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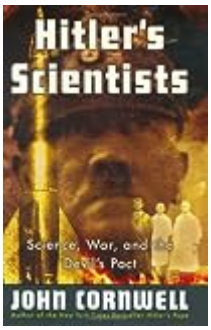

John Cornwell. *Hitler's Scientists: Science, War and the Devil's Pact.* New York: Viking, 2003. xvi + 535 pp. $29.95 (cloth), ISBN 978-0-670-03075-0.

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Science and Morality

John Cornwell makes the unusual choice of introducing his book with a quote from Rabelais: "Science without conscience is the ruin of the soul" (n.p.). By doing so he underlines his major concern: how the relationship between science and morality can be distorted under a totalitarian regime. This is not Cornwell's first venture into answering moral questions via historical narratives. His earlier bestseller, *Hitler's Pope* (1999), deals with Pius XII's role in the Holocaust.[1] Cornwell held that Vatican diplomat and later pope Eugenio Pacelli defended antisemitism and anti-Bolshevism to increase the power of the Catholic Church. In *Hitler's Scientists*, Cornwell is once again concerned with the relationship between systems of belief and the (fascist) state, this time turning to science rather than religion. While *Hitler's Pope* was mainly based on original research and aimed to revise the celebratory view of Pius XII, *Hitler's Scientists* draws together recent scholarship on the topic and presents it to a general audience.

Still, *Hitler's Scientists* is more than an overview of the existing literature. Its real concern is moralistic, posing questions such as "Is science morally and culturally neutral?" or "Does a scientist have to be politically conscientious?" The book approaches these topics by dealing with a wide range of scientific disciplines–the only volume so far with such an ambitious scope. Cornwell includes all of medicine, psychology and psychoanalysis, geography, geopolitics, mathematics and the physical sciences in his book. Previous histories of Nazi science have been mostly limited to one scientific discipline.[2] Many have an even narrower focus, like those concerned with certain areas of medicine.[3] However, the book's chronological structure fragments the narrative, and the constant jumping from one science to another can be tiring and confusing.

Moreover, while Cornwell touches on interesting aspects of single scientific disciplines (such as mathematicians' attempts to portray their field as relevant to National Socialist aims by emphasizing notions of *Deutsche Mathematik* argued to be in alignment with Nazi ideology), many of his accounts are too brief to be valuable. This criticism is especially true of his sections on psychology and psychoanalysis (chapter 11) and the chapters on racial hygiene and eugenics (5 and 6), which lack a co-

herent narrative. It is hard to understand why Cornwell, who is otherwise successful in processing existing literature into a highly readable story, fails to do so in the case of eugenics, given the impressive body of scholarship on the topic.[4]

This odd neglect may have a logic behind it; a closer look reveals that Cornwell's real focus is the physical sciences–three-quarters of the book deals with physics and technology: engineering, rocketry, radar, cryptology and, above all, nuclear fission. Within the physical sciences, the much-contested figure of Werner Heisenberg receives by far the most attention.

The Heisenberg debate seems an ideal test case for Cornwell's questions about the moral neutrality of science. Two typical positions characterize the debate, which surrounds the problem of why Heisenberg remained in Germany. The first–espoused by some journalists and playwright Michael Frayn–points to Heisenberg's failure to join the NSDAP and the dislike for his "non-Aryan" physics among National Socialists as evidence that Heisenberg was practicing a form of passive resistance. This interpretation follows Austrian journalist Robert Jungk, who argued in an early account of Heisenberg's behavior in *Heller als tausend Sonnen* (1956) that German nuclear physicists chose not to build the bomb. Only later did Jungk discover that their failure to develop the bomb was due to ignorance. Jungk drew on evidence from interviews he conducted with the physicists themselves (notably Carl von WeizsÃ¤cker), and retroactively accused them, in a revised edition of the book (1990), of whitewashing themselves. Journalist Thomas Powers confirmed Jungk's original thesis in *Heisenberg's War* (1994), arguing that Heisenberg fought his own personal war against the Nazis by consciously delaying the construction of a bomb. Powers's view is heavily based on his interpretation of Heisenberg's fateful meeting with Niels Bohr in occupied Copenhagen in 1941, during which Heisenberg gave a suspiciously vague report on the progress of German nuclear research. Bohr interpreted the conversation as an attempt at exploitation, but Power reads it as a hidden cry for help. British playwright Michael Frayn, who acknowledges basing his work on Powers, has similarly focused on the meeting: in the beginning of his play *Copenhagen* (1998), Bohr's wife Margrethe asks: "Why did [Heisenberg] come to Copenhagen?"[5] Frayn suggests Heisenberg's moral status is subject to uncertainty–much like his physics.

An alternative explanation, held mostly by historians and scientists, suggests that by staying in Germany, Heisenberg sacrificed moral and political scruples for the benefit of science–or for his scientific career. His loss of the race for the bomb is a sign of intellectual failure, not moral superiority. Scholars who espouse this position follow Samuel Goudsmit, who attributed the failure to "certain stupidities on the part of German scientists and their government."[6] Paul Lawrence Rose is convinced that Heisenberg miscalculated the required amount of U-235 for the reaction. His conclusion that the necessary quantity could not be procured during wartime caused him to attempt to tease scientific advice from and thus alienate Bohr, his former mentor and close friend.[7] David Cassidy suggests Heisenberg acted for the German government when visiting Bohr, arguing that Heisenberg hoped to use Bohr's connections to Allied nuclear physicists to make them believe that Germany was still a long way from building the bomb.[8] Cassidy and Rose base their argument on a postwar letter by Heisenberg to his colleague B. L. van der Waerden and on the newly released Farm Hall transcripts–secret recordings of conversations of ten German nuclear scientists interned near Cambridge, England, made in order to discover whether they collaborated with the Soviets after the war. Rose criticizes Powers's failure to take into account this "damning evidence," released in 1992 and recently published in an annotated edition (p. 70).[9] Among the most coherent and successful chapters in Cornwell's book are those treating these transcripts (chapter 29) and the subsequent chapter-long evaluation of the figure of Heisenberg ("Heroes, Villains and Fellow Travelers").

Within this debate, Cornwell adopts historian Mark Walker's view, which demystifies the traditional story of heroes and villains. In *Nazi Science*, a more popular version of an earlier work, Walker proposes a "spectrum of 'shades of gray' " for studying science under Hitler (p. 2).[10] Cases like Heisenberg's are less clear than that of Nazi physicist Johannes Stark or the regime-critical Albert Einstein–a broad gray zone is found between the black and white of "Nazi" and "anti-Nazi." In this light, Cornwell's use of Heisenberg is intended to be symbolic of the larger problem of the scientist's moral dilemma, the central theme of his book. However, a deeper discussion of this point is lacking. Why is the Heisenberg myth so persistent? Why are historians, scientists and journalists all still so concerned with Heisenberg? And why do certain people–like Heisenberg–become visible in the first place, while others do not?

Cornwell does not address these important questions. (It should be noted that the point of the book is not to

condemn or acquit Heisenberg.) Rather, he connects the Heisenberg debate to the larger question of the alleged uniqueness of Nazi science. Nazi science was not unique, Cornwell argues, and "experimentation on groups and individuals without their consent has occurred before" (p. 445). Human experimentation, whether out of simple curiosity or the desire for fame, is a "temptation" without which "there would have been no progress in medicine" (p. 445). But this argument about the continuity between Nazi and non-Nazi science runs aground on the impossibility of providing an unproblematic representation of the Holocaust, an issue raised most notably by Saul FriedlÃ¤nder.[11] To give just one example, the provision of the horrible technical details of mass extermination seems problematic in the absence of any discussion of the "limits of representation" of the Holocaust with regard to its science and technology. In his chapter, "The 'Science' of Extermination and Human Experiment," Cromwell writes: "Together they designed a crematorium which boasted five furnaces, with three crucibles to each furnace; that is fifteen crucibles in all, capable of dispatching sixty bodies an hour, or 1,440 bodies every twenty-four hours. Later in 1941 a confident *PrÃ¼fer* assured the SS that a four-crucible furnace configuration would also be possible–indicating, in a configuration of five furnaces, twenty corpses burning simultaneously and thus incinerating 1,920 bodies every twenty-four hours" (p. 354). Such detailed statements suggest that the technical aspects of Nazi science cannot be represented without trivialization, and that any account of Nazi science "normalizes" matters that should instead be treated as singular. Cornwell's recognition of these important problems is limited to his occasional quotes around scientific terms exploited by the Nazis.

It is not clear why Cornwell avoids this issue. Perhaps he wished to avoid siding with any of the parties in the *Historikerstreit* , or perhaps the "popular" genre of this work made him try to avoid getting into more academic debates.[12] In any case, the underlying assumption that science under Hitler was not anomalous explains the absence of Hitler in his book. Apart from one chapter ("Hitler the Scientist"), which portrays Hitler as a poorly educated, superstitious believer in pseudoscience, the "FÃ¼hrer" is strangely absent from a book with his name in the title.

What are the consequences, then, of Cornwell's belief that Nazi science is continuous with other science? It implies that misuse of science is not limited to the Third Reich–which supports Cornwell's major goal: to illustrate how science can go wrong and how it can lead to dangerous aberrations by scientists who, without necessarily being malevolent themselves, place the burden of responsibility for their science and its purposes on political regimes. Cornwell instead appeals to all scientists to be politically conscious, to rely on their own moral judgments.

Notes

[1]. John Cornwell, *Hitler's Pope: The Secret History of Pius XII* (London: Viking, 1999).

[2]. As, for example, Ute Deichmann, *Biologists under Hitler* (Cambridge: Harvard University Press, 1996) or her more recent *FlÃ¼chten, Mitmachen, Vergessen* (Weinheim: Wiley-VCH, 2001) on biochemists in the Third Reich.

[3]. Naomi Baumslag, *Murderous Medicine* (Westport: Praeger, 2005), on the role of epidemic typhus in the program of mass extermination of Jews, or Robert Proctor, *The Nazi War on Cancer* (Princeton: Princeton University Press, 1999), a classic study of "progressive" aspects of Nazi medicine and public health policy and its emphasis on diet, anti-smoking campaigns and elimination of occupational carcinogens.

[4]. Some excellent works on eugenics include Peter Weingart, JÃ¼rgen Kroll and Kurt Bayertz, eds., *Rasse, Blut und Gene* (Frankfurt am Main: Suhrkamp, 1992); Michael Burleigh, *Death and Deliverance* (Cambridge: Cambridge University Press, 1994); GÃ¶tz Aly, *Cleansing the Fatherland*, tr. Belinda Cooper (Baltimore: Johns Hopkins University Press, 1994); and Benno MÃ¼ller-Hill, *Murderous Science* (Plainview: Cold Spring Harbor Laboratory Press, 1998). Three examples of solid general works on Nazi medicine are Robert Lifton, *Nazi Doctors* (New York: Basic Books, 1986); Michael Kater, *Doctors under Hitler* (Chapel Hill: University of North Carolina Press, 1989); and Paul Weindling, *Health, Race, and German Politics Between National Unification and Nazism, 1870-1945* (Cambridge: Cambridge University Press, 1989).

[5]. Michael Frayn, *Copenhagen* (New York: Anchor Books, 2000), p. 3.

[6]. Samuel Goudsmit, *Alsos* (New York: H. Schuman, 1947), p. 232.

[7]. Paul Lawrence Rose, *Heisenberg and the Nazi Atomic Bomb Project: A Study in German Culture* (Berkeley: University of California Press, 1998).

[8]. David C. Cassidy, *Uncertainty: The Life and Sci-*

ence of Werner Heisenberg (New York: W.H. Freeman, 1992).

[9]. Bernstein, *Hitler's Uranium Club.*

[10]. Mark Walker, *Nazi Science: Myth, Truth, and the German Atomic Bomb (New York, Plenum Press, 1995). The older work is Mark Walker,* German National Socialism and the Quest for Nuclear Power, 1939-1949_ (Cambridge: Cambridge University Press, 1989).

[11]. Saul FriedlÃ¤nder, ed., *Probing the Limits of Representation: Nazism and the Final Solution* (Cambridge: Harvard University Press, 1992).

[12]. For a detailed discussion of the representation of Nazi scientific practices in the history of science, see Mario Biagioli, "Science, Modernity, and the 'Final Solution' ", in FriedlÃ¤nder, *Probing the Limits*, pp. 185-205.

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