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WITHOUT PARALLELS?: AVERTING A SCHWEBERIAN DYSTOPIA

A comparison between Plutarch and Sam Schweber cannot be pushed very far. While the Classical author wrote immensely engaging parallel lives, largely of statesmen and political figures in Greece and Rome — juxtaposed in parallel to illuminate historical patterns and repetition — his analysis was light and his sizable rhetorical skills were employed for the purpose of painting interesting stories that have continued to serve as a vault of anecdote in the millennia since. Schweber's revival of the practice of telling parallel lives as a narrative and explanatory strategy in the history of science has deeper intellectual aims. Schweber's goal has not been to divert or amuse but to instruct and provoke thought, reasoned debate, and — ultimately — political and ethical *judgment*. This is not the place (and I am not the person) to attempt to sketch the sequential careers of Sam Schweber as physicist and as historian of science, although such an exploration (and what it might reveal about the origins of the idea of employing parallel biography as a historiographic tool) would be very informative. Instead, I will focus on the potential of the parallel gambit to address the transformation in the history of science towards biography (largely from external pressures from publishers) and how it can simultaneously enrich both our pedagogical techniques and — of central importance to Sam Schweber as an individual — how we as a *community* interact with each other both within and across generations.

Biography has been a central mechanism by which Schweber has engaged with his historical material and presented to us a world (primarily in the history of the physical sciences) that is both rich in technical detail and in historical nuance. I could list his works in this regard at great length but I want to focus instead more narrowly on two of his monographs, which emphasize the role of *parallel* lives (thus excluding excellent studies such as those of John C. Slater or the parallel institutional study of MIT and Cornell): *QED and the Men Who Made It* and *In the Shadow of the Bomb*.[1] Both of these address the intellectual and social place of physics after World War II, which is not a coincidence; how we as historians can

1 Silvan S. Schweber, *QED and the Men Who Made It:Dyson, Feynman, Schwinger, and Tomonaga* (Princeton: Princeton University Press, 1994); and idem, *In the Shadow of the Bomb: Oppenheimer, Bethe, and the Moral Responsibility of the Scientist* (Princeton: Princeton University Press, 2000). For the studies of Slater and Cornell/MIT, respectively, see: idem, "The Young John Slater and the Development of Quantum Chemistry," *Historical Studies in the Physical and Biological Sciences* 20 (1990): 339–406; and idem, "Big Science in Context: Cornell and MIT," in Peter Galison and Bruce Hevly, eds., *Big Science: The Growth of Large-Scale Research* (Stanford: Stanford University Press, 1992):149–183. I also sadly exclude the striking exploration of Victorian culture and science

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illuminate the political and ethical quandaries posed by modern physics has been a central problem for much of his historical oeuvre.

In the first book, Schweber ably traces the conditions that enabled a solution to the fretful infinities that plagued quantum electrodynamics (QED) before World War II to emerge in the immediate postwar years. He describes in detail the alternative solutions of Julian Schwinger, Sin-itiro Tomonaga, and Richard Feynman and then the masterful equivalence proof between the various fomalisms developed by Freeman Dyson. Not only are all these lives placed in parallel to show how the same problem can be subjected to different solutions depending on the intellectual trajectory, institutional and political context, and available resources at hand to the physicist but they are also juxtaposed with the failed attempts of Wolfgang Pauli to solve the same equations in Zurich. There is (placing Tomonaga in brackets here) something very *American* about the solution to QED, Schweber argues and this is something that is revealed *only* when one sees all these biographies in parallel.[2] The specificities of each case are controlled for — almost in the manner of a science experiment — and one can see what is unique to each actor without reifying his or her peculiarities into a "universal" characteristic. Parallelism removes the classic temptation of the biographer: to see in the single (and singular) biographical subject some kind of "skeleton key" that will open up a culture. *In the Shadow of the Bomb* performs a similar paralleling of Hans Bethe and J. Robert Oppenheimer to elucidate their differing positions on the nuclear arms race and McCarthyist persecution of physicists. The central dynamic here is the moral and ethical concept of "integrity," and here the parallels leave Oppenheimer — so often portrayed as the tragic hero of modern physics — wanting.

I have, in that all-too-brief précis, already hinted at some of the problems of writing history of science as biography. Biography is not well regarded in today's historical profession. First, it is perceived as lacking in analytical rigor: the birth and death dates of a given scientist (to take our narrow case) do not typically represent historically momentous events and the long dalliances with the childhood of a scientist, *de rigeur* in most biographies, most often do not help illuminate the adult scientist (with his or her years of training and collaboration) unless one subscribes to the crudest of psychobiographical formulas. Second, biographies tend to be weak in terms of *argument*: the biographer gets caught up in the romance (often literally) of the subject, and thus loses the thread of analysis in the narrative. This may make good reading but it often results in poor history. The control effect

offered in idem, "John Herschel and Charles Darwin: A Study in Parallel Lives," *Journal of the History of Biology* 22 (1989): 1–71.

2 This develops, obviously, the justly-famous Schweberian claim that American physics is deeply rooted in a culture of pragmatism, his response to Paul Forman's provocative thesis about acausal physics in Weimar culture: S. S. Schweber, "The Empiricist Temper Regnant: Theoretical Physics in the United States," *Historical Studies in the Physical and Biological Sciences* 17 (1986): 55–98; and Paul Forman, "Weimar Culture, Causality and Quantum Theory, 1918–1927: Adaptation by German Physicists and Mathematicians to a Hostile Intellectual Environment," *Historical Studies in the Physical Sciences* 3 (1971): 1–115.

that parallel lives offer enables one to avoid these arguments; far from doubling or tripling the research burden, one often finds the narrative scale focused and clarified, as one realizes what is specific to the individuals in question and what is general to the scientific problem, the scientific community or the relevant cultural framework.

Coming up with a mechanism for writing a biography that is both rich in narrative and analytically coherent — what Schweber has done with his neo-Plutarchian parallel lives — is all well and good in ordinary circumstances, but perhaps something that should not concern the entire discipline of the history of science. Unless, that is, the field is experiencing an enormous push toward writing biographical works — which is in fact the case. That is, students in the academy are trained to disdain biography and are usually discouraged from writing dissertations in this format, and when they obtain their doctorate and try to publish their work, they find that biographies may be the only genre that remains publishable in this grim manuscript market. As academic publishing across the board becomes more competitive and university presses increasingly model themselves on trade-press criteria, biographies are in high demand. The future of our field, if younger scholars want to get tenure (and thus must publish their work), often seems like it lies in increasing numbers of biographical studies. This is not necessarily something that we should lament. A wider attempt to employ Schweber's model might be a *tertium quid* where we can balance the justifiable anti-biography qualms of the academic and the pro-biography enthusiasm of the publication marketplace. One feature of Sam Schweber's paralleling, therefore, would be to help graduate students focus their dissertations in a way that takes into account the nature of status quo academic publishing.

But keener attention to this historiographical intervention would do more than that. It would hardly be Schweberian if it did not simultaneously address two things that he cares about deeply: the training of students (both graduate and undergraduate) and the communal sociability of our discipline. The market-driven shift to biography is not a fluke; biographical narratives are appealing, especially in pedagogical contexts, as anyone who has tried to make history of science palatable to a large lecture course knows. Dressing wider political, social, scientific, and philosophical questions in human garb is a tried and true way of conveying the central questions of our discipline to undergraduate and popular audiences. In avoiding the distorting effects of focusing on a few central individuals (Darwin, Einstein, Pasteur, Newton), the paralleling strategy works admirably, exploiting student interest in the personal to convey the intricacies of a culture.

The issue of communal sociability is more ethereal, but since this essay is speculative already, I ask only a little more indulgence. I personally have benefited immeasurably from the gentle guidance of Sam Schweber throughout my graduate career — and legions of graduate students from the Boston area (and farther afield) can say the same. His intellectual generosity, inquiring spirit and true commitment to scholarship as a growing organism that feeds on *personal interactions* have been

an inspiration to me (and I am sure to many others). I believe it is not too much of an intellectual leap to see Sam's kindness in this regard as a mirror of his parallel tactics: he places his own life and thoughts in parallel with ours and wants us to do the same with each other. The point is that scholarship requires a community, not a bunch of atomized individuals who pursue their research oblivious to each other. By placing ourselves in parallel, we can overcome much of the "Balkanization" that has already begun to infect the history of science as specialized studies overshadow the traditional "big questions" of the discipline. This is not a call for resuming impassioned arguments about what drives scientific change (or other questions of the ilk) but for seeing our work as part of a larger historical project, reviving discussions that in many cases have lapsed.

This is Sam's problematic, his method, his dream, and his legacy. And we owe it to him and to each other to try for it.

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