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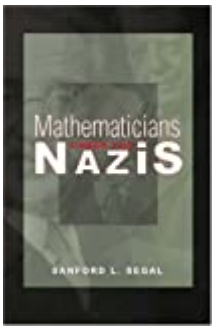

Sanford L. Segal. *Mathematicians under the Nazis.* Princeton: Princeton University Press, 2003. xxii + 530 pp. $79.50 (cloth), ISBN 978-0-691-00451-8.

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Mathematicians under the Nazis

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The history of mathematics is a discipline that only too rarely steps beyond the shadow of mathematics into the limelight of general history. But it is not a dormant field. The history of mathematics and mathematicians in Nazi Germany, in particular, has been the subject of numerous theoretically and methodologically informed publications in the last fifteen years. In keeping with the trend in the history of the sciences, historians of mathematics, including those dealing with the Nazi period, have been reaching out to their colleagues in general history departments. They have been drawing on general historical research and making their own work more accessible in order to explain the relevance of their findings to those outside the narrow confines of their specialization. Herbert Mehrtens and Reinhardt Siegmund-Schultze, for example, have both dealt with important aspects of this topic.[1]

Historical research on the Nazi period had been severely hindered by the fact that the papers of the German Mathematical Society (Deutsche Mathematiker-Vereinigung, DMV), particularly the personal papers of its president from 1937-1945, the Freiburg mathematician Wilhelm Suess, were not accessible to historians. These were, however, made available in the archives of Freiburg University in 1997, and they constitute an important corpus of indispensable sources for further research into hidden aspects of the history of mathematics in the Nazi period. Wilhelm Suess, as he was not shy to say, had the "imperialistic goal to gain for the DMV all and exclusive rights and responsibilities for mathematics" in Nazi Germany. The wealth of documents in his personal papers and the official DMV files, dealing with all aspects of mathematics and mathematicians in the years of his presidency, abundantly reflect this goal.

Thorough historical studies of other disciplines (such as Ute Deichmann's magisterial work on chemistry and biochemistry) have shown how systematic disciplinary histories can shed significant light on issues that are intensively debated by historians of science. In the context of the Nazi period, these include questions of continuities between 1933 and 1945; the practice and effect

of dismissals and emigration; the safeguarding of existing, and the availability of new resources during the period; the process of nazification in the sciences; research important to the war effort; and the practice of what has recently been termed "normal science."[2] For mathematics, an extensive study addressing these issues and building both on preceding results and the extended base of sources, would fill what is still a yawning gap in the field's historiography. The mathematician Sanford E. Segal hopes to accomplish some of this with his monograph, *Mathematicians under the Nazis*. He explicitly states that his audience includes non-mathematicians and those not mathematically informed. However, this aim is difficult to achieve, and the book's strength, its richness in detail, is simultaneously one of its shortcomings. It turns, occasionally, into a quarry of factual and biographical nuggets, of great interest to specialists perhaps, but not necessarily to non-mathematicians.

The book is, according to Segal, "a kind of a social history of mathematics and the community of mathematicians" in the Nazi period (p. xi). Three chapters set the stage of what is to come. In the first, Segal asks "Why Mathematics," discussing amongst other things, the character of mathematics as a basic science, its autonomy, and the differences between mathematics and the (experimental) sciences. The second chapter sets out to discuss the foundational crisis mathematics experienced before and after World War I. This dispute involved some of the most distinguished mathematicians of the period–L. E. J. Brouwer, David Hilbert and Hermann Weyl, amongst others–and its history has been the subject of various studies.[3] This topic might seem out of place in Segal's book, but he uses it to introduce one of his main characters, the mathematician Ludwig Bieberbach, a convinced Nazi and chief representative of the so-called ideological "Deutsche Mathematik" movement, which is discussed in Chapter Seven. The third introductory chapter deals with the German academic crisis in the Weimar period, drawing on the work of Fritz Ringer and Paul Forman.

The remaining five chapters discuss mathematics in Nazi Germany through a series of case studies. Chapter Four gives three examples of what Segal calls the "politicization of mathematics under the Nazis" (p. 85), one of which was the appointment of the prominent mathematician Helmut Hasse at the famous Goettingen Mathematical Institute, and the many party and government offices that interfered in it. In Chapter Five, Segal presents various glimpses into "Academic Mathematical Life" such as *Dozentenschaft* reports, mathematical camps, the value of mathematics in the Nazi state and the wartime drafting of scientists. The sixth chapter, on "Mathematical Institutions," discusses developments in the German Mathematical Society, the DMV, and the presidency of Wilhelm Suess, who is one of the individuals highlighted by Segal. The thread on Suess is picked up again in Chapter Eight, where he is characterized as an "anti-Nazi." This conclusion, even on the basis of the material presented by Segal, is highly debatable; nor does Segal mention that it was on Suess's initiative that the so-called *Judenfrage* in the DMV was solved. This, however, is crucial to the understanding of men such as Suess, the DMV president, who did not simply collaborate with the Ministry of Education and Research in the *Judenfrage*, but whose decision to expel Jewish members pre-empted the formal ministerial demand. In this way, Suess and the DMV legitimated themselves as reliable partners of the Ministry and its Nazi policies. Indeed, the DMV's professional policies became increasingly entangled with issues at the very core of the Nazi state–its anti-Semitism, anti-internationalism and striving for autarky. An objective of the Ministry of Education and Research was to transmit official policies on these issues to the sphere of the sciences. Thus, the collaboration of the DMV board, especially Suess, in this program, although beyond their control, formed the basis of their influence and their successful professional activities during the war. It is within this context that Seuss's founding, in late 1944, of the now-famous mathematical institute in the Black Forest, discussed by Segal in Chapter Six, has to be understood.

In Chapter Six we also find an account of mathematics in concentration camps. This is, to my knowledge, the most detailed and up-to-date account available, covering both the groups in Sachsenhausen and in Plaszow (near Krakow in Poland). It also gives one of the few examples Segal offers of mathematical work and research important to the war effort. Even though he repeatedly points to Alwin Walther's Institute for Practical Mathematics in Darmstadt, where calculations for the Peenemuende rocket project were done on a large scale, the importance of mathematical research to the war effort is somewhat underrepresented in Segal's book. Chapter Seven treats Bieberbach and the *Deutsche Mathematik* movement, and is, in my view, the most coherent and valuable chapter in the book. It is a well-informed biographical account of Bieberbach covering eighty pages, and drawing on a wide range of published and manuscript sources. The narrative begins with Bieberbach's activities in the Weimar Republic; his opposition to David Hilbert, the leading and internationally-renowned German mathematician, in the debate over intuitionism (mentioned in Chapter Two);

and the question of whether or not German mathematicians and/or the DMV should attend the International Congress of Mathematics in Bologna in 1928. The Nazi period is covered by a thorough analysis of Bieberbach's racial theory and his journal *Deutsche Mathematik*. The last chapter consists of sixteen biographical profiles (Wilhelm Blaschke to Wilhelm Suess) culminating in a eulogy to Suess's qualities as representative and propagandist of mathematics in the Nazi period.

This image of Suess and others as disinterested, apolitical brokers acting solely for the good of the discipline is firmly rooted in the post-war apologetic strategies of the German mathematical community; however, the post-war period is beyond the scope of Segal's account. One of the primary shortcomings of Segal's book involves his treatment of Suess. Segal does not draw on the Suess and DMV papers, which, as mentioned above, have been accessible since 1997; as a result, he gives a distorted picture of the developments surrounding Suess, the DMV and the whole mathematical community in the Nazi period.[4] Segal certainly has a good command of the sources known up to the early 1990s, but obviously much of his research was undertaken in the late 1980s. He should have stated clearly in the preface that important new material was at hand which he has not examined, instead of acknowledging that fact in a footnote halfway through the book (p. 264). The monograph would have profited greatly not only from incorporating the new archival material but also from using the findings and results of recent historical studies, such as the volumes on the German Research Foundation (DFG), the Kaiser Wilhelm Society (KWG) and the German student body.[5] Moreover, although Segal touches on a wide range of topics, the present reviewer would have welcomed more material about research important to the war effort, and about the DMV's policies and practises, including its anti-Semitic measures. Segal dwells frequently and extensively on what mathematicians quarrelled about, rather than what they did, which in itself is not very characteristic in mathematics as compared with other disciplines.

The history of mathematics and mathematicians in Nazi Germany has often been highlighted as a history of extremes, in which Bieberbach and *Deutsche Mathematik* or the abolition of the Goettingen mathematical tradition stand as emblematic. But there was more at stake than the fate of a group of Nazi mathematicians or the enforcement of anti-Semitic legislation, however depressing. The everyday collaboration with Nazi party and government officials, and the undermining of elementary human standards in the name of what was later termed the "common good" or the "good of mathematics," come closer to the essence of National Socialism and placed the independence of scientific activity in jeopardy by aligning it closely to National Socialist ideology and policy. For example, the dehumanisation practised by the regime's bureaucracies, as described by the sociologist Zygmunt Bauman, can be seen clearly in the vocabulary the DMV board when discussing the *Judenfrage* in 1938. It is full of variations of the words "elimination" and "removal" (*entfernen*, *Ausschaltung*, *allmaehliches Ausscheiden*, etc.), pointing to the fact that Jewish mathematicians were no longer to be thought of as colleagues, but as bureaucratic objects.

Segal's book covers a lot of ground, and is a rich but unfortunately not always reliable source of information about mathematicians in the Nazi period. That the book's source material and references are out of date, however, cannot easily be excused. It can only be described as an initial attempt to bridge the gaps in our knowledge of the subject.

Notes:

[1]. Herbert Mehrtens, "Mathematics and War: Germany 1900-1945," in: Jose M. Sanchez-Ron and Paul Forman, eds., *National Military Establishments and the Advancement of Science and Technology: Studies in Twentieth Century History* (Dordrecht/Boston/London: Kluwer Academic Publishers, 1996), pp. 87-134; Reinhard Siegmund-Schultze, *Mathematische Berichterstattung in Hitlerdeutschland. Der Niedergang des "Jahrbuchs Ã¼ber die Fortschritte der Mathematik"* (Goettingen: Vandenhoeck & Ruprecht, 1993); Idem, *Mathematiker auf der Flucht vor Hitler. Quellen und Studien zur Emigration einer Wissenschaft* (Braunschweig: Vieweg, 1998).

[2]. Ute Deichmann, *Fluechten, Mitmachen, Vergessen: Chemiker und Biochemiker in der NS-Zeit* (Weinheim et al.: Wiley - VCH, 2001); on "normal science" see e. g. Margit Szoelloesi-Janze, ed., *Science in the Third Reich* (Oxford/New York: Berg, 2001), p. 14.

[3]. One of these, Herbert Mehrtens' stimulating if highly contested *Moderne - Sprache - Mathematik* (Frankfurt a. M.: Suhrkamp Verlag, 1990) is not even mentioned by Segal.

[4]. Finding aids have been published by the archives of Freiburg University: *Findbuch des Bestandes E 4 - Deutsche Mathematiker-Vereinigung (1889-1987)* (Freiburg, 1999); *Findbuch des Bestandes C 89 - Nachlass*

Wilhelm Suess (1895-1958): 1913-1961 (Freiburg, 2000); cf. Volker Remmert, "Mathematicians at War. Power Struggles in Nazi Germany's Mathematical Community: Gustav Doetsch and Wilhelm Suess," in *Revue d'histoire des mathematiques* 5 (1999), pp. 7-59.

[5]. Notker Hammerstein, *Die Deutsche Forschungsgemeinschaft in der Weimarer Republik und im Dritten Reich. Wissenschaftspolitik in Republik und Diktatur* (Munich: C. H. Beck, 1999); Doris Kaufmann, ed., *Geschichte der Kaiser-Wilhelm-Gesellschaft im Nationalsozialismus: Bestandsaufnahme und Perspektiven*, 2 vols. (Goettingen: Wallstein Verlag, 2000); Michael Gruettner, *Studenten im Dritten Reich* (Paderborn et al.: Ferdinand Schoeningh, 1995).

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