Whitehead and the Sciences

PETE A.Y. GUNDER
University of North Texas

I have found much to admire in the symposium on Whitehead’s philosophy of education published in Interchange, Volume 26, #4, 1995. The contrast between Whitehead and Piaget, the possibility of building a useful bridge between Whitehead and “First Nations” education, the meaning that can be given to learning through the notion of embodiment: all are helpful to me and, one would think, will be helpful to many others.

This said, I think there are some problems connected with the manner in which the authors in this symposium state their interpretations of Whitehead’s basic stance. I refer to various statements which treat (or seem to treat) Whitehead’s philosophy as antiscientific or even anti-intellectual. This impression is misleading in itself. And it could, if carried too far, significantly damage an important part of learning, namely science education.

What follows is an attempt to set this record straight.

What is really striking about Whitehead is his ability to bring together two components of thought which are characteristically separated by most 20th century philosophers (usually to the detriment of one or the other). On one side there is logic, mathematics, and the sciences, on the other feeling, fluidity, novelty. But for Whitehead these are equally real aspects of one and the same world. The scientific approach to a proton or to a multicellular organism is not inconsistent with the understanding of these entities as feeling (“prehending”) their world and as shaping themselves purposefully.

That this is Whitehead’s most basic position can be shown straightforwardly in at least two ways. The first involves the way in which modern mathematical logic is presupposed throughout his thought. The second involves his understanding and appropriation of 20th century physics.

It is surely no accident that the author of Process and Reality (1929) was also the co-author (with Bertrand Russell) of Principia Mathematica (1913, 2nd ed. 1927). One of the goals of Whitehead’s philosophy of process, was to square a philosophy of process, like those of Henri Bergson and William James, with the demands of propositional thought, including the new logic of which he, Russell, and others were the founders. A rather technical discussion of Whitehead’s
concepts of "proposition" and "(relational) attribute," as well as an account of the modern "propositional function" as compared with Aristotle's subject-predicate proposition would be required to begin to outline Whitehead's approach to the relation between mathematical logic and the qualitative richness of experience (including the centrality of what later thinkers will call the "lived body"). That is not necessary here, or in the symposium on Whitehead and education. But it is important to keep in mind.

The second way in which Whitehead makes his philosophy consistent with the scientific viewpoint is mentioned in a footnote by Howard Woodhouse (p. 361) and explicitly alluded to by Mark Flynn (p. 379). It is certainly a strength of Whitehead's philosophy that it is modeled on, or at the very least consistent with, quantum mechanics and relativity physics. Roughly, the self-creativity of the actual occasion is grounded in the pulsational events of quantum mechanics; the relatedness of these events is understood via the macroscopic transitions of relativity. It is correct to say that Whitehead rejects Newtonian science. But it is wrong, in his name, to condemn "the irrational prejudices of the scientific method" (p. 406) or to state that Whitehead "moves away from a scientific perspective" (p. 385). Rather: He believes he has found a way to unify abstraction and concrete experience, science and sensibility, mysticism and logic.

**Science Education**

If mathematical and general scientific literacy are any indication—and granted that this is unfair to many dedicated science teachers—science teaching is not very well done as a rule. Professor Woodhouse notes correctly that the student's romantic sense of wonder "finds expression in artistic activity and aesthetic expression" (p. 527). It is quite likely that Professor Woodhouse means to extend this insight to the sciences as well as the arts. But the possibility of such an extension needs to be strongly asserted and its implications drawn.

To make a case for the positive implications of Whitehead's philosophy for science education all that is needed is to stress once more what the writers in this symposium have said about the rhythms of education in Whitehead, about the important place he makes for emotion in human thought, and about the dangers of atomistic thinking applied to the ways human beings learn.

Professor Flynn's discussion of Piaget's psychology is especially helpful in this regard. He makes it dramatically clear why emotion can and does play such an important role in Whitehead's theory of knowledge, while it acts only as a noticably empty (concept-free) "push" in Piaget's genetic epistemology. It is characteristic of modern thought to make Piaget's absolute separation of thought and feeling: Freud did it also, as did the entire positivist movement in