about. Alternatively, we can take the individual as the norm. There is no doubt that, at least throughout the period known to us from written records, we have, collectively, tended to choose the former. For convenience, I shall call this the societist choice, and the principle on which it rests the societist principle.

### The Societist Principle

Although there has been great variation in the detailed organization of the political/social groups organized on the societist principle, certain characteristics are found in all of them, if in varying degrees. Of these characteristics, probably the most truly fundamental, in the sense that it underlies the others, is that of judgement. The worth of every individual is assessed in terms of the contribution made by the individual to the group. Those who make great contributions are deemed to be important; those who have done little occupy the lower ranks of society. In other words, the effect of judgement is to create ranks of social status.(32).

So far we have considered only variations in the extent to which individuals contribute to society. It is also possible for individuals to behave in ways which harm society. As a general rule we recognize two classes of such people. First, there are out-siders; those who live in other groups and are hostile to us. If they fall into our hands, their lives are forfeit (at least in principle; if we do not kill them, it is because we are merciful; no legal obligation restrains us). Then there are the criminals within our own ranks. With respect to such people, most societies distinguish between

major and minor wrong-doers. Those who harm society in only a minor way are punished, but they are not excluded from the group altogether. Those who commit serious crimes are thrown out of the group. Sometimes this is done by sending them literally into exile; in other societies they are executed; elsewhere, usually where toleration is held in esteem, they may be sentenced to what amounts to exile within the country; i.e., they are sent to prison.

### Shortcomings of the Societist Principle

Although it is difficult to find examples of societies (construing that word so that it has political overtones) which are not based on the societist principle, criticisms have been brought against that principle. Three will be considered here.

To understand the first two, it is first necessary to consider the role of power in the solution of problems. It will be remembered that the second assumption on which this discussion is based is that we can obtain a satisfactory understanding of human beings by looking on ourselves as organisms who have to solve problems in order to live. To be able to solve a problem, an individual must have the power to do so. It would be hard to deny that that statement has a plausible ring to it. If we take it to be true, then, if, at some point in time, some problem defies solution, it would seem that to seek for additional power would be the logical course of action. Whether because of the logic or for some other reason, there is no doubt that many members of our species have adopted this strategy. Let us consider the consequences which flow from this choice when the problem to be dealt with is the second of the three we face; i.e., other people.

To solve the problem they present, I seek more power. The more successful the strategy is, that is the more powerful I become, the greater is the threat I present to other people. For if power in myself is good, power in others is dangerous. But that is true for all. So, the more powerful I become, the more enemies I make; and the more enemies I make, the more probable becomes my final defeat. Moreover, even if I remain undefeated, I shall spend more and more time and effort keeping other people "in their place". The choice of this strategy leads to Hitler, Stalin, or failure. Happily for our fellows, most of us end as failures.

What a splendid situation: the societist principle is only tolerable because we cannot make it work!

The second difficulty with the societist principle is also concerned with power. Man does not live by bread alone; we need a vision to guide us.(33). Because it is the least restrained by mundane reality, the visions we have created with respect to the nature of the third problem provide the clearest evidence as to our basic understanding of ourselves and the world in which we live.

It is necessary to deal with a side issue at this point. There are, currently, two widely held opinions on the nature of religion. There is the traditional view that we are religious because God exists; the alternative is to suppose that religion is as much a product of evolution as our physiology. Reflection suggests that the second view is not logically incompatible with the first, there being no logical objection to the supposition that God should preside over, or permeate, an evolving universe. As a philosopher, I am agnostic with respect to these three views. If there is a God, it seems to me that God has left it to us to make sense of our lives. To put it in other words, God is, presumably from intention (or indifference) a veiled God. Acting on the assumption that that is the case, it seems to me necessary that we explore the non-theistic hypothesis to the limit. In what follows, religion is therefore presented as part of the explanation we have provided for ourselves as to why the world is the way it is.

When we consider the religious beliefs which have flourished in societies with a clear, deeply-entrenched, hierarchical organization, we find that men are privileged by comparison with women. Is this surprising? Our understanding of reality is based on experience; it may therefore be assumed that we interpret the nature of non-material reality on the basis of our experience of the structure of the material world, as we experience it. In the latter sphere, men are dominant, we need look no further than their relatively great muscular strength. It is not that strength in isolation which is the critical fact, however. Rather, what is critical is that the fact of greater strength is taken as symbolizing the greater worth of the male sex. It is important to understand that, in this context, symbolizing carries the meaning of "demonstrating beyond possible doubt".

At the level of explicit rationality, this statement is absurd,-- but few would assert that we human beings are guided in our behaviour exclusively by principles of explicit rationality.(34).

To put the situation in summary form, we can make the following observations:

- 1) With extremely rare exceptions, all societies are hierarchical.(35).
- 2) In all hierarchical societies, women suffer some discrimination vis-a-vis men.
- 3) In all hierarchical societies, there is a rationalization for the privileged position of the males.
- 4) In all hierarchical societies the rationale is grounded in some assertion that men have a greater capacity for wielding that particular type of power which is related to the central values of the society in question than do women. In pre-industrial societies, where the central values were explicitly religious, women were barred from the priesthood. In societies where the central values are associated with some mixture of political and economic roles (whether liberal/free-enterprise, or socialist/state-organized) women are effectively prevented from occupying positions where the decisions with respect to these roles, at least insofar as they affect the whole society, are made.
- 5) Perhaps most significant of all, -- in all hierarchical societies, women are barred from taking a leading, and in many cases, even an active role in sexual relations (inert passivity is the classical role, of so far as sex is concerned, of the "good" woman in hierarchical societies. The "bad" woman pays for her sexual liberation by having to accept a position on the margin of society; she has no rights before the law; and if her "protector" throws her over, she becomes an outcaste.(36).

It is my conviction that the discrimination suffered by women is a consequence of the system of values which is also responsible for the existence of the hierarchical organization of society.

The third difficulty with the societist principle lies in its inability to provide objective norms of justice for the members of societies organized on the basis of that principle (over and above the case of women which has just been dealt with). This inability takes both of two forms. When two societies are at war and one is defeated, the members of the defeated party have no protection from any acts of injustice wreaked on them by the victors.

"Justice" depends upon the chances of military success, not objective norms.

Even more striking is the inability of a hierarchical society to provide justice to any members who do not belong to the dominant element within it. This defect of all hierarchical societies is a logical consequence of making the needs of society as a whole the norm of justice. Unless every individual member of a society shares in the values adopted by all the others, then that individual who does not is liable to suffer when he or she acts in accordance with their own personal values. Both history and current events give no encouragement to either the notion that the values of a society will be shared by all, or that those values which are embodied in the system of justice actually in effect deserve to be called objective.

#### The personalist principle

According to the personalist principle, it is the individual who matters. There is no way in which one individual can be said to be more important than another in any fundamental sense. Judgement is impossible.

At first sight, the last observation suggests that the principle cannot be made to work in practice. Any attempt to introduce it would seemingly lead to the abandonment of all judicial procedures; there would be no restraint upon crime, and society would quickly slide into lawlessness and anarchy. On close examination, however, this conclusion proves to be emotionally plausible rather than logically necessary. It rests on the assumption that we cannot distinguish between the doer and the deed. As personalists, we can still judge actions, and we can still condemn cruel, arbitrary, and unjust behaviour. Nor are we compelled to allow an individual who has brought harm to some other person to go free once their action has been judged as wrong.

The question of how we should deal with an individual who has been found to have acted wrongly must be set aside for a moment. It is necessary to deal first with another question which has been lurking close to the surface of the discussion, but which has never emerged openly. It will be recalled that it is assumed, in this paper, that human behaviour can be analyzed effectively by being considered to be the consequence of the effort to solve problems, with the problems being those perceived subjectively by the individual responsible for the behaviour. The question must now be faced: Has there been any implicit assumption made in this paper with respect to the processes involved in the making of decisions? More specifically, has there been an unrecognized assumption on the part of the writer that individuals possess free will?

The question must be faced because, once it had been established that there was an apparent incompatibility between the belief that all behaviour is

determined by conditioning or genetic endowment, on the one hand, and the administration of objective justice, on the other, the latter topic was taken up. That certainly seems to imply that an alternative to determinism is being given at least provisional recognition.

Strange as it may seem, however, that is not necessarily the case. How can that be? Is it being suggested that there is some third alternative; can individuals not be fully determined without necessarily possessing free will and, if some third alternative is not being suggested, how can the writer justify his apparent determination to ride on both sides of the fence?

It is the last question which comes closest to being the right one. I do not know whether we are fully conditioned, or whether we possess free will; and I do not know because the evidence is compatible with both hypotheses. To understand how this can be, it is necessary to know something of the findings of research in the fields of cybernetics.

#### The Findings of Cybernetics.

By way of introduction, I want to give credit to Gordon Pask's book, An Approach to Cybernetics, which is the principal source of what follows. To begin, let us consider what is meant by the term system. Pask's two paragraphs on this topic are too mathematical to satisfy most potential readers of this paper, so I will turn elsewhere for definitions. One writer has stated that "a system is a set of objects together with the relationships between the objects and between their attributes".(37). Another writer has defined a system as "any set of attributes and the history of that set of attributes"(38). It is clear from these definitions that the concept referred to by the term system is very general; it seems that almost everything is a system. With one proviso that is, indeed, true. The proviso is that a system only exists where there is organization; the parts have to be not merely associated together, but processes of inter-relationship must be taking place. Separate objects flung together in a heap do not form a system.

Although the diversity of systems is very great, Pask identifies three categories to which all belong: state-determined, Markov, and self-organizing. The first are so called because the state of such a system a short while in the future is wholly determined by its present state. The example of such a system which is commonly given is that of a kettle full of water on a hot stove. The kettle is on the point of boiling. Providing that the system is not disturbed, the kettle will be boiling in a moment. The future behaviour of such systems is both completely and exactly predictable.(39).

Markov systems differ from the state-determined variety in that, while their future behaviour can be completely predicted, exact prediction is not possible.(40). This may seem paradoxical at first sight, but if a spinning



coin is considered, it will be seen that, while we can say that, when it stops spinning, it will show either a head or a tail, we cannot say with certainty which it will show. It will also be noticed that in the case of the spinning coin, the probability of either event happening can be calculated. This is always true of Markov systems.

It should be noted that, if we had enough information, we could treat Markov systems as complex state-determined systems. In the case of the spinning coin, for example, if we knew the exact position of the coin at some point in time, the distance the coin had to travel before it came to rest, the time it would take to complete its flight, and the rate at which it was spinning, then we could predict whether it would show a head or a tail. Thanks, however, to the power of the mathematical analysis of probability, it may well be sufficient for practical purposes to treat the system in its Markov form. In other words, knowing the probability of any given outcome is good enough.

The most distinctive feature of a self-organizing system is that it shows changes in its pattern of behaviour.(41). This means that its future behaviour is neither completely nor exactly predictable. If such a phrase were used in everyday conversation, we would normally assume that the system being referred to must possess free will. That such is not necessarily the case can be seen from the consideration of a single example of a self-organizing system.

The system in question is that of all living organisms on earth a thousand-million years ago. If observers, similar to ourselves in all respects but with an Eighteenth-Century view of natural behaviour, had arrived then at planet earth with the mission of describing the living organisms of the planet and their future prospects, we can reasonably suppose that their report would have contained the following points: the living organisms of the planet are to be found only in the sea; they are not complex, though there is a distinction between the most simple, or single-celled organisms, and others which are more complex structures; their behaviour seems to consist of the ingestion of the nutrients necessary for continued growth and activity, the excretion of the by-products resulting from the chemical exchanges in such growth and activity, and multiplication (i.e., the appearance of new individuals) through division; future -- a continuation of the present, with the possibility of an increase in numbers to the limits set by the volume of the earth's water-surface.

Given such a report, we can imagine the surprise of successors returning 900 million years later, in the age of the dinosaurs. Not only have very complex organisms appeared in the seas, with a great range of activity

(including such remarkable features as sexual reproduction), but other organisms have left the sea and are thriving in the highly different environment of the earth's land-surface. If asked to make predictions about the future of this system, our observers would presumably be extremely cautious. They might, for example, point out that at the time of their observation, the larger forms of mobile terrestrial life were confined to tropical latitudes because the body temperature of such organisms is the same as that of their environment, and the amount of physical activity necessary to maintain life and reproduce the species is only possible when their body temperatures are those found in the tropics. On the other hand, given the evolution which had already occurred, the possibility of animals developing which could flourish in cool environments could not be discounted. But to say that it could happen is not to say that it will, much less to say what form it will take if it does.

Such academic caution would of course, have been justified by the events of the last hundred-million years. Not merely have the mammals appeared, which are able to maintain their bodies at an almost constant temperature, irrespective of the environment, providing only that the latter does not vary too greatly from the normal, but they have a variety of heat-conserving mechanisms: fur, fat, feathers, and in the case of ourselves, clothes. In addition, we ourselves have gone further and have learned to change the temperature of relatively large parts of the environment to that which suits us best (relatively large when compared with our bodies, that is).

While almost every aspect of evolution suggests interesting trains of thought, the one which is of specific interest here is the basic mechanism of change which enables the whole process to take place. While this mechanism is still far from fully understood, it is clear that the changes which occur are not purposive. That is to say, they do not take place because problems exist which they are intended to solve. They are simply changes. And in many cases they are changes for the worse, at least in the sense that the new element disappears quickly from the population of living organisms. Some changes, on the other hand, do result in individuals who are better equipped to survive in competition with other individuals.

The conclusion that we draw is that, where change is constantly taking place in a population, with new types emerging, some of which survive, and where no individual escapes the possibility of change, the overall character of the population in question will itself change over a period of time. To this change, we have given the name evolution. (42).

In summary, self-organizing systems are capable of showing behaviour which is unpredictable and which appears to be purposive, without there being any

question of the system being endowed with free will. It should also be noted that, at least in theory, self-organizing systems are reducible to sub-systems of the Markov form, in much the same sort of way that Markov systems can be reduced to their state-determined components.

The case for total determination seems to be unshakable.

The matter is not that simple, however, as the following conclusion reached by two of the pioneers of cybernetics shows. As reported by Pask, they were able to show that

"plausible networks of...formal neurons (a formal neuron is a construct, depicting the least set of properties which a real neuron, a constituent active cell of the brain, could possibly possess) were automata capable of many gambits, such as learning, the elaboration of gestalten and the embodiment of universals". (43).

We are left with no alternative but to conclude that the evidence we have as to the nature of the organism we refer to as an individual human being is ambiguous; we may have free will, - or we may only seem to have. On the other hand, it is reasonable certain, not merely that we are capable of behaving in ways which it is meaningful to call purposive (we breath, drink, and eat in order to maintain bodily health), but also that our brains are capable of creating objectives which can become the goals of our behaviour even though these goals (e.g., the provision of justice) may not exist until we achieve them.

This leaves one problem left from the earlier discussion of justice. At that time it was said that, if we worked on the assumption that all behaviour is determined either by conditioning or genetic endowment then we could not have a system of justice which would be objective (p. 11, above). It now seems that the deterministic assumption is not incompatible with justice. Which of these conclusions is the correct one? I think that the answer is that, even if our behaviour is fully determined, no system which provides justice will come into existence unless our determined behaviour leads us to treat individuals as though they were, at least potentially, capable of acting freely.

#### Justice and the Personalist Principle

This brings us, once again, to the question of the possibilities of providing justice on the basis of the personalist principle. It will be recalled from our earlier discussion that, once the objection that the adoption of this principle would lead to narchy, had been refuted, the question became one of how we should deal with individuals who had been found to have acted wrongly.

We can answer this question by drawing on one of the best attested findings of sociology. This finding can be expressed in the following phrase: within a group, the behaviour of individuals tends to regress towards the mean. In everyday English this means that, when a number of individuals join together to form a group, it will be observed that, at first, their patterns of behaviour tend to differ fairly widely, one from another; however, as time passes, those elements of the pattern which have most in common tend to be repeated more frequently, while those which are most different tend to be given up. In summary: the individuals, conceived of as patterns of behaviour, become more and more alike.(44).

If we take it to be a fact that wrong acts are the exception, then the way to discourage their repetition is to take those who commit them, and have them absorbed, separately, within well established and resilient groups whose patterns of behaviour are those deemed to be desirable.

The interesting thing to note here is that, in our society, we do the opposite: i.e., we take people convicted of serious crime, and put them together in isolation from the rest of society. In other words, we give them the opportunity to form a group. The result is predictable; the members of this group reinforce, if not the patterns of behaviour themselves (it is difficult to break and enter when incarcerated in gaol), then the attitudes which lie behind the behaviour. Given the validity of the sociological research which has been formulated in the phrase, individuals regress towards the mean, it is scarcely surprising that crime is on the increase in our society.

#### CONCLUSIONS

The history of science provides us with a model. The reality of the world does not conform to the image of naive self-evidence. From the latter perspective, the real world seems strange and full of paradoxes. Despite this appearance, however, there is a structure to reality. In the realm of matter, we have not only learned that we can, if we wish, take advantage of that structure, we have also learned to do that with some readiness. Long ago we learned that we could reach the East by sailing West. More recently, we have learned that we do not live in rectangular, three-dimensional space where parallel lines never meet, but rather, we live within the curvature of space-time where self-evident certainties prove to be merely assumptions which, though useful when taken as the basis of restricted analysis, become, when raised to the status of Absolute Certainty, the walls of a prison which prevent us from exploring the world of reality.

It seems to me to be beyond reasonable doubt that one of the findings of scientific research which can help us make deeper contact with reality is that there is a dimension to reality where measurement is futile. The point where this non-material dimension of reality makes contact with those of the measurable world lies in the individual human being.(45). It is for this reason that people are not simply things to be measured and manipulated.

I cannot prove that human beings are capable of accepting responsibility for their own actions, and, by voluntary intention, choosing to work in co-operation with others in free and equal association with them. Nor do I say that it is easy for people to take on this responsibility. Indeed, the very fact that our immediate perception of reality is that of the societist means that each individual starts, as a child, as their own worst enemy. But I do believe these things.

The imagery of Lewis Carroll is correct in terms of the initial psychological structure of the human person. The only way in which his portrayal of reality fell short of the situation in which we find ourselves lay in presenting the looking-glass world as being on the other side of the mirror. It is in our common-sense world, the one where order prevails in society because governments enforce laws made for the good of society, that, every time we set out to achieve some objective thought to be in the best interests of all, we find ourselves being carried inexorably further and further from the order, security, peace, and happiness, for which we long.

## REFERENCES

1. Bertrand Russell, A History of Western Philosophy, New York, 1945, p.613.
2. It should be noted that this way of identifying presuppositions is not new. According to K. R. Popper, Parmenides, whom Popper calls the father of theoretical physics, argued "roughly as follows:
  - (1) Only what is, is.
  - (2) What is not does not exist.
  - (3) Non-being, that is, the void, does not exist.
  - (4) The world is full.
  - (5) The world has no parts; it is one huge block (because it is full).
  - (6) Motion is impossible (since there is no empty space into which anything could move)."Popper continued: "The conclusions (5) and (6) were obviously contradicted by facts. Thus Democritus argued from the falsity of the conclusion to that of the premises:
  - (6') There is motion (thus motion is possible).
  - (5') The world has parts; it is not one, but many.
  - (4') Thus the world cannot be full.
  - (3') The void (or non-being) exists."(Karl R. Popper, Conjectures and Refutations, London, 3rd ed., 1969, pp.80-81).
3. Popper, the same, Chapter Three, "Three views concerning human knowledge", pp. 97-119: originally published in Contemporary British Philosophy, 3rd series, ed. H. D. Lewis, 1956.
4. It was Popper's assertion that "we are not students of some subject matter but students of problems", (Conjectures and Refutations, p. 67) that set in motion the trains of thought which led ultimately to the choice of the second assumption as it appears in this paper.
5. The assertion that there are three types of problems is not, in itself, novel. It is novel, however, at least so far as I know, to suggest that they can have a role to play as assumptions in a philosophy.

Among those who have said, at least by implication, not merely that there are three kinds of problems, but have done so in terms which suggest that their problems are the same as those presented in this paper are the following.

  - 1) David Bidney, Theoretical Anthropology, New York, 1953. Bidney argued that "in addition to material artifacts...there are conceptual symbols, or 'mentifacts', comprising language, traditions, literature, and moral, aesthetic, and religious ideals, as well as the various intellectual instruments of scientific research which are valid and objective for the mind which conceives them and reflects upon them as mental phenomena. There are also the social norms and organizations, which we may call 'sociofacts' and which serve to regulate the conduct of the individual within society, as well as the society as a whole in relation to other societies." (p.130).

The triad of artifacts, sociofact, and mentifact was adopted by Julian Huxley as "convenient terms" ("Evolution, cultural and biological", Yearbook of Anthropology, New York, 1955, p.3), and he saw them as constituting the principal components of culture.

Quite recently, Wilbur Zelinsky attributed the "tripartite classification into artifacts, sociofacts, and mentifacts" to Huxley (The Cultural Geography of the United States, Englewood Cliffs, New Jersey, 1973, p.73). We should also note, however, that Bidney himself gives credit to E. E. Eubank, Concepts of Sociology, New York, 1932, as the source of the triple classification (Bidney, p.27). Whether Eubank in his turn gave credit to an earlier author remains to be established.

- 2) Geoffrey Vickers, Value Systems and Social Processes, Harmondsworth, Middlesex, 1970 (first published by Tavistock Publications, 1968). Vickers refers to technological, political, and cultural problems as all requiring solutions if the British people are not to be overwhelmed by catastrophe (p. 73).
6. Here we run into an apparent difficulty. As Popper comments in his paper on the three views concerning human understanding, already cited, the second, or, as he calls it, instrumentalist view is accepted by virtually all orthodox Western scientists (Popper, Conjectures and Refutations, pp. 97-100). The result is that all quotations taken from orthodox authorities as to the nature of science tend to carry overtones of the instrumentalist point of view. This might lead some readers to the conclusion that these quotations involve me in inconsistencies. This is not so because, in this section, I am concerned with the procedures of science; and with respect to procedures there is no difference between Popper and the instrumentalists; it is in their presuppositions, as they would both agree, that they differ.
7. G. A. Lundberg, Foundations of Sociology, New York, 1939, pp. 54-55. The footnote which Lundberg placed in the middle of the long paragraph I have quoted provided for the citation of his sources. It is a long footnote containing a discussion of the views of several authorities, including Albert Einstein. The chief source, however, is P. W. Bridgman, The Logic of Modern Physics, New York, 1932.
8. F. S. C. Northrop, The Logic of the Sciences and the Humanities, New York, 1947.
9. The same, p. 117.
10. The same, pp. 129-130.
11. The same, p. 128.
12. The same, pp. 128-129.
13. The same, p. 130.
14. The same, p. 131.
15. H. M. Blalock, Jr., Social Statistics, New York, 1960, p. 10.
16. A. Barnett, The Human Species, Harmondsworth, Middlesex, 1961, p. 122.

17. See, for example, M. C. Jones, "A laboratory study of fear: the case of Peter", in D. K. Candland, ed., Emotion: bodily change, New York, 1962, pp. 91-99. This paper originally appeared in Pedagogical Seminary and Journal of Genetic Psychology (now the Journal of Genetic Psychology), 31, 1924, pp. 308-315. Even more striking is the report by Julius Horwitz of a study carried out by the New York City Youth Board on juvenile delinquency. The Board was impressed by some research of Sheldon and Eleanor Glueck of Harvard University on the causes of this form of crime. The Gluecks had claimed that the development or non-development of delinquency in boys could be forecast on the basis of studies made of them when they were 5 to 6 years old. In particular, they claimed that such developments were determined very largely by five factors in the milieu of the child. The five factors were:
  - 1) The discipline maintained over the boy by the father.
  - 2) The supervision of the boy by the mother.
  - 3) The affection of the father for the boy.
  - 4) The affection of the mother for the boy.
  - 5) The cohesion of the home.

In 1952, the Youth Board studied 301 boys and assessed their milieu in terms of the Gluecks' factors. They then made the following predictions: 33 boys would become delinquent within the next ten years, 243 would not become delinquent, and with respect to the remaining 25, there was an even chance of them becoming delinquent. In the next ten years 28 of the first group became delinquent, 236 of the second group were never delinquent, and of the last group 9 became delinquent. Even in the case of the last group, where the predictions were least accurate, 72% of them were correct. In the case of the 243 individual boys who, it was predicted, would stay out of trouble, the predictions were right in 97% of the cases (J. Horwitz, "Arithmetic of Delinquency", New York Times Magazine, January 31, 1965, pp. 12-13ff).
18. The idea that we would be tempted to jump from a single observation to a general conclusion is one of the central elements in Karl Popper's view of human nature. He tells the story of how the idea came to him in "Science: conjectures and refutations" (Chapter 1 of Conjectures and Refutations, pp. 33-46. This chapter was first published as "Philosophy of science: a personal report", in C. A. Mace, ed., British Philosophy in Mid-Century, 1957).
19. J. Maringer, The Gods of Prehistoric Man, New York, 1960, pp. 3-11, provides support for this contention.
20. P. Caws, "Scientific method", in P. Meadows, ed., Encyclopedia of Philosophy, New York, 1967, Vol. 7, pp. 339-343.
21. J. R. Platt, "The fifth need of man", Horizon, 1(6), 1959, pp. 106-111. This paper was later reprinted in J. R. Platt, The Excitement of Science, as Chapter Five; see especially pp. 64-65), Boston, 1962.
22. The following three quotations represent Wheatley's key statements on this point:
  - 1) Despite the possible bias inherent in the nature of the evidence... the combined testimony of archeology, epigraphy, mythology, literature, representational art, and either extant or recorded architecture leaves no room to doubt that religion provided



the primary focus for social life in the immediately pre-urban period", (Paul Wheatley, The Pivot of the Four Quarters, Chicago, 1971, p. 302).

- 2) "It needs no further emphasis beyond that provided in previous sections of this chapter to establish that the earliest foci of power and authority took the form of ceremonial centres, with religious symbolism imprinted deeply on their physiognomy and their operations in the hands of organized priesthoods" (the same, p. 303).
- 3) "Whatever may have been their antecedents, early in the process of urban generation priestly hierarchs came to assume the roles of economic administrators, and gathered into their hands control over emergent superordinate redistributive instruments" (the same).
23. The denial of the gap is exemplified by the following statement: "The new attitude toward a concept is entirely different. We may illustrate by considering the concept of length: what do we mean by the length of an object? We evidently know what we mean by length if we can tell what the length of any and every object is, and for the physicist nothing more is required. To find the length of an object, we have to perform certain physical operations. The concept of length is therefore fixed when the operations by which length is measured are fixed: that is, the concept of length involves as much as, and nothing more than, the set of operations by which length is determined. In general, we mean by any concept nothing more than a set of operations: the concept is synonymous with the corresponding set of operations (emphasis in the original) (P. W. Bridgman, The Logic of Modern Physics, New York, 1927, p. 5).
24. This, if we follow Blalock, is the position taken by Northrop (see, p.11 above). Blalock's own position is less clear. On the one hand, he seems to follow Northrop when he says categorically that any "actual test is made in terms of the concepts as operationally defined. Propositions involving concepts defined theoretically are therefore not directly testable" (Social Statistics, pp. 10-11). On the other hand, Blalock also went on to discuss the problem, which is a common one in the social sciences, of what to do when there is no agreement on the operational definition which should correspond to a given theoretical definition. He concluded: "We may then say that to the extent that these several procedures yield different results...the theoretical definition is unsatisfactory" (the same, p. 11). But is it possible to argue from the operational to the theoretical definition without putting them "in the same proposition", and so running foul of Northrop's prohibition? If it is not possible, then Blalock is caught in a logical inconsistency.  
  
For the moment we will leave Blalock and his problems, but we will return to them in footnote 30.
25. Popper, Conjectures and Refutations, p. 357. The statement originally appeared in "Utopia and Violence", The Hibbert Journal, Vol. 46, 1948.
26. Norbert Wiener, The Human Use of Human Beings, New York, 1954, p. 193.
27. The same.
28. The same.
29. Rudolf Carnap: Philosophical Foundations of Physics, New York, 1966, p. 234.

30. It may occur to those who have read either Henry Margenau, Open Vistas, New Haven, Connecticut, 1961, or P. Van Duijn, "The interaction of theories and experiments in science", in S. Dockx and P. Bernays, eds., Information and Prediction in Science, New York, 1965, that I accept the account of the way in which human beings organize their ideas about reality which is provided in those two works. As a matter of record, I have not read the works in question, but got my knowledge at second hand from Ronald Abler, J. S. Adams, and P. Gould, Spatial Organization, Englewood Cliffs, New Jersey, 1971, pp. 3-22. It is at this point that we can revert to Blalock and the problems he had in relating theoretical and operational concepts (footnote 24, above). We can see that, in those instances where it is possible to assign numbers to the events of human behaviour, then Carnap's correspondence rules allow the two to be related in a way which will command assent, but where measurement is not possible, then agreement, if it is achieved at all, will be a voluntary response.
31. Some will note that, if science itself must rest on faith, then it is no cause for despair that we will start our search for a system of justice with nothing more certain than the hope that such a system may exist, as our starting point, and Popper's faith in human beings to guide us.
32. It is, of course, a historical fact that in many societies status is, in large part, inherited, and is not created de novo by explicit judgements. That does not alter the relationship however: - it is still true that those whose position in society indicates that they should be providing great services to the state who occupy positions among the elite, whether they provide those services or not. The fact that a man is born to be king has not, as a general rule, been regarded as good grounds for withholding from him the public esteem which is bestowed so lavishly on those who provide leadership. Individuals are confused inextricably with the offices they occupy. In the same way, the fact that some have been born to slavery (or to some other semi-outcast state of life) has rarely been regarded as any justification for that inability to make the contributions befitting a free individual which keeps them bound to that station in life "to which God has seen fit to call them". It seems that, in societies where status is inherited, the act of judgement is taken over by each individual as an attitude acquired in early life and never subsequently questioned.
33. Or, to use the jargon of the social scientist, the individual needs a reference frame provided by an attitudinally oriented operational environment within which his decision making activities can be located if his activity is to result in decisions which achieve the threshold of existential meaningfulness necessary for the decisional process to be operationalized in overt behavioural output.
34. Mary Douglas, in her study of the concepts of pollution and taboo, reached the conclusion that "many ideas about sexual dangers are better interpreted as symbols of the relation between parts of society, as mirroring designs of hierarchy or symmetry which can apply in the larger social system" (M. Douglas, Purity and Danger, Harmondsworth, Middlesex, 1970, p.14). It is true that the sexual dangers to which she was referring were those presented by sexual fluids, rather than to the threat which men and women pose to one another as total personalities, but if society is to be a hierarchy based on power relations, then the greater physical strength of the male acts as an immediately obvious symbol of the greater power which one sex or the other must possess (or the

hierarchy will lose its structure). In the absence of some other counter-vailing source of power which would give the female the pre-eminence, the biceps will do. It is also true that the religions which were the focus of Douglas's attention were the ones we refer to as primitive. The use of the term primitive tends to suggest that the findings of her study need not necessarily apply to "advanced" cultures. It is vital that we recognize that in this context, the word primitive is a carry-over from the Nineteenth century. The distinction which is made in this paper between the three forms of problems was not made one-hundred years ago. At that time, the progress which had been made in solving the problems set by the physical environment was taken to be evidence for an advance in "civilization", to use the word beloved by the Victorians themselves. It is much less obvious to us than it was to them, that we who live in the giant sprawling cities of the Western world do a better job at regulating the relations which prevail between either individuals or social groups than did people of other times and places. In the realm of values, too, many of us are cautious now about claiming superiority for any one set, even our own. So it may be that rules of pollution and taboo (very much including those governing the ways in which the sexes relate to one another) are to be found in our own societies.

35. I do not think that anyone will challenge this statement, but if they look for my authorities, they lie chiefly in the commonly known fact that all civilizations, whether occidental or oriental, ancient or modern, have been hierarchical in form. If there are any exceptions, they are to be found among the people we call primitive. Possible examples are the Bambuti (Colin M. Turnbull, The Forest People, New York, 1961), the plateau Shoshone, and perhaps the Eskimo (properly called the Inuit) (Peter Farb, Man's Rise to Civilization..., New York, 1968), and The Semang (C.D. Forde, Habitat, Economy and Society, London, 1934). Forde also provides descriptions of the Eskimo, the Paite, who were neighbours of the Shoshone, and of the Bushmen of the Kalahari who also seemed to have lived in a society which had no clear hierarchical form.
36. The plite word used by our Victorian forefathers was demi-mondaine; we even had to borrow a word from outside the language in order to refer to the inhabitants of this world which lay in shadow beneath our own.
37. A. D. Hall and R. E. Fagen, "Definition of a system", General Systems, 1, 1956, p. 18.
38. N. P. Moray, Cybernetics: Machines with Intelligence, London, 1963, p.38.
39. Pask's actual words are "a behaviour is state determined if an observer, knowing the state at  $t$ , is able to predict the state at  $t + 1$  with certainty" (An Approach to Cybernetics, p.28). Pask gives as his principal source the work of Ross Ashby, whose Introduction to Cybernetics, New York, 1956, should be consulted. The use of the distinction between complete and exact prediction was made by Moray, following Pask.
40. An Approach to Cybernetics, pp. 42 - 45.
41. Self-organizing systems are introduced on p. 47 of An Approach to Cybernetics, but they form the subject of the rest of the book.

42. For an up-to-date account of the processes which have brought about biological evolution see Ernst Mayr, Population, Species, and Evolution, Cambridge, Massachusetts, 1970. A less technical but still scientifically acceptable account will be found in G.G. Simpson, The Meaning of Evolution, New Haven, 1949.
43. Pask, An Approach to Cybernetics, p. 13. The sources cited by Pask were (a) W. Pitts and W. S. McCulloch, "How we know universals, the Perception of Auditory and Visual Forms", Bul. of Math. Biophysics, 9, 1947, and (b) the same, "Logical Calculus of ideas imminent in nervous activity", Bul. of Math. Biophysics, 5, 1943.
44. It would be only a moderate exaggeration to cite the whole of the six-hundred and some pages of Bernard Berelson and G. A. Steiner, Human Behaviour, an Inventory of Scientific Findings, New York, 1964, in support of this observation. Almost the last paragraph of the book contains the following statements: "So behavioural science man is social man - social product, social producer, and social seeker - to a greater degree than philosophical man or religious man or political man or economic man or psychoanalytic man - or the man of common observation and common sense, for that matter. Our man seeks virtue through reason far less than he seeks approval through the public around him;...he is less concerned with the exercise of power than with his relations with those who are powerful...; he seeks acceptance and the good view of the community more than he seeks economic power or political power or economic riches... The traditional images of man have stressed, as prime motivating agents, reason or faith or impulse or self-interest; the behavioural science image stresses the social definition of all of these. Here, the individual appears less 'on his own', less as a creature of the natural environment, more as a creature making others and made by others" (Human Behaviour, p. 666). Of the 1045 findings which Berelson and Steiner present, the one which summarizes the point under discussion here most concisely is the following: "The more people associate with one another under conditions of equality, the more they come to share values and norms and the more they come to like one another" (the same, p. 327).
45. This is why contemporary social science tends to be deeply frustrating for those who practise it. If they are to be scientific, they must measure; but those aspects of human nature/behaviour which can be measured most precisely turn out to be ones which are trivial, superficial, or irrelevant. In the words of the two men who recently compiled an inventory of the findings of the behavioural sciences with respect to human beings and whom I have already cited in the previous footnote, "as one reviews this set of findings, he (sic) may well be impressed by another omission perhaps more striking still. As one lives life or observes it around him (or within himself) or finds it in a work of art, he sees a richness that somehow has fallen through the present screen of the behavioural sciences. This book for example, has rather little to say about central human concerns; nobility, moral courage, ethical torments, the delicate relation of father and son or of the marriage state, life's way of corrupting innocence, the rightness and wrongness of acts, evil, happiness, love and hate, death, even sex" (Berelson and Steiner, Human Behaviour, p. 666). If our mediaeval forefathers were led by the straight-jacket of scholasticism to dispute over the number of angels who could dance on the head of a pin, it seems that we too, in our own way, allow numbers to come between us and the problems which trouble us most deeply.