The Culture of Objectivity

Beamtimes and Lifetimes. The World of High Energy Physicists. SHARON TRAWEEK. Harvard University Press, Cambridge, MA, 1988. xviii, 187 pp. $20.

Every sensitive observer of contemporary science and technology will want to read this short, compelling description of the people whose lives are devoted to accelerators. The culture of high energy physics is so much a distillate of the culture of science as a whole that each of us will see something of ourselves in Traweek's anthropological report. What we see is disturbing. "I have presented an account," she writes, "of how high energy physicists construct their world and represent it to themselves as free of their own agency, a description . . . of an extreme culture of objectivity: a culture of no culture, which longs passionately for a world without loose ends, without temperament, gender, nationalism, or other sources of disorder—for a world outside human space and time" (p. 162). Traweek's analysis makes clear, however, how very firmly anchored in human space and time our science is. It therefore raises the question: Why do we banish ourselves from our vision of what we are doing? Even if we consider science a god, why can't we recognize that she takes a human form?

In high energy physics, the culture of objectivity is embodied in conceptual and physical machinery that separates timeless truth from ephemera. One manifestation of the culture of objectivity is the distinction physicists maintain between data and noise, a distinction that must be painstakingly built into their machines, the detectors. There are different styles of building detectors, Traweek observes, and therefore different styles of sorting data from noise as well as different styles of relating traces in the machine to the collective knowledge product, theory. In the cosmology of high energy physicists—"their system of knowledge, skills, and beliefs, what is valued and what is denigrated" (p. 7)—detectors occupy a central position, as the place where scientist and nature interact.

Traweek's account becomes more startling as she demonstrates how the social world of high energy physicists reflects this cosmology. First, the "noise" of the rest of the world has been cut off from the pure realm of the physicists, with both physical and social fences. Around that pure realm is a buffer zone occupied by followers who understand the sanctity of physics and are willing to sacrifice themselves to it—namely, spouses, the views of whom are represented in Traweek's account by one who claimed that "one could best contribute to society and civilization by providing as much support as possible for [one's spouse]; very little else could be as important" (p. 83). Finally, even within the pure realm, individuals are constantly being tested for the appropriate qualities—"drive, commitment, and charisma"—and discarded if they are found wanting, just as background noise is discarded from the analysis. The belief in physics as a meritocracy and the accompanying rigid hierarchy within and between laboratories are thus further manifestations of the culture of objectivity.

Traweek's comparison with Japanese high energy physics shows clearly how much a human choice these social arrangements are. In Japan, research groups are organized nonhierarchically; competitiveness and individuality are considered undesirable feminine traits, in contrast with the masculine virtues of interdependence, teamwork, and nurturing; and accelerators and detectors are not built by researchers but are commissioned from private firms, by government decree. In Japan, physicists are able to wait to start using a new accelerator; they are not consumed with the data addiction of their U.S. counterparts, who are driven to rush a half-finished detector onto a beam to get their data-fix.

American physics could be different from the way it is, Traweek's account tells us. By implication, science—which physics symbolizes—could be different as well. Do we want it to be? Traweek stops short of calling the culture of objectivity dehumanizing, but I find that description inescapable on the basis of her book. The question, then, is whether we want people in science, or whether we want to continue to worship it as an object separate from ourselves.

This question makes *Beamtimes and Lifetimes* important, even essential, reading, despite features that will annoy a number of readers. The analysis is maddeningly inductive, for instance. Readers not only are left to draw many conclusions for themselves but are frequently left in the dark as to the type of conclusion toward which the description is moving. My best advice on this score is to settle back with the book, absorb the description, then be prepared to ask yourself, when Traweek finally arrives at her interpretative passages, whether she has supported them adequately. Another source of annoyance is her tendency to generalize, almost to the point of stereotyping, about "senior physicists," "American physicists," and the like. After numerous instances of such generalization, she finally acknowledges on p. 146 of 162 pages of text that she is using Max Weber's "ideal types," a way of smoothing away variations in behavior in order to talk about clusters of differences; but this last-minute reference is scarcely enough.

Others will be annoyed by the unusual presence of Traweek herself in the text. While reading the third-person descriptive material, we find Traweek changing graduate schools, having dinner, shocking Japanese children off their bicycles with her resemblance to a mythical dragon, and getting married and divorced. Scientistic social scientists, in particular, will find such insertion of self into the text objectionable; more forgiving readers will find that many of these passages help them achieve the anthropological distance that is essential to grasping the argument fully. All should recognize that if Traweek had left herself out she would have blunted the main point of her argument.

Finally, some readers will be annoyed with Traweek's analysis of the genderization of physics, including her descriptions of how detectors resemble female anatomy, her strong reading of scientists' expressions of love for their data, and the notion that they are coupling with nature. As with her other interpretations, there will be disagreement; but if the description were timid, it would not be as thought-provoking.

I urge that none of these annoyances stand in the way of a careful reading of this book. The ultimate question Traweek's work raises is not why the cosmology of American physics discourages women from participation—an important enough question—but rather why that cosmology excludes humans. If Traweek has this wrong, her work needs careful critique. If she has it right, it deserves serious thought.

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