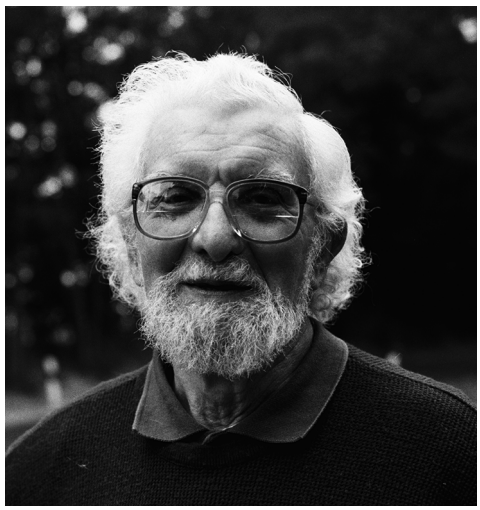
News of the Profession: Eloge



Photograph taken by Skúli Sigurdsson.

SILVAN SAMUEL SCHWEBER (1928–2017)

Sylvain (Anglicized to Silvan) Samuel Schweber was born in 1928 in Strasbourg, France. The family was orthodox Jewish. He left France in 1942 with his mother and sister. Their destination was New York City, where Schweber's father—who had served as a soldier in the Austrian army during World War I—was already living, having entered the country early enough to be able to pull the Schweber triad from Vichy France to the United States. On their journey to the promised land they stayed for nine months in Havana. The young Schweber was struck by the contrast he noticed between the absence of U.S.-style racism in Cuba and what he later witnessed on the Eastern Seaboard of the United States.

I know I speak for very many historians of science when I describe Schweber as memorable, visionary, supportive of students, visitors, and colleagues, and wonderfully productive as a historian of science, be it as a historian of biology or of physics. I consider it one of the fortunes of my life to have gotten to know him and to have benefited from his caring generosity and his demanding teaching.

It was in the fall of 1979 that I first met Schweber. The occasion was a lecture course on thermodynamics and statistical physics he taught at Brandeis University, where he had been since 1955. He was a theoretical physicist, but the legacy of his Ph.D. studies in Princeton under the tutelage of the mathematical physicist Arthur Wightman showed in the course. The title of Schweber's dissertation, completed in 1952, was "The Configuration Space Treatment of Relativistic Field Theories." From 1952 to 1954 he was a postdoctoral fellow at Cornell University; the most important product of this stint was a book that he wrote with Hans Bethe and Frederic de Hoffmann: *Mesons and Fields*, Volume 1 (1955). Forty-six years later, in an insightful interview with Arne Hessenbruch, Schweber noted: "What was characteristic of my 1952–54 experience at Cornell was the intimate relationship between theory and experiment, something I had not felt at Princeton."[1]

The 1979 Brandeis lecture course in physics that I remember so well met twice a week. Taken by four students, it was housed in a relatively small room with—and this is crucial for understanding Schweber's teaching skills—two blackboards. When time was up, Schweber had filled both blackboards with his elegant handwriting. He was an excellent teacher: clear, caring, inspiring. Early on I asked him about Richard C. Tolman's *Relativity, Thermodynamics, and Cosmology* (1934). His answer was: No, the book is much too difficult as a supplementary text. Nevertheless, the next time the class met Schweber lent me an introductory text in quantum mechanics.

[1] Arne Hessenbruch, interview with Silvan Samuel Schweber, 27 Aug. 2001, https://authors.library.caltech.edu/5456/1/hrst.mit.edu/hrs/materials/public/Schweber_interview.htm.

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The subject of this lecture course, which had chance, reductionism, phase transitions, calculations, community, and experimentation as its main themes, was very close to Schweber's heart and remained so throughout his life. Indeed, these themes reappear in a series of magnificent papers that he published between 2014 and 2016. But the manner in which he treated them here makes it very clear that his perspective had shifted considerably since the time—by now four decades behind him—when he made the move from physics to the history of science.

The occasion for that move was a sabbatical year at Harvard University. Schweber used it to write a substantial paper that appeared in the *Journal of the History of Biology* in 1977 under the title "The Origin of the *Origin* Revisited." Indeed, it is very important to highlight Schweber's point of entry to the history of science—namely, that of intellectual history and history of ideas, particularly with regard to Darwinism and Victorian culture. He had been very impressed by Howard E. Gruber's *Darwin on Man: A Psychological Study of Scientific Creativity* (1974). This new approach was also colored by Schweber's bonding with English-language poetry, cemented by his reciting poems at night to his first wife, Myrna, who suffered from multiple sclerosis. Two more publications in the same journal followed: a paper on Darwin and the political economists and an essay review of Susan Faye Cannon's *Science as Culture* (1978). Further papers include one about demons, angels, and probability, published in 1982 in a *Festschrift* for the theoretical physicist László Tisza; one on the wider British context of Darwinism, which appeared in a 1985 volume, edited by David Kohn, that took stock of the Darwin industry; and one on Auguste Comte and the nebular hypothesis, part of a *Festschrift* for Frank E. Manuel that appeared belatedly in 1991. Schweber also kept publishing about Darwinism and its British intellectual context.

Schweber was an honest and hard-working man who held himself to exacting standards. This became very clear in the countless book reviews he wrote, which absorbed a considerable part of his prodigious energies. In a very critical review of Arthur I. Miller's *Empire of the Stars: Obsession, Friendship, and Betrayal in the Quest for Black Holes* (2005) Schweber concluded by observing, in a fashion typical of him:

> I have been critical of Miller's book. It is not that I do not respect what he attempted to do, nor that I do not admire the erudition and hard work that went into writing the book. It is that I believe that off-scale people like Chandra and Eddington are very complex and often very difficult; and also that I believe it is unlikely that a *single* event can be so traumatic or important for such people as to determine the most important facets of their subsequent intellectual productions and/or of their character. It is because, like Miller, many of us try to write about important subjects, try to be relevant, try to give an insight into being creative in the sciences, that I have taken the liberty to be critical in order to learn to be more sensitive and successful in this arduous task.[2]

The meaning of epithets like "honest," "sincere," and "hard working" becomes palpable when we sail on the ethereal waters of Google Scholar and then come across two reviews that, thanks to Schweber's third wife, Snait Gissis, have appeared posthumously: a review of Roger Penrose's *Fashion, Faith, and Fantasy in the New Physics of the Universe* (2016) and a review of the English translation of the correspondence between Elisabeth and Werner Heisenberg in the years 1937–1946 (2016).

In the spring of 1987 Schweber was a visiting professor in the history of science at Harvard. He gave two courses, a lecture course on the history of physics in the twentieth century and a seminar on probability and chance from the Enlightenment, via Victorian culture (Darwin, Maxwell), to U.S.-style pragmatism along the lines of James and Peirce. I attended both courses. Schweber's breadth of coverage was noteworthy, one of the underlying goals of the seminar being to understand how a pragmatist like Peirce

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[2] Silvan Sam Schweber, rev. of Arthur I. Miller, *Empire of the Stars: Obsession, Friendship, and Betrayal in the Quest for Black Holes*, *Journal for the History of Astronomy*, 2007, 38:519–522, on p. 522.

could seriously envision that the laws of nature could be the result of natural selection. At this time Schweber was moving more and more into the history of twentieth-century physics.

Deep changes were taking place in Schweber's scholarly orientation during the 1980s. In retrospect it is clear that he was frequently overcommitted; even so, he managed to carve out a niche of growing productivity in the history of science at Harvard, not only for himself but also for the graduate students in the history of science department and for visiting scholars and faculty members. The two-hour colloquium, "Joint Seminar: History and Philosophy of Twentieth-Century Science," that he ran on Friday afternoons was memorable for the diversity of its themes (and for all the Pepperidge Farm cookies he used to serve as well). It constituted one point of a quadrangle whose other vertices were the departmental colloquium itself, the Boston Colloquium in the Philosophy of Science run by Robert S. Cohen at Boston University, and the Dibner Institute colloquium at MIT directed by Jed Z. Buchwald. This quadrangle became Schweber's utopia.

Schweber's output in the history of science over some forty years is nothing less than awesome. When he began to tackle the project of writing the biography of Hans Bethe (1906–2005), he had (leaving aside his publications on physics) published work on Darwinism and Victorian culture, on twentieth-century science and the military, on operations research (together with Mike Fortun), on renormalization theory (together with Tian Yua Cao), and, in a delightful paper in *Reviews of Modern Physics* in 1986, on Feynman and the visualization of space-time processes. On top of all this came his 1994 magnum opus *QED and the Men Who Made It: Dyson, Feynman, Schwinger, and Tomonaga*. Schweber was both well- and ill-equipped for this gargantuan biographical task. On the one hand, there was that early 1950s postdoctoral fellowship with Bethe at Cornell—he had come to idealize both the man and the university environment. On the other hand, the task of writing Bethe's biography was the result of Bethe's own request, to which Schweber had acquiesced without quite recognizing either the growing vastness of the Bethe papers or the time-consuming nature of oral history. In the fall of 1994 it dawned on Schweber—already well immersed in the source material—that the Bethe biography "thus conceived would take up three volumes that no one would read. This would be unfair to Bethe (for I believe his life ought to be read), and would also be unfair to me. My aim at present is to write a book of some five hundred pages in length, that would be accessible to a wide audience."[3]

Schweber was both erudite and theoretically inclined as a historian. That explains his engagement with, for example, the writings of Paul Forman, Ian Hacking, Michel Foucault, and Frank E. Manuel. The vehicle that Schweber used to escape from the Bethe impasse was the venerable technique of studies on parallel lives. In his case this would lead to separate studies on Bethe and Rudolf Peierls, on Bethe and George Gamow, on Bethe and Edward Teller, on Bethe and Victor Weisskopf (chapters all—or, rather, quasi-books), and on Bethe and J. Robert Oppenheimer (really a book this time, published in 2000 and entitled *In the Shadow of the Bomb: Oppenheimer, Bethe, and the Moral Responsibility of the Scientist*). When he embarked on this series, Schweber could draw in addition on his own beautiful study in parallel lives in which he compared John Herschel and Charles Darwin (published in 1989 in the *Journal of the History of Biology*). The method of parallel lives is intriguing and potentially very fruitful: it brings in the social and the contingent; it can mitigate any tendency toward hagiography; it can be liberating for the author. We can fruitfully read Schweber's *QED* as another instantiation of this technique, although this time with four lives instead of two. A later exercise in parallel lives, *Einstein and Oppenheimer: The Meaning of Genius*, appeared eight years after the Bethe/Oppenheimer book and was followed in its turn by his 2012 *Nuclear Forces: The Making of the Physicist Hans Bethe*.

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[3] S. S. Schweber, "Writing the Biography of a Living Scientist: Hans Bethe," subsection "The Biographical Task." This appeared in *The Pauling Symposium: A Discourse on the Art of Biography*, proceedings of the "Conference on the Life and Work of Linus Pauling (1901–1994): A Discourse on the Art of Biography," 28 Feb.–2 Mar. 1995, Corvallis, Oregon (Corvallis, 1996).

At Harvard Schweber enjoyed the company of colleagues, graduate students, and visitors in a free and generously open manner. As a man of very wide reading, he of course enjoyed free access to the libraries, notably the Widener but also the one in the basement of the Science Center that was then still open to the general public. This was a world on paper, and when openness ceased to be the rule Schweber registered the event as yet another sign of a fundamental change going on in the structure of the universities and other institutions of higher learning in the United States. The signal event was the Bayh-Dole Act, enacted by the U.S. Congress in December 1980. Slowly but surely, corporate structures permeated academia, with deep consequences for the entire knowledge economy.

The accompanying photograph from the summer of 2008 is vintage Schweber. It radiates care, concern, and warmth. It is dignified, yet without a hint of pomposity. It is also cheerful. Even so, there must have been many less cheerful moments in his house in Lexington, as his marriage to Miriam Schweber, his second wife, was fraught with tension.

The emphasis Schweber placed on the community, on the collective, and on the social comes clearly to the fore in his contribution on Hans Bethe in *The New Dictionary of Scientific Biography*. It ends on the following note: "Physics at Cornell became a model of a communicative community [Dewey]: one that exists under the constraint of cooperation, trust, and truthfulness, one that is uncoerced in setting its goals and agenda. For Bethe such a community was the guarantor that one of the most exalted of human aspirations—the desire to be a member of a society which is free but not anarchical—could indeed be achieved."[4] It is a picture of Schweber no less than of Bethe himself, and countless people will remember him that way.

Skúli Sigurdsson

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[4] Silvan Schweber, "Hans Bethe," in *The New Dictionary of Scientific Biography*, Vol. 1 (New York: Scribner's, 2008), pp. 269–276, on p. 275.