

Science plays on stage

Carl Djerassi's review of the book *Science on Stage: From "Doctor Faustus" to "Copenhagen"* by Kirsten Shepherd-Barr (PHYSICS TODAY, February 2007, page 63) is so undeservedly nasty that I was surprised to find it in PHYSICS TODAY. Since Djerassi had already reviewed the book for *American Theatre*,¹ one wonders why he bothered to do it all over again. His wording suggests more of a vendetta than a review. That he has lately taken to writing science plays himself suggests a very biased point of view and an opportunity to advertise his own work. His attack on Shepherd-Barr's *Copenhagen* chapter was particularly disturbing since that chapter is one of the most well-written and illuminating accounts of the 1941 Niels Bohr–Werner Heisenberg visit that I have seen.

Although the metaphors based on the uncertainty principle and complementarity may be tiresome to physicists, they nevertheless seem to appeal to the nonscientific public that was Michael Frayn's main intended audience for *Copenhagen*. Shepherd-Barr's description of Bohr's dozen or so uncompleted attempts to write to Heisenberg about their meeting seems accurate and provides great insight. One has to have read the actual documents, especially those released in 2002 by the Bohr family,² to appreciate her account adequately. A reading of those documents makes it clear that Bohr was deeply disturbed by boasts that the Nazis were winning the war and that Heisenberg was working on the development of a nuclear weapon for Germany. Incidentally, the later versions of the unsent draft letter² left me with the suspicion that the main purpose of the 1941 visit by Heisenberg and Carl von Weizsäcker was to enlist Bohr's help. No wonder Bohr left the meeting in icy silence! His previously unpublished drafts give the lie to Heisenberg as quoted in Robert Jungk's book:

Under a dictatorship active resistance can only be practiced by those who pretend to collaborate with the regime. Anyone speaking out openly against the system thereby indubitably deprives himself of any chance of active resistance.³

I thought the most interesting aspect of Shepherd-Barr's treatment of science in the theater involved the portrayal of the interactions between scientists and other people. She describes very well

and in depth the history and technology of dramatic efforts to bridge the gap between the two "cultures." Djerassi seems to have a narrow, unbending view, no doubt derived from his own writing, of the nature of a science play. But I think his notion that science can be taught in any depth through theatrical production is misguided. For example, how can one expect to present anything but an extremely superficial discussion of the uncertainty principle without the mathematical background needed to understand quantum mechanics? Ironically, Jungk quotes the oft-mentioned notion, which Wolfgang Pauli denied, that Pauli "was watching a revue in Copenhagen when the exclusion principle came to him."⁴

Djerassi derides Shepherd-Barr for seeing only a "small percentage of the 122-odd plays" with which he seems familiar. But she clearly states on page 5 that her aim is "not to provide exhaustive and comprehensive coverage of science plays; rather, it is to provide a sense of . . . core science plays." She also states, on page 219, that her annotated list—a joint venture with Brian Schwartz and Harry Lustig—is an ongoing compilation. Incidentally, the list includes several plays by Djerassi, and the annotations alone are worth the price of the book. Many of the plays Shepherd-Barr addresses have not yet been staged, so judging them theatrically would have been premature. But the fact that Djerassi's plays have been produced doesn't make them great triumphs.

References

1. C. Djerassi, *American Theatre*, January 2007, p. 96.
2. Niels Bohr, unsent letters, documents 11a, 11b, and 11c, Niels Bohr Archive, <http://www.nba.nbi.dk/papers/docs/cover.html>.
3. R. Jungk, *Brighter Than a Thousand Suns: A Personal History of the Atomic Scientists*, J. Cleugh, trans., Harcourt Brace, New York (1958); see footnote on p. 91.
4. Ref. 3, p. 158.

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Djerassi replies: William Bennett's ill-tempered missive starts with an astounding premise: Expertise in a subject is automatically tainted with bias. He implies that only persons uncontaminated with experience or knowledge of a field should serve as reviewers. He calls my review "undeservedly nasty," despite my having called Shepherd-Barr's book "a well-written and super-detailed account . . . [with] excellent analyses of some contemporary science plays such as *Copenhagen*." The fact that

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I highlighted some glaring deficiencies—perhaps less elegantly than Robert M. Friedman’s lukewarm review of the same book¹—based on quotations with specific page references can hardly be called bias. Bennett whines about my having written two reviews: In fact, PHYSICS TODAY invited me to review the book after having been informed that I had already accepted an earlier request from *American Theatre* for a major rebuttal—rather than just a review—of Shepherd-Barr’s book.

Bennett’s two paragraphs dealing with *Copenhagen* have nothing to do with my review, in which I describe Shepherd-Barr’s chapter as a “genuinely thorough and sophisticated analysis,” although I expressed surprise at her quoting approvingly the French director Jean-François Peyret’s wisecrack that *Copenhagen* is “fake theatre.” Bennett then regurgitates historical facts about Bohr and Heisenberg with which I am in total agreement. But his last paragraph, notably the last two sentences, is ludicrous. Nowhere do I state that the fact that my “science plays” have been translated into 15 languages, performed in many theaters, published in book form, and broadcast by the BBC World Service, National Public Radio, the German public broadcasting institution Westdeutscher Rundfunk, and other media make them great triumphs. What I did say is that Shepherd-Barr’s listing of dozens of plays that have been neither staged nor published and are thus beyond the scrutiny of any reader, biased or unbiased, can hardly justify some of her sweeping generalizations. Even Bennett concedes that “judging them theatrically would have been premature.” In that case what utility does such a hodgepodge list have in a book that emphasizes theatricality of science on the stage?

Reference

1. R. M. Friedman, *EMBO Reports* 8, 445 (2007).

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Simon Newcomb, astronomer and personality

Expending the time and effort to write a book review is a selfless service that often goes unrecognized. We thank Bradley Schaefer for his knowledgeable and incisive review of *Simon Newcomb: America’s Unofficial Astronomer Royal* (PHYSICS TODAY, February 2007, page 66).

However, one of our primary goals in writing the book was to dispel the notion that Newcomb was “cold, ruthless, and more feared than liked,” a characterization that we found little basis for in the extensive collection of correspondence archived at the US Naval Observatory Library and the Library of Congress. Newcomb knew and corresponded with virtually every leading astronomer of his era, not to mention many of the physicists, mathematicians, and economists. Colleagues regularly stayed at his home when visiting Washington, DC, and he and his family reciprocated in visiting colleagues across Europe and South Africa.

It should not be surprising to learn that when Newcomb left the Naval Observatory for the Nautical Almanac Office, he left behind more than a few jealous colleagues, who would await their opportunities to “get even” for any number of imagined slights. But the world-class astronomers of the day recognized his achievements with nearly every prestigious award, and dozens of universities conferred honorary degrees on him as well.

We did not mention in our book that some have suggested Newcomb as the “intentional prototype for Arthur Conan Doyle’s arch-villain Professor James Moriarty” or as the “learn’d astronomer” in Walt Whitman’s famous “When I heard the Learn’d Astronomer,” because we found only speculations¹ but no credible evidence that either claim is true. In fact, several scientists have been suggested as possible models for Professor Moriarty, among them Carl Friedrich Gauss. But the model that Doyle seems to imply in *The Valley of Fear*² is the London arch-criminal of the 18th century, Jonathan Wild. Why would Doyle choose as his prototype for Moriarty a relatively remote American astronomer rather than Wild, the locally well-known British villain and criminal?

Historians who do not practice science seem often to see differences of opinion between scientists as indicative of personal dislike, but scientists on opposing sides of scientific issues are frequently close friends. Scientists Virginia Trimble and Markus Aschwanden concluded that “Simon Newcomb has, in recent years, been something of a victim of bad publicity, being cited for his reluctance to include spectroscopy . . . in our discipline and societies. . . . In his own later writing, however, he comes across as the sort of person you might well want to go on an observing run or a country ramble with.”³ It is about time that many of the unfounded myths about Newcomb be exposed and ex-

punged. He was certainly one of America’s greatest astronomers, a respected colleague, and a devoted husband and father, fully worthy of the respect and honors accorded him in his own time.

References

1. B. E. Schaefer, *J. Br. Astron. Assoc.* **103**(1), 30 (1993).
2. A. C. Doyle, *The Valley of Fear*, originally published by A. L. Burt, New York, 1914; available at <http://www.gutenberg.org/etext/3776>.
3. V. Trimble, M. J. Aschwanden, *Astron. Soc. Pac.* **114**, 475 (2002).

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Schaefer replies: Bill Carter and Merri Sue Carter take issue not with my review, which was glowing, but with the opinion of most other historians that Simon Newcomb had a “cold” and “ruthless” personality.

With the Carters raising the issue, I should report why most historians use words like “intimidating,” “sanctimonious,” and “grim” to describe Newcomb. Many incidents contribute to that broad conclusion, including his use of disguised influence to deny tenure, grants, jobs, and publications to one of America’s greatest mathematicians;¹ the perceived attempt to steal the credit for Asaph Hall’s discovery of the Martian moons;² and long-running feuds with many of the leading astronomers in America.³ As contrary evidence, the Carters’ letter offers only the generality that Newcomb visited and corresponded with leading scientists and won prestigious awards. Such evidence confirms only that Newcomb was the greatest astronomer of his day; it says nothing about his personality.

Regarding Professor Moriarty, many frivolous claims have been made over the last century of Sherlockian literature, but only Newcomb has a long list of identical and unique matches with the biography of Moriarty. Newcomb also has three documented personal connections with Arthur Conan Doyle at the time the author was inventing the arch-villain. But Newcomb has no connection with Moriarty’s criminal side. Doyle often used multiple sources for characters, and he explicitly told friends that the criminal side of Moriarty’s career was modeled after Adam Worth,⁴ a London arch-villain famous at the time, and not after Jonathan Wild, a forgotten criminal from two centuries earlier. We all agree that Doyle did not