

The State of the Question, Past, Present, and Future

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WE HAVE so far envisaged in formal and abstract terms a three-sided controversy about the difference of man. We have seen that there are three possible answers to the question about how man differs from everything else on earth. What are the criteria for judging the relevance and probative force of the evidence or arguments that are offered in support of each of these three answers? What is required in the way of evidence and arguments to resolve the question, or at least to approach a resolution?

Since we are concerned with the difference between man and other things, evidence to be relevant must be comparative; that is, it must involve observations of human and animal behavior, or of human and machine behavior. In order to be comparative, the evidence must be objective or public; it must consist exclusively of what can be observed about the external or overt behavior of the objects being compared. In other words, man must be treated as an object to be studied by the observation of his external or overt behavior in exactly the same way that other animals or machines are objects to be studied.

This excludes from consideration all evidence drawn from man's reflexive study of himself as a subject rather than as an object. Even if such evidence, drawn from elements common to

man's self-consciousness, has the character of being inter-subjective, it is still irrelevant for the simple reason that it is not comparative. Much contemporary philosophical writing about the nature of man—that of the existentialists and the phenomenologists as well as that of more traditional philosophical sects, such as the Kantians and the Thomists—appeals almost exclusively to such reflexive or subjective evidence, consisting of what men universally discover about themselves from self-consciousness or close examination of their interior life. Evidence of this type would be relevant to the question of man's difference only if we had similar and comparable evidence from other animals and from machines. We do not at present have such evidence; and we cannot beg the question by assuming that it is unobtainable because it does not and cannot exist.

I am not saying that reflexive or subjective evidence is totally without significance. My sole critical point is that such evidence can have no bearing, probatively, on the comparative question with which we are concerned. It is inadmissible for that purpose, but that does not exclude it entirely from consideration. Once the question of how man differs from other things has been answered in the light of objective evidence, then it may contribute significantly to the understanding of whichever answer the objective evidence decisively supports. Yet even here it is of limited value, for it can never alter the purport of that answer. What we know about ourselves reflexively or through self-consciousness must itself be understood in a manner that is compatible with what we know about ourselves through objective and comparative evidence.

The evidence, to be relevant and probative, must not only be objective and comparative; it must also be as extensive as possible; therefore, common experience, on the very face of it, is woefully inadequate for answering the question with which we are concerned. Scientific investigations of every sort, experimental and clinical as well as studies in the field, are required to provide the data we need. When in earlier centuries the question about man was regarded as if it were a purely philosophical question—one that could be answered in the light of common experience alone—the question, as I have already pointed out, was usually framed in a non-comparative form. Its primary interest was not in how man differs, but in what man's nature or essence is. To answer

a question so framed, philosophers relied mainly on the inter-subjective common experience of man's self-awareness—his reflexive knowledge of his own interior life and processes. Having drawn from such self-knowledge an answer to the question about man's nature or essence, philosophers then illicitly begged the answer to the question of how man differs. Misled by the indications of common experience and by common-sense opinion, they assumed that what he knew himself to be, other animals were *not*.

The philosophers have not been the only offenders against the logical requirements of an adequate approach to the mixed question about man. The biological and behavioral scientists, especially contemporary ones, have for the most part assumed that they could answer the question in the light of scientific evidence alone and without the help of philosophical analysis and argument, just as the philosophers of an earlier day, and even some of recent date, have for the most part assumed that they could answer the question without the benefit of the detailed comparative evidence that only the most painstaking scientific investigation can amass.

In the three-sided controversy that is constituted by the possible answers to the question, philosophers—past and present—have taken and take all three positions: (1) that man differs only in degree from other things; (2) that man differs in kind, but only superficially; and (3) that man differs radically in kind from everything else on earth. Scientists have held and hold only the first two of these three views of man's difference, in the nineteenth century mainly the first, and in the twentieth the second as well as the first. It would, perhaps, be more accurate to say that no reputable scientist has held the view that man differs radically in kind from everything else on earth on the basis of scientific evidence alone, whereas scientists, on the basis of such evidence alone, have concluded—correctly or not—that man differs only in degree from other things or that, if he differs in kind as well, that difference in kind is only superficial. There have been a number of eminent scientists who have favored the third view, but they have done so on philosophical grounds or by engaging in philosophical speculation, to which they felt they had to have recourse because the available scientific evidence has seemed to them insufficient to establish either of the other two views.

In different ways, scientific evidence and philosophical analysis, criticism, and reasoning are involved in the attempt to support each of the three answers, or *should* be if that attempt is properly conducted in the light of the fact that the question is neither purely philosophical nor purely scientific, but mixed.

To support the answer that man differs only in degree, the evidence must show that *every* type of human performance is found in other living things and in machines as well, and that it is present either to a higher or a lower degree in man. Since the evidence never consists in the bare data of observation, but the data interpreted, the interpretations given must be checked against conflicting evidence from common experience and the interpretation put upon it by common-sense opinion; in addition, the methods of investigation employed in obtaining the data, the assumptions underlying such methods, and the soundness of the theoretical constructs used by the scientists in interpreting their data, must all be subjected to critical examination. This is the work of the philosopher; if the scientist engages in such criticism, he can do so competently only to the extent that he possesses the competence of a philosopher.

To support the answer that man differs in kind, but only superficially, the evidence must show that man's objectively observable behavior includes certain performances *not found at all* in other living things or in machines; this must be combined with evidence that clearly supports the explanation of these distinctively human performances by reference to a critical threshold in an underlying continuum of degrees of either psychological or neurological complexity. Everything that was said above about the interpretation of the scientific data supposed to be relevant and probative, and about the need for a critical examination of both the data and the interpretation, applies with even greater force here; and so, *a fortiori*, if philosophical competence is required in an effort to determine whether the first answer can be adopted as the right answer to the question, it is even more so required here.

To support the answer that man differs radically in kind, the evidence must show, as in the case of the second answer, that man performs certain acts *not performed at all* by other living things or by machines, combined with arguments that justify the positing of some power or factor in man's constitution that is *not present* in other things, animate or inanimate. The justification must al-

ways take a form that is in line with the principle of parsimony; i.e., it must take the form of arguing that the performances found in man's observable behavior but not found at all in the observable behavior of other things cannot be satisfactorily explained *except* by positing a power or factor in man's constitution that is not present in anything else. To advance such arguments is clearly the work of the philosopher, and just as clearly is it the work of the philosopher to advance arguments of a contrary tenor, similarly and equally in line with the principle of parsimony and trying to show that the behavior in question can be satisfactorily explained without positing any power or factor in man's constitution that cannot be found in other living things or in machines. Here, then, we cannot avoid the confrontation of opposed philosophical views bearing directly on the question of man's difference.

It would appear that the work of the philosopher is even more important in connection with an effort to determine whether this third answer—radical difference in kind—is right or wrong than it is in the case of the first two answers—difference in degree and superficial difference in kind. Nevertheless, surprising as it may seem, we shall see that, within the framework set up by these opposed philosophical views, we may have to await the future work of scientists for something approaching a decisive resolution of the philosophical dispute, though it should not be surprising that the philosophers, left to themselves, may never be able to resolve it.

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Everything that has been said above indicates why it is necessary to separate two historical periods in the treatment of the question about the difference of man. The *first period* runs from the beginning of Western thought until the middle or end of the nineteenth century. During this time, the question was regarded as a purely philosophical question by all or most of the writers, mainly philosophers and theologians, who addressed themselves to it. The *second period* runs from the middle of the nineteenth century to the present. During this period, the question could no longer be so regarded, at least not by anyone who was aware.

of the obvious relevance of the data accumulated by the biological and behavioral sciences, and of the theories or hypotheses developed by scientists in the light of the evidence they had amassed. Though it ceased to be a purely philosophical question, it did not, in consequence, become a purely scientific one. There are, unfortunately, too many scientists who are still not aware that the question cannot be treated as a purely scientific one, in spite of the great achievements of the biological and behavioral scientists in obtaining critically relevant evidence.

The error that the philosophers made during the first historical period is at least excusable in view of the fact that there was little or no scientific evidence available for them to consider, even if they had had a mind to do so. If there are philosophers alive today who still persist in that error (as unhappily there are among the existentialists, the phenomenologists, and the scholastics), their blindness to the evidence that now confronts them on all sides is difficult to explain away or condone. It is as inexcusable as the opposite error that is made by the host of contemporary scientists who are blind to the philosophical aspects of the question, and proceed ineptly as if the question were one wholly within the competence of scientists to answer.

The second historical period, during which scientific investigations and theories based on scientific data have contributed to the solution of the problem, can itself be divided into three stages. (1) The initial entrance of science into the picture is represented by the obvious relevance of the theory of evolution in general and by the development of paleoanthropology in particular—by the finding of fossil remains and by the hypotheses concerning their significance for the origin of man on earth. (2) The second, and somewhat later, entrance of science is represented by the development of the behavioral sciences, especially in the area of comparative studies of human and animal behavior, and also by clinical and experimental research in neurology. (3) Last comes the stage that is represented by the work of computer technology and by the development of machines for the simulation of human performances, together with the mathematical and neurological theories underlying these technological and experimental efforts.

Whereas the first stage began 150 years ago, and the second 60 to 75 years ago, this third stage is of recent origin, a matter of the last 30 years at most. As I see it, it is to the future develop-

ment of the efforts represented by this third stage that we must look for any significant alteration in the state of the question about the difference of man, rather than to any further discoveries in the field of paleoanthropology or to any new data that can be obtained by the ethnologists, by the comparative study of human and animal behavior, by clinical and experimental neurology, or even by the revolutionary biophysics and biochemistry that are opening new vistas in physiology.

This may appear to be a rash prediction. The reasons for it are explained in Part Two. The reader, having examined the analyses and arguments there set forth, will be in a position to judge whether the reasons for my prediction are sound or not.

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The analyses and arguments referred to above are developed in the following sequence.

Chapter 4 reviews the theories of the philosophers who treated the question about man as if it could be satisfactorily answered without investigation—by philosophical analysis in the light of common experience alone. It sets forth the state of the question during the first historical period when it was incorrectly treated. By doing so, it enables us to see where we would be now if scientific evidence had never been brought to bear on the question. Suppose that we had nothing but the assertions or arguments of opposed philosophical views about the nature of man, together with such evidence as is supplied by common experience but without any comparative study by investigative effort, of the behavior of men and animals. Which side in the three-sided issue that the philosophers disputed would we—should we—favor? Would the issue be resolved? Would it be resolvable?

Chapter 5 deals with the views of Darwin and his contemporaries and tries to explain why Darwin answered the question as he did, in the light of the evolutionary evidence that was available in his day; it also considers the advances in evolutionary theory as well as the extraordinary increase in significant data from his day to our own. Chapter 6 deals with the findings and theories of the paleoanthropologists, largely since the turn of the century. In addition, it tries to explain why they, with few exceptions,

reject Darwin's answer that man differs only in degree from other animals, and take the position that man differs in kind as well as in degree. Though they themselves are not always explicit or definite on the point, it is nevertheless evident that they regard man's difference in kind as superficial, not radical. Together Chapters 5 and 6 cover what I have called the first stage of the entrance of science into the picture.

Chapter 7 turns to the work of the behavioral scientists, especially the comparative studies of human and animal behavior that began in the early years of this century and have multiplied progressively in the succeeding decades. It also considers the relevant findings of ethologists in the field and of experimental psychologists in laboratory studies of human behavior, many of them of very recent date. It undertakes a critical examination of the methodological postulates and the basic assumptions of psychological theory, particularly that of behaviorism in its various forms, in an effort to understand why the behavioral scientists in general, and the behavioristic psychologists in particular, tended to revert to Darwin's view that man differs only in degree from other animals. Here, then, we have what I have called the second stage of scientific work that has affected the state of the question about man.

Chapter 8 brings us to a point of decision. In the light of all the evidence now available, it appears to be the unanimous agreement of reputable scientists today, both the paleoanthropologists, on the one hand, and the behavioral scientists, on the other, that man and man alone possesses a propositional language or has the power of syntactical speech. When I say "appears to be unanimous," I mean, of course, just this: that in all the scientific literature that I have examined, I have found no dissenting voice to the contrary. There may be some, but I have not come upon them. In any case, I feel relatively sure that if there are dissenting voices, they are an almost inaudible minority. What needs to be explained, and Chapter 8 attempts it, is why, though agreeing with the paleoanthropologists that man alone possesses a propositional language, the behavioral scientists persist in saying that man differs only in degree from other animals, whereas the paleoanthropologists, in recognition of the same fact, assert that man differs in kind. It is plainly a contradiction to say, on the one hand, that only man has a certain trait or is capable of a certain

performance, and to say, on the other hand, that man differs only in degree from other animals. With that contradiction resolved, as it must be, in favor of the observed facts and hence in favor of the proposition that man differs in kind from other animals, at least in this one respect if in no other, we are brought in Chapter 8 to the point of decision mentioned above.

Let me be clear on this point. All I am saying is that the data at present available together with the present state of scientific opinion on the subject appear to be decisive on the question whether man differs only in degree, or in kind as well as in degree. This must not lead us to conclude that this question is forever closed, or that it is finally and incorrigibly answered. New and contrary evidence may be discovered by further scientific investigation, such as the research now being done on the communicative powers of the bottle-nosed dolphin. The state of scientific opinion on the subject may change. These things being as they may, it still remains the case that, as this book is being written, it is impossible for anyone who understands the distinction between difference in degree and difference in kind to assert, in the face of the available evidence, that man differs only in degree from other animals.

With the question whether man differs only in degree or also in kind decided, for the time being, in favor of kind, we are left with the question whether man's difference in kind is radical or only superficial. Chapter 6, it will be recalled, will have pointed out that the paleoanthropologists tend to regard it as superficial because they think it can be explained by a critical threshold in a continuous series of degrees of brain magnitude and complexity. The behavioral scientists and especially the behavioristic psychologists do not disagree on this point; but, as Chapter 9 will show, they offer still another reason for thinking that the difference in kind between man and other animals, based on man's exclusive possession of a propositional language, is only a superficial difference in kind: namely, that the underlying psychological processes are exactly the same in men and other animals and that man's having propositional speech, lacked by other animals, can be accounted for simply by the much higher degree to which the same psychological processes are operative in him.

If this theory of the matter were established by the scientific evidence now available, we would have reached a second and

final point of decision—at least for the time being; for, in addition to knowing that man differs in kind, not just in degree, we would also know that man's difference in kind is only superficial, not radical. The age-old question about how man differs would have been resolved—again let me say, for the time being. But, in my judgment, the explanation that is offered by the psychologists of why men possess and other animals do not in the least degree possess a propositional language cannot stand the test of criticism. When, in Chapter 9, the data offered by the psychologists is thoroughly reviewed and their interpretation of it carefully examined, their theory of human language will be found untenable. This will be followed in Chapter 10 by an analysis of language in relation to thought that, in my judgment, decisively establishes the opposite theory: namely, that the reason why man and man alone has a propositional language is that man and man alone has the power of conceptual thought. If that is the case, then the manifest difference in kind between man and other animals, in virtue of the fact that only man has a propositional language, is not shown to be a superficial difference in kind *by reference to a critical threshold in a series of degrees of the same psychological processes in both animals and men.*

With these two points of decision reached—and *they are the only points of decision reached in this book*—we are left in Chapter 11 with the one issue that still remains undecided: namely, whether the difference in kind between men and other animals is merely superficial or is, on the contrary, radical. Chapter 12 then describes the efforts of the philosophers to decide that issue, by arguments which either try to show, on the one hand, that conceptual thought cannot be adequately explained in neurological terms, or, on the other hand, that it can be. If the first line of argument were to prevail and become universally persuasive, the issue would be resolved in favor of the view that man differs radically in kind. If the second line of argument were to prevail and become universally persuasive, the issue would be resolved in the opposite direction, in favor of the view that man's difference in kind is only superficial. But, as we shall see, there is little chance that either set of arguments will ever become so cogent as to prevail and become universally persuasive.

Must the crucial issue, then, forever remain unresolved? Chapter 13 gives us some hope that a resolution is possible by other

means than direct philosophical argument in support of one or the other of the competing theories. The other means take the form of a challenge laid down three centuries ago by Descartes, a challenge that we can now see has three prongs: one for the zoologists to meet; one for the neurologists to meet; and one for the computer technologists and experimenters with artificial intelligence to meet. Chapter 13 explains why the zoologists and the neurologists cannot resolve the issue even if they are able in the future, as they are not yet able, to offer evidence of the sort that is called for. This leaves for Chapter 14 the consideration of the evidence offered by the computer technologists and by the experimental work on machines designed to simulate human intelligent behavior. Here we come to the third and most recent stage of scientific work that bears on the question of how man differs from everything else on earth. And while Chapter 14 will show that the present achievements of this scientific effort do not meet the Cartesian challenge and resolve the crucial issue about superficial versus radical difference in kind, Chapter 15 will conclude Part Two by explaining why it is almost certain—as certain as anything can be on earth—that through the scientific effort that is now being made in this direction, the issue will be resolved at some future date—one way or the other. Which way, I, for one, do not dare to predict.

Part Two thus ends inconclusively, as in my judgment it must in view of the present state of the question. It leaves for Part Three a hypothetical exploration of the difference it makes how man differs from other animals and from machines. Since we do not now know the answer to the question whether the difference in kind is superficial or radical, we must consider what consequences follow, first, if one alternative turns out to be true, and then, if the other does. Though the evidence at present available and the present state of scientific opinion favor the proposition that man differs in kind from other animals and not just in degree, new evidence may be discovered in the future that changes the state of scientific opinion. We must, therefore, consider what consequences follow, on the one hand, if man differs in kind, whether superficially or radically, and, on the other hand, if man should turn out to differ only in degree.

Most readers expect a book that undertakes to deal with an important question to conclude with a definitive answer to it.

This book does not do that for the simple reason that no one knows the answer yet. The countless books that claim to give a definitive answer claim more than is known in the present state of scientific evidence and philosophical thought. The claim that this book makes may be just as presumptuous, but it is of a different sort: namely, that it provides the basis for understanding and criticizing all the writing that has so far been done on this subject, as well as whatever remains to be written in the future as new evidence accumulates and new theories or arguments develop. Anyone who tries to solve the problem of man's difference, either by research or by argument, would be well advised to consider the guidelines here laid down. Precisely because it offers a dialectically objective assessment of the research and thinking that has so far been done on the question of man, this book can fairly claim to be a prolegomenon to future research and thinking about the subject.

What do I mean by a dialectically objective assessment? I mean one that fairly examines a conflict of opinions without taking sides. The procedure of this book is dialectical in the sense just defined. It is an adaptation of the method developed and applied by the Institute for Philosophical Research in the studies it has completed of the ideas of freedom, love, progress, happiness, and justice, and the studies now in progress on the idea of equality, and on the problem of the relation of language and thought. In describing that method as dialectical, the Institute has stressed the restraints with which it approaches controversy about any subject. It tries to clarify the question or questions that constitute the issues of a controversy; it attempts to present or construct the positions that are taken in a controversy, so far as they can be found in or developed from the literature of the subject; it offers the evidence and the arguments that enter into the dispute of the issues, so far as these exist. Beyond this it does not go; it does not take sides; it makes every effort to exercise the restraints of dialectical neutrality. [1]

The reader may think that I have cast aside these restraints at two points—the point at which I found it necessary to resolve the contradiction into which the psychologists fall when they say, on the one hand, that man differs only in degree, and, on the other hand, that only man possesses a propositional language; and the point at which I found it necessary to reject as untenable,

in the light of the known facts, the theory that the same psychological processes are operative in animals and men, though to a different degree, and that it is this difference in degree that explains why animals lack a propositional language and men possess one. But that is not the case. I do not regard the criticism of illicit inferences or specious arguments, or the pointing out of patent inconsistencies and misleading equivocations in the use of words, as a violation of dialectical neutrality.