

To Maria-Josi,
with my regards.

SW

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PRAGMATISM, OLD & NEW

Selected Writings

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experiences which have much in common, and beaten out, like other pathways, by the coincidence of human purposes and the exigencies of human coöperation. Concerning the *a priori* there need be neither universal agreement nor complete historical continuity. Conceptions, such as those of logic, which are least likely to be affected by the opening of new ranges of experience, represent the most stable of our categories; but none of them is beyond the possibility of alteration.

Mind contributes to experience the element of order, of classification, categories, and definition. Without such, experience would be unintelligible. Our knowledge of the validity of these is simply consciousness of our own fundamental ways of acting and our own intellectual intent. Without this element, knowledge is impossible, and it is here that whatever truths are necessary and independent of experience must be found. But the commerce between our categorical ways of acting, our pragmatic interests, and the particular character of experience, is closer than we have realized. No explanation of any one of these can be complete without consideration of the other two.

Pragmatism has sometimes been charged with oscillating between two contrary notions; the one, that experience is "through and through malleable to our purpose," the other, that facts are "hard" and uncreated by the mind. We here offer a mediating conception: through all our knowledge runs the element of the *a priori*, which is indeed malleable to our purpose and responsive to our need. But throughout, there is also that other element of experience which is "hard," "independent," and unalterable to our will.

NOTE

1. Albert Einstein, *Relativity: The Special and General Theory*, trans. R. W. Lawson (New York: H. Holt, 1920), pp. 26–28: italics are the author's.—*CIL*, modified by eds. We have added from Einstein's text, in the first paragraph, "by experiment"; in the second paragraph, "of lightning"; and in the fourth paragraph, "That my definition satisfies this demand is indisputable."—*Eds.*

27.

NATURALISM AND FIRST PRINCIPLES

SIDNEY HOOK

Source: *American Philosophers at Work*, ed. Sidney Hook (New York: Criterion Books, 1956), pp. 236–58. The slightly revised version that appears here is from Hook, *The Quest for Being* (New York: St. Martin's Press, 1961), pp. 172–95, also reprinted in *Sidney Hook on Pragmatism, Democracy, and Freedom: The Essential Essays*, ed. Robert B. Talisse and Robert Tempio (Amherst, NY: Prometheus Books, 2002), pp. 46–67.

Summary: In this paper Hook develops an account of what it is to be rational or reasonable which is naturalistic in both of the two most important philosophical senses of the term—defending at once naturalism-as-opposed-to-apriorism, and naturalism-as-opposed-to-supernaturalism, and in the process revealing their deep interconnections. Hook argues that (1) there are "working truths on the level of practical living"; (2) these are found in every culture and at all times; (3) the scientific method is a refinement of these universal canons of rationality and intelligibility; (4) its principles define the meaning of naturalism, the characteristic doctrines of which, such as the denial of disembodied spirits, generalize the cumulative evidence won by the scientific method; and, (5) while naturalism is not necessarily true, it is more reasonable than the alternatives.

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In this chapter I shall discuss what seems to me to be one of the most fundamental problems in the intellectual enterprise which goes by the name of philosophy, *viz.*, what it means for human behavior to be reasonable or rational. It is a question which arises even when we have no doubt that a person is logical in the sense that he draws conclusions which are implied or entailed by certain premises. A paranoiac is nothing if not logical when he spins the strands of unrelated events into a web of conspiracy of which he is the presumed victim. Some philosophers have raised the question in connection with a discussion of the nature of intelligibility when the meaning of the thought or conduct of others is puzzling or in doubt. I have been led to it because of some recent criticisms of naturalism which charge that it arbitrarily imposes its own canons of rationality or intelligibility on human behavior and therefore denies certain important truths about the world and human experience on *a priori* grounds.

A similar question has also been raised by some fashionable sociological views of knowledge according to which there are irreducibly different modes of knowing illustrated in different cultures and which suggest, and sometimes explicitly affirm, that there is no such thing as a universally objective, valid method of determining rational or intelligible conduct, independent of time or society or class, or even of party. On this latter view, it is sometimes argued that moral, social, and political conflicts are the results of conflicting logics of inquiry. Sometimes the converse is argued, *i.e.*, irreducible social conflicts give rise to irreducibly different criteria of truth. In either case no one method can claim universal and exclusive validity. Indeed, to claim that any one method of establishing truths is better than another is to be guilty of philosophical imperialism almost in the same way that the claim of superiority for the institutions of modern western, democratic society evinces cultural imperialism.

My argument will make the following points: (1) despite all the

basic conflicts over first principles of thinking or evidence, there are working truths on the level of practical living which are everywhere recognized and which everywhere determine the pattern of reasonable conduct in secular affairs, *viz.*, the effective use of means to achieve ends. Rationality on this level is not merely as Charles Peirce suggests "being governed by final causes"¹ but so using the means and materials of the situation in which final causes are pursued as to achieve a maximum of functional adaptation between means and ends. (2) Second, this conception of rationality is not limited to our culture and to our time but is supported by the available anthropological evidence. The mind of primitive man, medieval man, communist man, for all the claims that have been made about their differences, is no different from our own. This is not incompatible with believing that in respect to discovering new truth one or another group of men, in virtue of *historical*, perhaps genetic reasons, at a given time may be in possession of superior powers. (3) Third, scientific method is the refinement of the canons of rationality and intelligibility exhibited by the techniques of behavior and habits of inference involved in the arts and crafts of men; its pattern is everywhere discernible even when overlaid with myth and ritual. (4) Fourth, the systematization of what is involved in the scientific method of inquiry is what we mean by naturalism, and the characteristic doctrines of naturalism like the denial of disembodied spirits generalize the cumulative evidence won by the use of this method. (5) Fifth, that the criticisms of naturalism from which the paper takes its point of departure can be met by showing that, although the assumptions of naturalism are not necessarily true, they are more reasonable than their alternatives.

If it is true, as Peirce says, that "Every reasoning holds out some expectation,"² the validity of rules of reasoning is not a matter of fiat but depends upon the fruits of inquiry. Ultimately the rules of logic are instruments of discourse which enable us to avoid the shocks and surprises, the disasters and disappointments in attempting to understand the nature of the world and our own inten-

tions and purposes. One method of reasoning is more valid than another because its use enables us to make the knowledge we have today more coherent, and especially because it more easily facilitates adding *new* knowledge to it.

1

That first principles must be justified before we can achieve assured knowledge is a view seemingly held by some philosophers but rarely by anyone else. Scientists, for example, have satisfactorily solved problem after problem without feeling called upon to solve the problem of justifying their first principles. Not only scientists but people of ordinary affairs generally know when something is truer than something else without knowing, or even claiming to know, what is *absolutely* true. To say that we do not have to know what is ultimately or absolutely true or good in order to know what is truer or better, sounds dialectically impossible. But I submit that this is actually the way common sense and science operate. Even the most rationalist of philosophers in their nonprofessional capacity make effective use of everyday knowledge long before they reach their uncertain conclusions about the validity of first principles. It isn't necessary to assert that we know what is absolutely true about the cause of tuberculosis to know that a certain germ has more to do with it than climate. Similarly, few people know what their "ultimate" values are, and yet almost everyone will claim to know that it is better for human beings to do productive labor for a living than to be recipients of charity. Deny propositions of this sort and insist that declarations of the truer or better must wait upon knowledge of *the* true or *the* good, and the whole of human inquiry anywhere would come to a halt.

This is not to assert that there is no problem concerning the justification of first principles or of those rules of procedure which we follow when we reach the knowledge about which there is a max-

imum of agreement among human beings. What I am asserting is that the justification of rules of procedure in inquiry is not of a different logical order, possessing so to speak another or higher type of necessity than the actions of which they are the rule. More specifically what I am asserting is that there is no such thing as strictly logical justification of first principles in science or common sense since proof by definition involves the reduction of all statements to indefinable terms and undemonstrable propositions or to propositions themselves so reducible. And secondly, what I am further asserting is that in the sense in which justification of first principles is an intelligible question—as when someone asks me why I regard naturalism as a truer or more adequate doctrine than its rivals—the answer will take the same *general* form of the answers given by those who do the world's work—the cobblers, the carpenters and gardeners—when they are asked to justify one set of procedures rather than alternative ones.

In other words I am saying somewhat differently what William James observed in *The Problems of Philosophy* although it is alleged he sometimes sinned against the meaning of his own words. "Philosophy," he there says, "taken as something distinct from science or from practical affairs, follows no method peculiar to itself. All our thinking today has evolved gradually out of primitive human thought, and the only really important changes that have come over its manner (as distinguished from the matters in which it believes) are a *greater* hesitancy in asserting its convictions, and the *habit* of seeking verification for them whenever it can."³ (my italics)

Such an approach, as I understand it, is the only one that can consistently be advanced by naturalists in justifying their first principles. This has provoked the retort that it is essentially question-begging, that since the methods and categories of common day activity and science—upon which naturalism relies—are designed to take note only of the existence of certain things, the existence of other things like immaterial entities, cosmic purposes, Gods, and disembodied souls are ruled out *a priori*. The assertion of their

existence on the naturalist's view must therefore be assumed to be not merely false but meaningless or contradictory. Since we are concerned here with questions of existential fact, the naturalist who naïvely believes himself to be imbued with a spirit of natural piety for a world he has not created, is taxed with the ironic charge of legislating for all existence.

Before evaluating the charge of circularity it is important to realize that if valid, it holds for *every* philosophical position. We cannot break out of this circularity by invoking only the law of contradiction, unless we are prepared to hold that all knowledge is analytic and that the differences between nature and history, with all their contingency, and mathematics and logic disappear. Certainly, whatever falls outside the scope of the basic explanatory categories of any philosophical position cannot be recognized. This is a tautology. That these categories are restrictive follows from their claim to be meaningful since a necessary condition of a meaningful statement is that it should be incompatible with its opposite. The only legitimate question here is whether they are narrowly restrictive, whether there are matters of knowledge in common experience which they exclude or whose existence they make unintelligible.

Since every philosophic position must start somewhere and make some preliminary or initial assumptions that can be challenged at least verbally by other philosophers, it is always possible to level the charge of circularity. But what shall we therefore conclude? That these assumptions are mere stipulations or arbitrary postulations which express nothing but the *resolutions* of philosophers? This would be voluntarism gone mad. Philosophers might just as well close up shop insofar as they claim for their position some objective validity in reporting or interpreting the facts of experience. For even voluntarism could not sustain itself against the charge of circularity.

The naturalist does not despair because he cannot demonstrate what is by definition indemonstrable. Nor can he rely upon intuitions or revealed dogmas because of their irreducible plurality. He

believes he can show that although not demonstrable, his assumptions can be made reasonable to "reasonable" men. And the mark of a "reasonable" man is his willingness to take responsibility for his actions, to explain why he proceeds to do one thing rather than another, and to recognize that it is his conduct, insofar as it is voluntary, which commits him to a principle or belief rather than any form of words where the two seem at odds with each other. The naturalist does not speak, as one of its critics does, in large terms of "justifying philosophical categories as rationally and comprehensively as possible," and then fail to tell us in what specific ways philosophical rationality and comprehensiveness differ from scientific rationality and comprehensiveness. Are the laws of logic and the canons of evidence and relevance any different in philosophy from what they are in science and common sense?

To every critic of naturalism who has charged it with circularity I propose the following. Consider someone who comes to you and proclaims on the basis of some special personal experience that an all-pervasive R substance exists. It is neither physical nor psychical nor social, neither natural nor divine, nor can it be identified by, defined in, or reduced, in any sense of reduction, to any physical, psychical, or social terms. It is subject, so you are told, to no material conditions of determination whatsoever. The very request that these conditions be indicated is brushed aside as revealing a constitutional incapacity or blindness to grasp this unique entity to which all sorts of edifying qualities are attributed in an analogical sense, including a triune gender. It is granted by the believer in R that its existence cannot be logically inferred from whatever *else* is experienced, but he is quick to add that its existence cannot be logically *disproved* without assuming a question-begging philosophical position which rules out the possibility of this unique cosmic process. The next day he reports personal contact with another presence which he calls the analogical father, and the day after, the analogical grandfather, and so on, until even the most fervent supernaturalist finds himself confronted with an embarrassment of supernatural riches.

Embroider the fancy as you will. It is obvious that he can repeat almost word for word the points in the indictment of those who charge naturalists with circular reasoning.

Even if all philosophical positions are *au fond* question-begging, there would still remain the task, pursued by all philosophers of determining which of all question-begging positions is more adequate to the facts of experience. Every philosopher who seriously attempts an answer does assume *in fact* that there is some common method of determining when a position is adequate to the facts of experience and when not. The contention of the naturalist is that this common method is in principle continuous with the method which we ordinarily use to hold individuals to responsible utterance about the existence of things in the world—a method which is pre-eminently illustrated in the ways in which men everywhere solve the problem of adaptation of material means to ends.

2

The procedures which are the matrix of reasonable conduct everywhere seem to me to be clearly involved in what broadly speaking we may call the technological aspect of human culture. It is not necessary to maintain that tool using is the only characteristic which differentiates human society from animal societies to recognize that whereas only some nonhuman animals occasionally use natural objects as tools, all human animals, wherever they are found, *make* their own tools. What distinguishes modern society from primitive society is not the presence of inventions but the organization of inventiveness.

Anthropological evidence leaves no doubt that primitive man wherever found solved tremendous problems of adjustment and survival. With a little imagination we can appreciate that starting from scratch such things as the invention of fire and the wheel, the cultivation of plants, domestication of cattle, and the smelting of

metal represent inventive feats of a high order. There is an obvious continuity between our own technology and that of our primitive ancestors. "The sapling," says A. A. Goldenweiser, "bent out of its natural position to provide the dynamic factor in a primitive trap, is the remote forerunner of the spring which runs untold millions of watches and performs numerous other tasks in modern technology. The achievement of Alexander the Great in cutting the Gordian Knot, though dramatic, did not equal that other achievement—the tying of the first knot. And this knot, in the midst of an ever growing family of knots, is still with us."⁴

One can multiply illustrations indefinitely of the ingenious ways in which primitive man everywhere chooses between alternate means to achieve the particular end, improves upon these means and tests them by their relative efficacy in achieving determinate results. What stands out in my mind particularly is the impressive functional economy of the Eskimo's composite harpoon, that marvelous contrivance by which he spears seal, walrus, and whale, and especially the way in which the precious point is recovered. Hundreds of decisions must have been made and tested by their consequences before the instrument finally took shape.

The pattern of rationality does not extend of course to all aspects of primitive life any more than it does to our own life, but it points to a universal pattern of intelligibility understood by everyone who grasps the problem which the tool or technical process is destined to solve. Where religion or myth does not influence technology, the indefinite perfectability, so to speak, of the particular instrument is recognized or another one is substituted which gives more reliable results. Thus, for example, the Eskimo will abandon his ingenious harpoon for a gun when he can procure one.

The contention of Levy-Bruhl that primitive man thinks pre-logically, that he denies the law of contradiction, that he is unable to isolate and distinguish logically unrelated things or ideas, that he understands by a kind of "participation" is not borne out by a study of primitive technology. Levy-Bruhl's observations are valid enough for

the religious beliefs and social customs of the primitives, for their "collective representations" but not for the individual behavior of the primitive in war or hunt or in the field. One might add that Levy-Bruhl's observations can be extended to much of the religious beliefs and social customs of modern society, too. Even if all of Levy-Bruhl's claims are granted they do not invalidate Franz Boas' plausibly argued conclusion that the mental processes of primitive man in respect to inhibition of impulses, power of attention, logical thinking, and inventiveness seem essentially like our own.⁵

Despite their differences on other questions there is fundamental agreement among Levy-Bruhl, Boas, Goldenweiser and Malinowski concerning the universality of the experimental, commonsensical, practical approach to the environmental challenge. Malinowski points out that the realms of the profane or secular, and the realms of the religious or supernatural are not confused even when their respective activities are conjoined. The native plants his sweet potato with the most exacting care for the conditions of soil, moisture, and other elements which affect its growth: but in addition, he goes through some religious ritual, supported by a myth, before he believes he has a right to expect a successful crop.

"Can we regard primitive knowledge," asks Malinowski, "which, as we found, is both empirical and rational, as a rudimentary stage of science, or is it not at all related to it? If by science be understood a body of rules and conceptions, based on experience and derived from it by logical inference, embodied in material achievements and in a fixed form of tradition and carried on by some sort of social organization—then there is no doubt that even the lowest savage communities have the beginnings of science, however rudimentary."⁶

Similarly, Goldenweiser:

"Technique on the one hand, and religion and magic, on the other, present from one angle the opposite poles of the primitive atti-

tude. Industry stands for common sense, knowledge, skill, objective matter-of-fact achievement. Religion stands for mysticism, a subjective translation of experience, a substitution of mental states for external realities and a reification of such states into presumed existences in a realm which in part is 'another' world but in part also belongs to 'this' world, in so far as the two worlds interpenetrate."⁷

What all modern anthropologists seem to agree on, as I interpret them, is that the religious or mystical elements in primitive experience, with their myths and religious rites, arise not in competition with the secular knowledge of technology or as a substitute for such knowledge but as a "complement" in situations in which all the available technical means and know-how are not adequate to a desired end, or where events do not clearly or always prosper when the proper instrumentalities are employed. In a world full of dangers and surprises, in a world of time, pain and contingencies, it is not hard to understand the psychological place of religion. It is a safe generalization to say that the depth of the religious sense is inversely proportionate to the degree of reliable control man exercises over his environment and culture. In this sense religion is a form of faith, emotion, not knowledge: when it is something more than this and competes with science or technology it becomes superstition.

We may restate this a little differently. Science or technology and religion represent two different attitudes toward the mysterious: one tries to solve mysteries, the other worships them. The first believes that mysteries may be made less mysterious even when they are not cleared up, and admits that there will always be mysteries. The second believes that some specific mysteries are final.

This relation between technology and religion is not restricted to primitive societies. Somewhere in the Talmud it is written that if a man's son is ill, the correct thing for him to do is not merely to call a doctor or merely to pray to God but to call a doctor *and* pray to God. And in our own culture this seems to be the function of nonsuperstitious religion. The theology comes as an afterthought. Even those

who do not believe in God often look around for Him to thank or to blame somewhat like the atheist in the well-known story who when asked why he nailed a horseshoe over his door replied, "I really don't believe in it but I've heard it brings luck even if you don't."

In modern societies our attitudes are more complex. There is religion and religion. If you pray to God expecting rain or a baby boy, that is one thing. It is bad science, although if Rhine establishes the existence of psychokinesis (the PK effect), a power which some subjects allegedly have to influence the way dice will fall by wishing or willing, this kind of praying may not be bad science. If you pray in order to relieve your mind that is another thing. It is good psychology although there may be better psychology. If you pray without any purpose at all but out of a sense of relief, gratitude, awe or fear—that is not science at all but pure religion or art. "If scientific statements are to be called truths, religious statements should be called something else—comforts, perhaps."⁸

3

I turn now to a brief consideration of the nature of technology and technological behavior. All technological behavior is purposive behavior; the purpose provides a test of relevance, and the achievement of purpose, a test of the adequacy of alternative means suggested. Its every feature takes note of the compulsions of the environment as well as the much more limited powers of man over the environment. Its knowledge is a form of *acknowledgment*—an acknowledgment of the nature of materials, the effect of motor action on the redistribution of materials, the importance of sequential order and spatial configuration. It is obviously reconstructive in intent, and makes of a natural order one that is also reasonable. It discounts the immediate qualities of use and enjoyment for the sake of anticipated consequences. Wherever we have a tool or technique, it refers not to a unique situation but a class of situations

so that it has a kind of implicit universal import not separable from ultimate individual applications. The better instrument recommends itself to us to the extent that it enables us to make a more reliable prediction of *observable* effects that bear on the purpose in hand—the resolution of the problem. Learning from these simple inductions of experience is usually the first manifestation of intelligence. The violation, or rather the attempted violation of established inductions, like walking off a roof or out of a window, is sometimes the first evidence of insanity.

Technological behavior may be overlaid with all sorts of propitiatory rites but it is usually possible to distinguish between the functional and ritualistic aspects of the use of instruments. In its purely functional aspect every feature of the technique can be justified by its normal fruits or consequences. In time the process of adaptation tends to give us structures that are as simple and beautiful in their economy as the axhandle and oar, turbine and jet plane.

An analysis of the implicit logic of technology and the common-sense operations it involves, reveals that no hard and fast line of separation can be drawn between the general pattern of scientific method and reasonable procedures in the primary knowledge-getting activities of men struggling to control their environment. With the development of new instruments of discovery and measurement, and the use of mathematical notation, science becomes more abstract, more systematic, more precise, more complex. But wherever a man has had an idea sufficiently clear to enable him to draw a valid inference from it, the truth of which he sought to test by some controlled observation or experiment, he was proceeding—no matter how primitively—in a scientific way. The continuity between reasonable procedures in reaching conclusions about matters of fact of everyday concern and the procedures by which we make the most esoteric discoveries in the advanced sciences cannot be breached without making the whole enterprise of science a mystery, for every science starts from, and returns to, some of these reasonable procedures. If the common-sense world is

radically unreliable or illusory, every theoretical construction which is based upon it or which it tests, is no more credible.

What we might call the first order facts of science are drawn directly from the world of common-sense experience—*e.g.*, that a sponge holds more water than a cloth, that a polished surface is a better reflector than an opaque one, that white clothing is cooler than black—all of which were once discoveries. In the development of science no matter what the succession of theories, these first order facts are the last to be challenged. Whether the wave theory or corpuscular theory or any other theory of light is defended, the law which states the inequality of the angles of incidence and refraction when a ray of light passes from one medium to another is not questioned. For the class of phenomena it characterizes must be accounted for irrespective of what other predictions are made. From this point of view the laws of nature may be plausibly interpreted as instrumental devices to bring within the largest explanatory scheme our empirical knowledge of first order facts and successfully to predict future experiences which then become first order facts for all other theories.

Science differs from technology in two important respects. First in generality, and second in purpose. Technology is restricted in its practical reference to useful results; whereas the practical purpose of science, if we choose to use this language, is “the advancement of knowing apart from concern with other practical affairs,” *i.e.*, the building up of a systematic body of knowledge.⁹

4

If there is no break in the continuity between life sustaining technological and vocational activities anywhere, and developed scientific activities, there is still less to be said for the view that science is so intimately tied up with culture that we must in Spenglerian fashion speak of Apollonian science, Magian science, and Faustian science with irreducibly different criteria of scientific validity. This

is carried to extreme lengths by the current dialectical materialistic interpretation of science which denies its classless, international character and asserts that all sciences, social as well as physical, are class sciences and party sciences. More is meant here than the obvious view that social and political circumstances, interests and ideas have influenced the kind of scientific problems considered, and the direction of their application. The actual content of science is allegedly dependent upon a class or party approach, and the philosophy of dialectical materialism is recommended because by following its lead, problems within science can be presumably solved which defy solution on the basis of other philosophies. It would follow from this, to paraphrase Mannheim, that different classes think differently about everything, or at least everything important, which is manifestly false. There are no “national truths” in science, and Pierre Duhem is obviously right in his claim that it is only by its deficiencies that a science can become the science of one nation rather than another. The belief that there are “class truths” or “party truths” in science rests upon the elementary confusion between the objective evidence for a theory, which if warranted, is universally valid, with the uses, good, bad, or indifferent that are made of it.

Much more worthy of notice is the claim made that what constitutes “objective evidence for a theory” is an historical conception. The history of science reveals that the conditions which a scientific theory must fulfill to be accepted have been more rigorous at some times than at others. It becomes pointless to speak, then, of scientific method *überhaupt*; there are only scientific methods.

This is a very difficult and interesting question which I can treat only briefly and with the appearance of a dogmatism I do not feel. As a possible solution of this problem I venture the following: At any given time scientists accept as working truths hypotheses of varying degrees of generality and strength. They are more firmly convinced of the genetic theory of heredity than of the theory of organic evolution. They would be less surprised if the general theory of relativity were abandoned than the special theory. The

degree of confirmation which a theory must pass muster at any time seems to be a function of the fruitfulness of previous theories in the field with similar degrees of confirmatory strength in extending our knowledge of the unknown. In addition the strength of an hypothesis is a function of the number of alternative hypotheses that are available as explanations. As a rule the more numerous the confirming instances the stronger the hypothesis. But if there are no alternative hypotheses present, we may be satisfied with far fewer confirming instances than where alternative hypotheses are present.¹⁰ Further, the bearing of an hypothesis upon the direction of inquiry, the leads it opens up to new ways of experiment, must be taken into account.

To use a distinction of Peirce, in science a *valid* reason for believing a theory may not be a conclusive reason or even a strong reason. My contention is that what makes any reason in science a *valid* reason for believing an hypothesis is not historical, but invariant for all historical periods in the growth of science. But whether a reason is a strong reason for believing an hypothesis varies with the presence or absence of other leads and the evidence for them. This is an historical matter since no one can predict how many creative, competing insights will be current when an hypothesis presents its credentials for confirmation. I therefore do not believe that the variations in the degree of confirmatory completeness which scientific hypotheses have had to meet at different times relativizes in any way the logic of scientific method.

In passing it should be noticed that even in the history of mathematics standards of rigor seem to have varied, and for centuries mathematicians believed propositions which were only conclusively proved in the nineteenth and twentieth centuries. No one would infer from this that the notion of mathematical validity is historically conditioned, for despite the variations in rigor they progressively illustrate one underlying logical pattern of proof to which no alternative has ever been formulated.

If the foregoing is sound then I think it constitutes some reason

for believing that there is only one reliable method of reaching the truth about the nature of things anywhere and at any time, that this reliable method comes to full fruition in the methods of science, and that a man's normal behavior in adapting means to ends belies his words whenever he denies it. Naturalism as a philosophy not only accepts this method but also the broad generalizations which are established by the use of it; *viz.*, that the occurrence of all qualities or events depends upon the organization of a material system in space-time, and that their emergence, development and disappearance are determined by changes in such organization.

Common sense takes the word "material" as loosely equivalent to the *materials* with which men deal as they go from problem to problem; naturalism as a philosophy takes it to refer to the subject matter of the physical sciences. Neither the one nor the other asserts that only what can be observed exists, for many things may be legitimately inferred to exist (electrons, the expanding universe, the past, the other side of the moon) from what is observed; but both hold that there is no evidence for the assertion of the existence of anything which does not rest upon some observed effects.

The objections that have recently been urged against naturalism sometimes proceed from the notion that a philosophical position must justify its general assumption in some absolutely unique way. This is, as we have seen, a blind alley. Naturalism makes no assumptions over and above those that have been made every time the borders of our knowledge have been pushed back. It therefore has the cumulative weight of the historic achievements of common sense and science behind it. *If* we want to acquire new knowledge, the naturalist asserts, we should follow the basic pattern of inquiry—recognize the problem, state the hypotheses, draw the inferences, perform the experiment, and make the observation. There is no logical necessity or guarantee that we will achieve new knowledge this way but it is reasonable to act on the assumption. If one chooses to call this faith, it is certainly of a different order from the faith that new knowledge will suddenly be won in some other way—as dif-

ferent as the faith that "if I sow, reap, mill and bake the wheat, I shall get bread" is from the faith that "manna will fall from heaven." This difference would remain even if men decided not to reach for new knowledge, and depressed by Hiroshima, were to cry "Sufficient unto the day is the knowledge thereof." The connection between the method that one *could* follow and the conclusions that depend upon its being followed, remains unaffected by what one wants or does not want.

It is all the more surprising therefore to hear from one critic that "the most fundamental objection to the 'naturalist's' procedure is that, in Peirce's words, it 'blocks the path of inquiry,' it seeks to settle by stipulation the very issues that we most need to be reasonable about if we can." Why? Because, he answers, "having committed themselves in advance to a position which identifies reasonable procedure with that which does not differ 'sharply' from that of the more fully developed sciences, they (the naturalists) will limit the scope of reasonable inquiry to what can be settled by the methods these sciences employ."¹¹

This charge rests upon a double confusion—one of interpretation and one of observation. It is not reasonable procedure—what Dewey calls the basic pattern of inquiry—of which the naturalist says that it does not differ sharply from the more developed sciences. It is the techniques and body of knowledge which enable us to control everyday affairs of which he says that they do not differ sharply from the techniques and body of knowledge that the sciences have developed. For some of the techniques and parts of the body of knowledge of the former are always incorporated in the latter. The reasonable procedure—which according to naturalists is emphatically *not* a special technique of any special science—is *identical* in every formal aspect in every field in which we can lay claim to tested and universally agreed on knowledge about the world. How, then, can it serve as an obstacle to further inquiry, unless it is held that some disciplines have a basic pattern of inquiry quite different from that employed by critical common sense and

science. What are these disciplines? What is this pattern? And what tested and universally agreed upon knowledge about this world or any other has been won by it? We are not told.

The error of observation derives from the failure to note that the driving motivation of modern naturalism has been not to block but to open up the paths of inquiry into whole fields which until now have not been investigated scientifically—especially the social disciplines. If this criticism of the danger threatened by naturalism were just, we should expect to find naturalists opposing attempts to employ scientific method in anthropology, history and economics on the ground that the methods and techniques of mathematical physics—"the more fully developed sciences"—were not applicable to them. But it is precisely the naturalists who by distinguishing between the basic pattern of inquiry and the special techniques applicable to different subject matters have been trying to banish methodological purism.

It is true that there have been occasions in the past when those concerned with the logic of scientific method have seemed to show excessive caution in evaluating the first efforts of scientific theories struggling to be born. Before the theory of evolution was buttressed by the findings of experimental genetics some biologists regarded its claims as too speculative. Today many scientific psychologists are very dubious about the validity of psychoanalytic theories which are somewhat in the same state as theories of magnetism at the time of Oersted and Oken. But all of these doubts, including those that follow from a too rigorously formulated canon of verifiability, far from obstructing inquiry are a challenge to it, and melt away as fruitful results are achieved and systematized. Such hypercritical doubts about evidence usually lead to suspension of *judgment* not of inquiry; they do not establish or enforce nontrespass signs. The dogmatism of a Comte who ruled out the possibility of our ever learning anything about the internal constitution of the stars, derided the undulatory theory of light, and professed skepticism about the results of microscopic investigation is as rare as it is

inconsistent, and was repudiated by his scientific colleagues as soon as his views were made known.

If we take a long view of the history of scientific inquiry, the evidence is overwhelming that it has not been the naturalists who have obstructed investigation into new fields by insisting that the methods of the more advanced sciences be taken as paradigmatic for all inquiry, so much as those who have contested the validity of the naturalist position, particularly in the study of the human body and mind. The deliverances a few years ago by high church dignitaries against psychoanalysis follow a precedent established by a long line of more distinguished predecessors. An interesting chapter remains to be written on the distortion produced in other fields of science by those who took mathematics as the *model* of all knowledge. But the mathematical ideal for all human knowledge was held by comparatively few naturalists. Those thinkers who took it seriously tended to regard scientific knowledge as mere opinion lost in the welter of appearances and unable to grasp reality.

The most powerful opposition to naturalism comes not from those who feel that it obstructs the path of inquiry and closes the gates to new knowledge but from those who fear that it arbitrarily excludes from the realm of existence and knowledge something which we actually have good reason to believe in, *viz.*, God and man's immortal soul. Naturalism *arbitrarily* excludes the existence of God and man's immortal soul, it is alleged, because its first principles and categories of explanation are such as to make the very assertion of their existence meaningless. If true, this charge would be serious indeed, for the naturalist professes to be open-minded about the possibilities of existence in a world in which his greatest efforts seem so modest in the cosmic scale.

There are many conceptions of God and the soul which are unintelligible because they involve the attribution of contradictory qualities to Him; and there are other conceptions which are so vague and indeterminate in meaning, that nothing significant can be

affirmed or denied of them. But it is not difficult to find conceptions that are sufficiently meaningful to make the contention of the *impossibility* of their existence arrant dogmatism. Are naturalists guilty of this kind of dogmatism?

I do not believe this to be the case. For one thing this would remove the sting from naturalism. Its criticisms of the belief in Deity have not been based on semantic considerations but on what it presumed to be the weight of scientific discovery. Some theologians and even some Catholic scientists like Duhem have sought to bolster the beliefs in God precisely on the ground that in relation to the categories of naturalistic science, the affirmation as well as the denial of God's existence would be meaningless. Such a view of naturalism is more devastating to atheism than to theism because the atheist does not profess to have any other categories at the disposal of his understanding while the theist emphatically does.

Secondly, wherever declared naturalists assert that the existence of God is impossible, it will usually be found they are using the term impossible not in the logical or mathematical sense but in the physical or medical sense in which we say that it is impossible for anything to burn or for a man to breathe without oxygen. Neither Professor Ducasse in his recent discussions of immortality nor Professor Ewing in his discussions of the body and its mental attributes have established anything more than what a sophisticated naturalist is prepared to grant them *to begin* with, *viz.*, that God's existence and personal survival are synthetic propositions and that therefore their denial cannot be contradictory or a matter for logic alone to settle. G. E. Moore once observed that the fact that one needs one's eyes for seeing is an empirical discovery, and this is obviously true for more recondite matters like the role of the brain in thinking and of the nerves in feeling. To see without eyes is physiologically impossible but every believer in immortality known to me is convinced that in his disembodied state he will see at least as well as he sees now. The two assertions are not *logically* incompatible for obviously the believer in immortality expects the laws of physi-

ology to be suspended in the hereafter. This is not logically impossible but the absence of a logical impossibility does not constitute a scintilla of evidence against the usual validity of physiological law as we know it. Every reasonable person in his behavior denies the assumption "that we have no right to disbelieve in anything which cannot be logically disproved."¹²

The history of naturalism, it seems to me, has been marked by two main tendencies. The first has interpreted God in the same way as the great historical religions; *viz.*, as an omnipotent personal power who guides the destinies of the world He has created—and concluded that the evidence does not warrant belief in the existence of anything corresponding to this conception. The second has reinterpreted the conception of God and used the term "God" to signify a principle of order in the universe, the totality of all things, the possibility of good in the world, or the object of human allegiance. Karl Marx once observed that even the profession of belief in deism on the part of scientists was motivated by a desire to win freedom to continue scientific inquiry and to escape molestation from those whom we would today call religious fundamentalists. But in most cases the attribution of such motives seems to be entirely gratuitous even though a greater freedom from interference by revealed religion may have been among the effects of the profession of deism.

Whatever the historical facts, the charge of dogmatism against naturalism on the ground that it rules out by definition the possible existence of God and the soul has often been made. Recently it has been renewed and fortified by quoting from an essay by Professor W. Dennes some ambiguous passages which are interpreted to mean that all things in the world *must* ultimately be described and explained in terms of the categories of quality, relation, and event. One critic then asks, "How do we know that the world consists of events, qualities and relations, and nothing more? We know only that we must so describe it if we are committed to basic categories of a naturalistic philosophy. . . . But would the nature of a spiritual substance be similarly determinable?"¹³ Another critic referring to

the same point writes, "If everything has to be an event, the idea of a timeless God is excluded from the outset and without argument. The writer asserts that his list of categories makes no demand upon the metaphysical commitments of the reader, as though giving up one's belief in God were nothing."¹⁴

These questions seem to me to misconceive both the meaning of the text criticized as well as the position of naturalism. I shall, however, discuss only the latter.

(1) Naturalism is not committed to any theory concerning which categorial *terms* are irreducible or basic in explanation. Naturalists differ among themselves about this in the same way that scientists may differ among themselves as to what terms in the language of science should be taken as primary. What all naturalists agree on is "the irreducibility" of a certain method by which new knowledge is achieved and tested. The analysis of this method may be made in terms of categories like thing, structure, function, power, act, cause, relation, quantity and event. The choice of which categories to take as basic in describing a method depends upon the degree to which they render coherent and fruitful what we learn by the use of the method. Historically, and up to very recently, the most widely used category among naturalistic philosophers has been matter or substance. It is a complete non sequitur to assume that because one asserts that the fundamental categories of description are X and Y and Z, and that they hold universally, he is therefore asserting that the world cannot be significantly described *except* in terms of X, Y, and Z, or as so many critics assume, that the world consists of "nothing but" X and Y and Z. One may use categorial terms A and B and C that are not fundamental and maintain either—what most naturalists do *not*—that they are logically definable in terms of X, Y, and Z or—what most naturalists do—that the conditions under which any existing thing is significantly describable in terms of A, B, and C are such that they are always describable in terms of X, Y, and Z.

This gives us two possibilities in respect to a term like sub-

stance. It might be defined as a constellation of events instead of a substratum in which predicates inhere, and all statements about substances translated without loss of meaning into statements about organized sets of events or processes. Or second, an attempt might be made to show that whatever else a substance is, its manifestations or appearances can always be described in terms of activities or operating powers, themselves definable as events or powers. This does not require that substances whether material or spiritual have to be directly observed, but it does require that their presumed manifestations or effects must be observable in our experience, else we can populate the world at will with the creatures of our fancy.

Whether the existence of the identifiable "effects" of an allegedly spiritual substance justifies our belief in the existence of a separable and immortal soul rather than our belief that they are "effects" of a highly organized body in a given culture is something which the naturalist proposes to solve, either (i) by proceeding in the same way and with the same logic that he makes inferences from the presence of certain observable occurrences to the presence of other unobserved occurrences, or (ii) by examining the experimental evidence for the survival of the soul or personality after the death of the body, which brings us into the field of parapsychology and psychical research.

That the choice of which categorial terms to use in description is a problem independent of determining what actually exists in heaven or earth may be clear if we bear in mind that even if we were to conclude that man has an immortal soul, that would not by itself answer the question whether it was to be described as a spiritual substance or an organized set of spiritual functions. Conversely, Whitehead denies the explanatory primacy of the category of substance, and using the categories of event, quality and relation reaches altogether different conclusions from naturalism.

(2) Nor does naturalism exclude the very idea of a "timeless" God at the outset and without argument, as Professor Raphael Demos alleges. Otherwise, as I have already indicated, it could not deny his existence or be denounced for its atheism. Naturalists use

the term "timeless" to designate traits and qualities in existence which either do not change or to which the predication of temporal quality is irrelevant. Circular things exist in time but their circularity is timeless. Before we can assert that there are timeless "entities" in existence which do not change, we should need some experience of them in time in order to distinguish them from what lacks changeless character. The point is not whether timeless nonexistential entities can be conceived without contradiction. Assume that they can. But Mr. Demos is talking not of a purely conceptual or logical construction from whose meaning we can deduce existence. He is talking about a timeless entity whose existence must be inferred, as in orthodox theology (*e.g.*, the Aquinate proofs of the existence of God) from a series of temporal and contingent events. And he must meet the naturalist contention that there is neither empirical nor logical warrant for the leap from what we can observe in our experience in time to a creature outside of time. That there must be some disclosure in time of what is presumed to be outside of time is a starting point of the argument, Mr. Demos must admit, else the whole concept of God is useless for the purposes for which Mr. Demos and orthodox theology invoke him.

(3) If God and man's immortal soul are so conceived that they have no empirical effects, then there is nothing to prevent anyone from imputing any set of logically consistent attributes to them. They would then take their place with other imaginary creatures in the realm of mythology. I can very well understand the refusal of historical religions to take such conceptions of God and the soul seriously, since it makes them completely otiose in understanding the world, superfluous entities that can be shaved away with a flick of Occam's razor.

It is of course true that in modern philosophy the term "God" has stood for many different ideas—natural structure, the order of cause and consequence, the principle of concretion or logical limitation, the experience of value and righteousness. Avowed atheists, like Morris R. Cohen, have described their dedication to truth, and

not only out of piety to the memory of Spinoza, as "the intellectual love of God." Naturalists are under no more compulsion to observe terminological taboos than other philosophers although one would expect them to be more careful of the context of familiar terms used to convey new meanings. If anyone gets particular satisfaction out of the use of the term God, then fortunately or unfortunately, he can find it in the writings of most naturalist philosophers. Naturalism, as a philosophy, however, has nothing to do with such linguistic matters important as they may be in other respects. Naturalism as a philosophy is concerned only with those assertions about existence from which something empirically observable in the world follows that would not be the case if existence were denied. And it proposes to treat assertions about God's existence in the same generic way that it treats assertions about the existence of invisible stars or hidden motives or afterimages or extrasensory perception. Critics of naturalism who regard this as dogmatic might put their charge to the test by furnishing the reasons or evidence which *they* hold warrant belief in the existence of God or gods, cosmic purpose or personal survival after death.

Some beliefs are reasonable even if we cannot finally confirm or disconfirm them. But if we take technological and practical behavior as the matrix of the reasonable, then beliefs in the existence of supernatural entities are not reasonable. They are not warranted even if they turn out to be true, just as a guess is not warranted knowledge even when it turns out to be true. Santayana somewhere suggests that the reason most people believe in immortality is that they cannot imagine themselves dead. This raises an interesting methodological point since only if we are immortal can we prove it, while the naturalists who deny the immortality of the soul will never have the satisfaction of saying, "We were right." "Wouldn't naturalists be surprised," a critic of the position once observed, "if after they died they woke up in the presence of God." They certainly would be surprised. The degree of their surprise would be the measure of the unreasonableness of the belief. Unreasonable behavior or

conduct may sometimes turn out right—*e.g.*, if I gave six to one odds on the toss of a well made coin—but it is no less unreasonable for all that. And what is true for conduct is true for belief. Consequently, in respect to the available evidence in our possession, the naturalist is reasonable in his belief even if it turns out he is wrong about God and survival, while the supernaturalist in respect to the same data is unreasonable even if it turns out he is right. "Faith in the supernatural," says Santayana, "is a desperate wager made by man at the lowest ebb of his fortunes."¹⁵ The scientist who predicts that life will disappear because of the second law of thermodynamics will never be around when the last flicker of life dims. The logic of the argument is no different in the case of immortality.

In conclusion, the naturalist believes that his assumptions are reasonable because they express, in a more general way, no more than what is expressed by any nonphilosopher as well as by all philosophers, whatever their school, in their successful working practice in solving problems concerning the nature of things. And by successful is meant here something independent of the categorical terms of naturalism or any other philosophy, something as simple, naïve, and infeasible as discovering a substance that subjected to friction will burst into flame, building a house that will withstand an earthquake, producing a seed that will yield a better harvest. Naturalism, as a philosophy, is a systematic reflection upon, and elaboration of, the procedures man employs in the successful resolution of the problems and difficulties of human experience. To use a phrase of Peirce, without giving it necessarily his special interpretation, it is "critical commonsensism." But it is more than this. It is a proposal. It is a proposal to continue to follow this general pattern of procedure in all fields of inquiry where it has enabled us to build up a body of knowledge, and to extend it to fields where we have not satisfactorily settled questions *of fact* of any kind. As a proposal it seems hardly less reasonable to the naturalist to follow than, when thirsty, under normal circumstances, to look for some liquid to quench one's thirst. Could any other proce-

ture be more reasonable or as reasonable? Or must we solve *the* problem of induction first? But to raise the problem of induction no less than to solve it assumes that we are already in possession of undisputed although not undisputable knowledge. And to facilitate the transition from the problematic to the undisputed in human affairs has been one of the underlying purposes of all historical forms of naturalism.

NOTES

1. C. S. Peirce, *Collected Papers*, ed. Charles Hartshorne, Paul Weiss, and Arthur Burks (Cambridge, MA: Harvard University Press, 1931–58), 2.66. The quoted passage is from 1902.—*Eds.*
2. *Ibid.*, 2.153, 1902.—*Eds.*
3. William James, "Philosophy and Its Critics," in *Some Problems of Philosophy: A Beginning of an Introduction to Philosophy* (New York: Longmans, Green, 1911), pp. 15–16; ed. Frederick H. Burkhardt, Fredson Bowers, and Ignas K. Skrupskelis (Cambridge, MA: Harvard University Press, 1979), p. 14.—*Eds.*
4. A. A. Goldenweiser, *Anthropology*, New York: Crofts & Co., 1937, p. 134.—*Hook*
5. F. Boas, *Mind of Primitive Man*, New York: Macmillan, 2nd ed., p. 131.—*Hook*
6. Bronislaw Malinowski, "Magic, Science and Religion," in *Science, Religion and Reality*, ed. J. Needham (New York: Macmillan, 1929), p. 35.—*Hook, modified by eds.*
7. A. A. Goldenweiser, *op. cit.*, pp. 420–21.—*Hook*
8. W. Crawshaw-Williams, "True Truth: or the Higher the Deeper," *Rationalist Annual* (London), 1948, p. 28.—*Hook*
9. John Dewey, "Common Sense and Science: Their Respective Frames of Reference," *Journal of Philosophy* 45, no. 8 (1948): 206; reprinted in Dewey, *Collected Works: The Later Works, 1925–1953*, 16: 253.—*Hook, modified by eds.*
10. Peirce, *Collected Papers* 2.780 (1902).—*Hook, modified by eds.*
11. Arthur Murphy, review of John Dewey et al., *Naturalism and the*

Human Spirit (New York: Columbia University Press, 1944), *Journal of Philosophy* 42, no. 15 (1945): 413.—*Hook, modified by eds.*

12. Crawshaw-Williams, *loc. cit.*—*Hook*

13. Murphy, *op. cit.*, pp. 411, 412.—*Hook, modified by eds.*

14. Raphael Demos, "A Symposium on Educational Philosophy: Reply," *Philosophy and Phenomenological Research* 7, no. 2 (1946): 271.—*Hook, modified by eds.*

15. George Santayana, *Reason in Science*, vol. 5 of *The Life of Reason* (New York: Charles Scribner's Sons, 1906; New York: Dover, 1983), p. 297.—*Eds.*