I am not claiming that the philosophical writings of quantum physicists are the only source for postmodernist criticism of science. But they are a source, and a most authoritative one. The impact of the Copenhagen writings on the postmodernist predicament is more profound than was apparent from my PHYSICS TODAY article. The Copenhagen claim of the impossibility of gradual modification of the quantum paradigm inspired the Kuhnian notions of irrational jumps from one paradigm to another, of the impossibility of communication between different conceptual frameworks, of the absence of rational standards for comparison between alternatives and consequently of excessive relativistic claims about science.[6] These notions had a far-reaching impact on the general academic discourse.

The reasons for the emergence and the diffusion of the Copenhagen interpretation are diverse.[7] Bohr's philosophical background is one of them. Through his teacher Harald Høffding, Bohr inherited from Immanuel Kant the idea of deducing "irrefutable" knowledge by philosophical analysis of "conditions of experience." This approach underlies Bohr's simple thought experiments, which, avoiding mathematics, supposedly necessitate quantum uncertainty and complementarity. Byers is right that physicists are unlikely candidates to spread the illusion of the dispensability of mathematics, yet by endorsing such misleading explanations (that are, in Byers's words, "less difficult to nonphysicists"), they unintentionally do so. Rather, the patient teaching of the theories themselves, as done by Scott Keyes and his colleagues, can diminish scientific illiteracy and prevent gross misunderstandings of science.

It should be clear by now that in my article I did not intend to ridicule anyone. My point was rather that unleashing arrows of satire is an uncontrollable experiment, in which one cannot ensure where such arrows may ultimately land. Ironically, Alan Sokal chose to make his plea for a return to reason not by using rational argument, but by other means.

A return to the Enlightenment idea of rationality is as desirable as a return to classical physics. The notion of binding universal reason is too impoverished to take into account the sociohistorical context of science and individual scientific creativity. As Martin Gutzwiller writes, every scientist at work is a "distinct individual." How can we explain that many scientific results can be both strikingly imaginative and amazingly well-grounded? Such an explanation cannot be obtained by using empty slogans and hostile accusations.

Perhaps we should follow Dan Agin's advice "to bring the experts together in a climate of mutual respect."

Perhaps we also should invite each other to dinner, as was suggested by Robert Oppenheimer when he similarly faced excesses of antirationalism and a gap between two cultures: "We can have each other to dinner. We ourselves, and with each other by our converse, can create . . . [an] intricate network of intimacy, illumination and understanding."[8]

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Hooray for 1998 Nobel in Physics, but What about Fowler *et al.*?

I was pleased to see that in 1998 a second Nobel Prize was awarded for work on the quantum Hall effect. This one, for work on the fractional quantum Hall effect, may be of more fundamental interest than the one awarded to Klaus von Klitzing in 1985.

Nevertheless, I feel that the Nobel committee is perpetuating an oversight by continuing to neglect the most fundamental and far-reaching work in the field—namely, the experimental demonstration of the existence of the two-dimensional electron gas by Alan Fowler, Frank Fang, Webster Howard and Phil Stiles in 1966.[1] Their work, which had a profound effect on the direction of semiconductor research, is the basis for both the 1985 and 1998 awards. The Nobel committee acknowledged that in 1985, but did not even bother to do so in 1998. In addition, the pioneering work done by Fowler and colleagues has also been the basis for several successful semiconductor devices. Just how long must they wait for the recognition they deserve?

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Abbot, with Physics Career of 8 Decades, Passes Bethe Test

In his letter to the editor (PHYSICS TODAY, September 1998, page 15), Reuben Rudman essentially proposes an honor roll of professional longevity, noting that Paul P. Ewald's 70-plus years of activity were a match for those of his son-in-law Hans Bethe. However, surely their place on the roll is below that of Charles Greeley Abbot, who studied solar radiation from the time he reached the Smithsonian Institution in 1895 until shortly before his death in December 1973 at the age of 101, and who—according to his PHYSICS TODAY obituary (May 1974, page 65)—spoke at the opening of a symposium the month before he died.

Abbot was scientifically active through seven sunspot cycles, and I remember hearing that a Fourier transform of the number of his papers showed a peak with that 11-year period. His long-term scientific results about solar variations were controversial, though, and have since been reevaluated in the context of modern results by Peter V. Foukal, David H. DeVorkin and others.[1] And the link between solar radiation and terrestrial weather that Abbot reported is not currently believed.

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Correction

August 1998, page 49—In the pie chart on the cumulative costs of the US nuclear arsenal, the slice labeled "other outlays" should have been 0.11%, not 1.1%. ■