



## Alfred North Whitehead (1861-1947)

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The twentieth century, at least in English-speaking countries, has been predominantly an analytical, anti-speculative period (“The Age of Analysis,” according to a recent anthology). The glaring misfit in this case is Alfred North Whitehead. And what makes his apostasy the more striking is that he first achieved fame as one of the faithful.

Whitehead was born in 1861, in a village in southeast England, the son of an Anglican clergyman and schoolmaster. At the age of nineteen he entered Trinity College, Cambridge University, where he studied mathematics. “. . . during my whole undergraduate period at Trinity, all my lectures were on mathematics, pure and applied. I never went inside another lecture room. But the lectures were only one side of the education. The missing portions were supplied by incessant conversation with our friends, undergraduates, or members of the staff. . . . Looking backwards across more than half a century, the conversations have the appearance of a daily Platonic dialogue.”<sup>1</sup>

After he became a fellow in 1885, Whitehead came into contact with two somewhat younger men at Trinity, G. E. Moore and Bertrand Russell. It is one of the curiosities of intellectual history that the three greatest English philosophers of this century were all at Trinity College during the same period. The association with Russell was of particular importance. In the early years of the century, the two men, each of whom had published a book on the foundations of mathematics, discovered that their projected second volumes largely coincided; whereupon they decided to pool their efforts. The result was *Principia Mathematica*, one of the intellectual monuments of our time. During the period of his association with Russell, Whitehead also engaged in some very important work in the direction of constructing concepts of mathematical physics out of immediately given data. After the completion of *Principia Mathematica*, the ties with Russell were gradually broken because of profound differences, both intellectual and otherwise. This should be apparent to anyone who reads the selections from both men in this volume. According to a widely circulated story, in later years Russell considered Whitehead muddleheaded, while to Whitehead, Russell was simple-minded.

In 1910 Whitehead resigned his lectureship at Cambridge and moved to the University of London, where in 1914 he became Professor of Applied Mathematics at the Imperial College of Science and Technology. Much of his time in London was taken up with administration, and he became keenly interested in the problems of mass education in an industrial society, an interest which is reflected in his books, *The Organization of Thought* and *The Aims of Education*.

Prior to 1924, all Whitehead’s teaching had been in the field of mathematics. In that year, at the age of sixty-three, he accepted a Professorship of Philosophy at Harvard University. What followed amazed most of his former associates. This mathematician, logician, and analyst of scientific concepts began to propound a system of speculative metaphysics that is unsurpassed in the history of philosophy for scope, imaginativeness, and daring. It is expressed most fully in Whitehead’s masterpiece, *Process and Reality*, a formidable work, which is flanked by two less systematic and complementary volumes, *Science and the Modern World* and *Adventures of Ideas*. To be sure, this development was

foreshadowed in the earlier works, particularly the *Concept of Nature*. Whitehead never really sounded precisely like an analytical philosopher. He once remarked, "From twenty on I was interested in philosophy, religion, logic, and history. Harvard gave me a chance to express myself." But in fact the philosophical world was unprepared for what happened. Whitehead continued to teach at Harvard until 1937, long after the usual retirement age; and after his retirement he continued to radiate wisdom and gentility from his residence until his death in 1947. Some of the conversations at his "evenings" have been recorded in the *Dialogues of Alfred North Whitehead*.

Despite the tardiness of its flowering, Whitehead's genius had always been essentially a metaphysical one. His intellectual drive had always been toward synthesis, toward bringing together the apparently disconnected and mutually irrelevant. This can be clearly seen in his first book, *A Treatise on Universal Algebra*, in which he takes the sort of formal patterns we have in ordinary algebra and tries to give them a more general formulation, so that they can receive other than numerical interpretations, for example, geometrical and logical ones. The venture into speculative philosophy was an expression of the same sort of drive. *Process and Reality* opens with a notable definition. "Speculative Philosophy is the endeavour to frame a coherent, logical, necessary system of general ideas in terms of which every element of our experience can be interpreted."<sup>2</sup> In its emphasis on absolute generality, this statement conforms fairly closely to the conception of metaphysics in the grand tradition stretching from Aristotle's "science of being qua being" to McTaggart's "A consideration of what can be determined as to the characteristics which belong to all that exists, or, again, which belong to existence as a whole." But it is distinctive in being explicitly modeled on the method of hypothesis in science. This becomes clear when we realize that the latter part of the definition is designed to present the crucial criterion for the adequacy of a metaphysical system. To be adequate the system must be such that "everything of which we are conscious, as enjoyed, perceived, willed, or thought, shall have the character of a particular instance of the general scheme."<sup>3</sup> This means that Whitehead set himself against the sorts of procedures that have been most often followed by metaphysicians. He rejected the notion that the method of philosophy "is dogmatically to indicate premises which are severally clear, distinct, and certain; and to erect upon those premises a deductive system of thought. . . . The accurate expression of the final generalities is the goal of discussion and not its origin."<sup>4</sup> The alternative is what Whitehead calls "descriptive generalization," which consists in taking a set of concepts that have already been found applicable to some restricted area — biology, physics, art, logic — and trying to generalize them in such a way as to be applicable to all facts. The resulting system is then tested for defects, both internal (inconsistency, incoherence) and external (inadequacy to the facts). The scientific flavor comes from the heavy emphasis put on the external criterion. A large part of *Process and Reality*, and other books of this period, is an attempt to determine the extent to which the "categorical scheme" is adequate to various sorts of facts.

One criticism frequently leveled at Whitehead is that "he never argues for anything"; and you will discover that in the selection here reproduced he rarely pauses in his exposition to support what he is saying. But this lack is integral to his method. Remember that a metaphysical system is supposed to be coherent, that is, its constituent parts are supposed to hang together so as to require each other and indeed to be unintelligible without each other. This means that it would be futile to attempt to justify separate parts of the scheme piecemeal. The only hope lies in constructing the total scheme, and then determining the extent to which the scheme as a whole gives an adequate interpretation of all sorts of facts.

How would Whitehead reply to the attacks made on metaphysics by the logical positivists? Of course he has attempted to assimilate metaphysical and scientific method. But has he succeeded in showing that metaphysical statements conform to the verifiability

criterion as conceived by the positivists? Carnap would point out that Whitehead never specifies any observable facts that (if encountered) would disconfirm his system, and he might go on to claim, with considerable plausibility, that Whitehead's metaphysical principles, like all others, are so constructed as to rule out the possibility that there is anything to which they do not apply. Can we imagine anything that could not be interpreted as either a single Whiteheadian actual occasion, a component of an actual occasion, or a society of occasions? The theory is of such generality that when we "interpret" any field of experience in terms of it, for example, human relations, it doesn't lead us to expect one sort of observable facts rather than another. Anything that might conceivably happen in the sphere of human relations fits the theory as well as any other conceivable happening. This means that we cannot test (even partially) the adequacy of the theory by determining whether the actual facts are such as it would lead us to expect.

Even if Whitehead were to admit all this, he still has something to say to the positivist. "Philosophy does not initiate interpretations. Its search for a rationalistic scheme is the search for more adequate criticism, and for more adequate justification, of the interpretations which we perforce employ." The question is not whether we shall have metaphysics, but whether our metaphysics will be implicit and uncriticized, or explicitly formulated and developed so as to satisfy rational criteria in whatever way that is possible. Whitehead finds these metaphysical interpretations implicit in every department of human thought and activity. Here we shall be able to notice only the one that is most important for Whitehead's thought.

Whitehead devotes a great deal of his published work to discussions of the metaphysical presuppositions of science. This forms the main theme of *Science and the Modern World*, and it is touched on repeatedly in other books. With Whitehead's background in mathematics and physics this is not surprising. (Whitehead was not merely an onlooker in science. He developed a physical theory of relativity that has begun to be taken seriously by physicists as an alternative to Einstein's.) It is interesting that Whitehead is almost unique among today's leading philosophers in the way in which he tries to take account in his philosophizing of the content, as well as the methodology, of science. And, as he conceives the matter, philosophy does not merely take from science; in return it criticizes and illuminates scientific concepts and principles from the standpoint of its absolutely general scheme. "Thus one aim of philosophy is to challenge the half-truths constituting the scientific first principles."<sup>6</sup>

One of the formative factors in Whitehead's philosophical development was his attempt to find an alternative to the metaphysics he believed to be implicit in classical physics, which he termed "scientific materialism." According to this view, the physical universe, thought of as totally disconnected from the mental realm: (1) consists of bits of matter spread out in an absolute space and enduring through an absolute time so that each bit retains its identity as the same bit of matter through all its meanderings; (2) each of these particles has its essential character of mass, impenetrability, and so on, in itself, apart from its relations with other particles; it could be what it is even if there were no other particles for it to be related to; (3) each particle at any given instant has a unique position in space and time; (4) each instantaneous position is uniquely determined by the previous position of all the particles in the same system, in accordance with definitely statable principles.

Now Whitehead was impressed by certain developments in contemporary physics that seemed to invalidate this scheme, in particular the following: (a) the shift from continuity to discreteness in atomic physics (for example, it seems that the energy emitted by an electron is always a multiple of a certain fixed, minimum quantity; we never find any amount between these multiples); (b) the shift from deterministic to probability laws in the same area. This is a consequence of Heisenberg's Indeterminacy Principle, according to

which it is theoretically impossible simultaneously to determine with precision the position and velocity of a subatomic particle; (c) the breakdown of the category difference between space and time in relativity theory; in relativity theory, time is treated on a par with each of the three spatial dimensions. In the course of developing a scheme that would reflect these features of the new physics, as well as other areas of experience, better than scientific materialism, some of the main features of Whitehead's metaphysics emerged.

1. What is fundamental is process, rather than things that undergo process. The "final real things of which the world is made up" are "actual occasions," momentary happenings, not enduring hunks of matter that retain their identity through change. This is intimately connected with (c). For if time is no more different from a given spatial dimension than one spatial dimension is from another, then it is inadmissible to treat space and time as radically different, as is done in the traditional conception of substance. For according to that conception, to divide the space occupied by a thing is to divide the thing, but to divide the time occupied by a thing is not. Cut my camera in two and I have only half a camera. But suppose my camera lasted only two years instead of the four years it has lasted. This would not mean that I had only half a camera during those two years. The spatial extent of a physical substance is constitutive of its reality but not its temporal extent; it persists through time, while remaining wholly itself at any moment of its career. Now, if we refuse to use a double standard for space and time, we are led straight to the concept of an event or a happening as the ultimate unit. For the identity of an event (for example, a sneeze) is constituted by its duration as much as by its spatial spread. Consider half of the duration of a certain sneeze and you are considering only half the sneeze. A sneeze does not exist wholly at different moments. It exists, as a whole, only in the totality of its temporal spread. Time and space are coordinate for it.

2. Moreover, Whitehead conceived his actual occasions to be atomic. That is, each is a minimal, indivisible unit of becoming, in the sense that it is not made up of smaller happenings, each of which occupies a portion of its total duration. Although a larger unit (a "society") is made up of a succession of these minimal occurrences, there is no succession within each of the minimal occurrences. This feature of the scheme obviously reflects (a). Any change we can discern will be some multiple of the indivisible unit of change. "Time is a sheer succession of epochal durations." This notion of an entity that is a becoming, and occupies a temporal duration, without being a succession of shorter happenings, is a difficult one. In the attempt to formulate it, Whitehead was led into a number of paradoxes, a literary form to which he is not entirely averse. Within the actual occasion, "there is a becoming of continuity, but no continuity of becoming." "Extensiveness becomes, but 'becoming' is not itself extensive." "The epochal duration is not realized via its successive parts, but is given with its parts." There is a strong resemblance between this notion and William James's concept of the "specious present."

3. These happenings are internally related; that is, the essential nature of each is made up of its interconnections with all the others, so that no one of them could conceivably be what it is, apart from all the others being what they are. From this point Whitehead derives his famous, and obscure, "denial of simple location." Since each happening is, via its connections with them, involved in the constitution of every other, it is, in some degree or other, present in every region of space-time, on the principle that a thing is where it works.

4. The exact character of each occasion is not due entirely to the other occasions to which it is related, as would be true on a deterministic scheme. It can be fully understood only by taking into account a certain spontaneity peculiar to it as that particular happening.

Whitehead's account of descriptive generalization is reminiscent of Stephen Pepper's "root-metaphor" conception of metaphysical method (see his book, *World Hypotheses*<sup>7</sup>) in that both emphasize the way in which a metaphysician will take a set of concepts having an

established application in a restricted field and attempt to give it a universal extension. This is an illuminating way of looking at the history of philosophy. We can see how Aristotle started from biological concepts of form, function, and potentiality; Spinoza from logical concepts of premise and conclusion; Hobbes from physical concepts of matter and space; Berkeley from psychological concepts of perception, ideas, and volitions. It is typical of the richer systems to embody more than one such generalization, to be nourished by roots sent back into more than one special domain. Thus, I could have said, with equal justification, that Aristotle started from art or from formal logic. Whitehead's system also is characterized by this overdetermination. We have already seen some of the ways in which he generalizes certain features of contemporary physics. The title bestowed by Whitehead himself, "The Philosophy of Organism," would suggest that biological categories were most prominent. And indeed his concept of a society of occasions owes much to biology. But I think it is beyond question that the chief root-metaphor is human feeling. It is by taking our immediate feelings as his model that Whitehead is able to give a concrete filling to the abstract scheme which we saw to come out of the criticism of scientific materialism. Each occasion is thought of as a process of feeling, though few of them are conscious as some human feelings are. The integral connections among occasions are interpreted as "prehensions" (apprehensions without the "ap"). That is, each occasion is connected with others by taking them as objects of its feelings, so that each occasion is present in all others as data for their feelings. To justify talk about unconscious feelings, Whitehead gives a penetrating account of what he terms feelings of the "withness of the body." These are the massive organic feelings, for example, of visceral functions, forming the background for our vividly conscious sensations. Pointing out that there is a continuous shading from conscious attention to visceral feelings, through a dim awareness that they are there as background, to a complete unconsciousness of them, Whitehead maintains that we must suppose the feelings are going on, even when completely excluded from conscious attention. It is these feelings of the "withness of the body" that are taken as the chief model for "feelings in the mode of causal efficacy," which Whitehead thinks of as being fundamental in each actual occasion, and to which he refers in attempting to give an experiential basis for the concept of causality. Finally, the spontaneity that is an irreducible factor in the "concrecence" (coming to be) of an actual occasion is interpreted as the "subjective aim" of that occasion, the peculiar sort of unity of feeling at which it aims and which would constitute felt satisfaction for it. This means that the concepts in terms of which the detailed description of the constitution of an actual occasion will be given will be aesthetic concepts, in a broad sense of "aesthetics" in which it is considered to deal with the conditions of felt value, that is, the various dimensions in which experience can be more or less valuable, for example, orderliness, depth, contrast. In this regard the following autobiographical remark is of interest. "The effect of my wife upon my outlook on the world has been so fundamental, that it must be mentioned as an essential factor in my philosophic output. . . . Her vivid life has taught me that beauty, moral and aesthetic, is the aim of existence; and that kindness, and love, and artistic satisfaction are among its modes of attainment."<sup>8</sup>

When viewed most concretely, Whitehead's metaphysics is a panpsychism, based on a conviction that every existent is generically similar to a bit of human experience. Its nearest analogue in the history of philosophy is Leibniz's *Monadology*, from which it differs chiefly in treating the units as events rather than as timeless substances, and in converting Leibniz's "windowless" monads to a more modern style of architecture with glass all around.

I have said that Whitehead refuses on principle to argue for particular points in his system but, like most mortals, his adherence to principle is not undeviating. In particular, he occasionally slips into saying something in support of his panpsychism; since this is

such a crucial point in the system, let us look briefly at what he says. His scattered remarks on this point range themselves under three main justifications. First, if we do not conceive all occasions as involving feeling, we will have no way of conceiving what things are in themselves. We shall be able to think of them only insofar as they exhibit certain abstract patterns, such as spatial relations. Second, the continuity of man with subhuman life, and of the simplest organisms with nonliving matter, makes it very plausible to suppose that the same generic features are present throughout nature, with differences of degree. Third, panpsychism is a more economical theory. We have to admit sentient entities in any event; our consciousness of ourselves leaves us no option on that point. Therefore, it gives us a more economical scheme to suppose that all other entities are the same sort of thing, differing only in complexity of development, rather than to posit a radically different sort of unit — namely, insentient matter.

Whitehead's metaphysical system culminates in a philosophical theology, the details of which are found below. Here I shall only point out some of its affinities. Whitehead belongs with those thinkers (for example, William James) who have championed the concept of a "finite" God. Whitehead's God fits smoothly into his metaphysical scheme. He is the dominant actual occasion — one that has a concrescence of infinite duration. This means that His becoming overlaps with that of all other actual occasions, and that God is therefore immediately related to them all. But He is not all-powerful, nor is He credited with creating the world out of nothing. He is one of the factors within reality, engaged in reciprocal interactions with lesser actual occasions. The primary religious attitudes evoked by such a being are not speechless awe and wonder, but an active gratitude and devotion. Whitehead's God can use the service of His worshipers. He is doing what He can to bring about satisfactory fulfillments of the occasions of experience making up the world, but He is not omnipotent, and His benevolent designs will be more or less fully realized, depending on the use individual occasions (including those constituting human persons) make of their spontaneity. This sort of religious temper fits admirably the dynamic, open texture of the Whiteheadian philosophy.

## References

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2. A. N. Whitehead, *Process and Reality*, New York, The Macmillan Co., 1929, p. 4.
3. hoc. cit.
4. Ibid., pp. 11-12.
5. Ibid., p. 22.
6. Ibid., p. 15.
7. Stephen Pepper, *World Hypotheses*, Berkeley, Calif., University of California Press, 1942.
8. Whitehead, *The Philosophy of Alfred North Whitehead*, op. cit., p. 8.

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