

ence and nonscience, we will not be able to give our schoolchildren either good science or good nonscience. All of our children will suffer, "deprived" children the most, as they will lack the parental counterpoints to such confusion on the part of their teachers. Our society and its posterity will pay heavily for allowing such obfuscation.

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ADAMS REPLIES: The community discourse, whether civil or congenial, condescending or confounding, generated by the Portland, Oregon, Public Schools' *African American Baseline Essays* has immensely contributed to the democratization of the curriculum and more. (The discourse has, for example, moved the cognitive universe and contributions of people of African ancestry from the margins of invisibility or insignificance to a higher level of regard and respect within America's predominant European ethos.) This was the spirit and sincere intent of the *Baseline Essays*' conception and writing.

The *Baseline Essays* were never intended to be used to replace any curriculum texts. In this regard, Bernard Ortiz de Montellano appears confused, because above he asserts, "the use of the Portland *Baseline Science Essays* [is] to teach science to children in grade school," but elsewhere¹ he states, "The essays are designed primarily for grade-school teachers to use as a resource outlining the contributions of Africans and African Americans to knowledge in these subjects" (italics mine). The latter is true.

There are several serious semiotic as well as philosophical issues to which Ortiz de Montellano in particular, as an anthropologist, should be sensitive but apparently is not, and in fact does violence:

▷ Consider, for example, the use of the term "supernatural." Many languages, particularly African ones such as that of the ancient Egyptians, do not have terms equivalent to such European terms as "supernatural," "religion," "magic," "myth" and "science." Thus nowhere in my essay (which is, by the way, only one of a number that make up the Portland *Baseline Science Essays*) do I use the term "supernatural." For African and other people (including Europeans) what constitutes "reality" can be far larger than what is compre-

hended by "testable," "empirical" and "rational" capacities.

I personally don't believe in the "supernatural" and am critical of the methods and claims of "parapsychologists" and of the deeply limiting models and metaphors of brain function and quantum mechanics they use to explain data and results. I am compelled, however, to acknowledge that there is substantial cross-cultural human experience, past and present, of something that even the National Research Council² (as well as universities such as Princeton and Duke) says should be studied. It is one thing to discard an explanation but quite another to discard the phenomena. The history of science is replete with things that were once deemed to be impossible but given time became central ideas, themes and paradigms—for example, ceramic superconductors, deterministic chaos and solitons. In addition, until recently, many scientists did not consider either anthropology or psychology a "science"—and many still don't.

▷ Consider, too, the use by Ortiz de Montellano and Alvin M. Saperstein of other pejorative terms with loaded meanings and coded contexts, such as "exotic," "creation science," "natural law," "racial guilt" and "deprived" children . . . lack[ing] parental counterpoints."

In my previous letter I asserted the necessity for science education to comprehensively address historical, philosophical and social aspects of scientific inquiry (such as the role of values and culture).³ Thus most revealing, perhaps, is Ortiz de Montellano and Saperstein's statement in reply, "The fundamental problem is not, as Adams implies, just a philosophical difference in epistemology or a question of historiography." Later they quote selectively and out of context my question, "whose interpretation of the history of science would be the authoritative one?" I additionally said: "Could there be one 'correct' view for all time? Who would decide which people and organizations would have the task of developing alternative views? . . . What is called for is more intellectual humility and less knee-jerk reaction to information that is not congruent with one's learned social history and education."

An ABC News "American Agenda" program, "The American Revolution in Education," aired in January 1993, dramatized how false assumptions about learning, unproductive and outmoded teaching strategies, track-

ing and poor school management have all stymied the development of the constellation of "intelligences" every child has. The program focused on some of the extraordinary successful creative efforts many persons, from parents to principals to psychologists, are making to revolutionize American education. Diversity was shown to be a great asset, if understood and properly used. The type of scientific inquiry that this program discovered generated the greatest enthusiasm and achievement is best described by Bruce Douglass and Clark Moustakas's notion of "heuristic inquiry."⁴ Heuristic inquiry captures the essence of the African integrative principle and ethical standpoint "Ma'at" as a mode of inquiry.

In summary, a "heuristic inquiry" is a passionate and discerning involvement in problem solving, a search for the discovery of meaning and essence in significant human experience. Douglass and Moustakas point out that heuristic inquiry is concerned with timing and attunement: "Just as the artist must control the use of color and shading in painting a sunset, so must the heuristic inquirer discipline the quest for knowledge, in precise and exact terms. When to probe deeper, when to shift the focus, when to pause and examine inmost layers of meaning, when to reflect, when to describe. . . ." This is the type of scientific inquiry I advocate.

References

1. B. Ortiz de Montellano, *Chronicle of Higher Education*, 25 March 1992.
2. See D. Druckman, J. Swets, eds., *Enhancing Human Performance: Issues, Theories, and Techniques*, Natl. Acad. P., Washington, D. C. (1988).
3. See also P. Carruthers, *Eur. J. Phys.* **9**, 110 (1988).
4. B. Douglass, C. Moustakas, *J. Humanistic Psychol.* **25**(3), 39 (1985).

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Correction

July, page 54—Because of a key-boarding error, Sean Solomon's article "The Geophysics of Venus" stated incorrectly that "tracking the [Magellan] spacecraft for 360° of longitude in . . . a circular orbit will yield a gravity field of uniformly good coverage and resolution by the end of this month [that is, July]." Mapping Venus's global gravity field will require tracking Magellan for approximately the next 16 months, or through the end of 1994. ■