Mathematicians under the Nazis

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PREFACE

WHEN still a graduate student, I discovered by chance and to my fascinated horror that a prominent and distinguished German mathematician had been, *as a mathematician*, a propagandist for Nazi ideology. At that time, I thought that at some time I would want to investigate this further, to try to understand whether he was simply a freak or, as superficially appeared, the leader of a group of like-minded academic colleagues. I have always had an interest in history, and over the years this developed into a growing amateur interest in the history of science. Sporadic concentration on the subject broadened my original interest to a question of the situation of mathematics under the Nazi regime. An Alexander von Humboldt Fellowship in 1988 enabled me to spend time doing archival research in Germany, as well as talk to a number of mathematicians. Since then, my previous sporadic work has been more concentrated, including several trips to Germany, and this book is the result.

From the first, I wanted to write a book that was both scholarly, in the sense of documentation and understanding, and also readable by a wider public, as many scholarly works unfortunately are not. In particular, it should be a book that does not require any advanced knowledge about mathematics. Sensitive (perhaps hypersensitive) to the general but perverse social view of mathematicians as disembodied intellects, it also seemed appropriate to explain enough about the nature of mathematics to make its interaction with ideology more interesting and meaningful. From another internal standpoint, this also seemed necessary. To write about the history of mathematics in a period so soaked in ideology and political pressure seemed meaningless unless both a mathematical-historical and a general historical context were provided. Thus this book is an attempt at a kind of social history of mathematics and the community of mathematicians in the period. At the same time, it is *not* a history of mathematics as a scientific discipline or of mathematical results achieved during the period in question. Information about actual progress in mathematics in Germany during the Nazi period is available in the seven volumes of the FIAT review of German science devoted to mathematics and edited by Wilhelm Süss and Alwin Walther (for applied mathematics). Rather, this is a contribution to the history of the academic community of mathematicians as practitioners of an academic discipline in a time of intense political and ideological pressure.

Being a kind of social history also means that the people who figure in it are not just the mathematically famous, but also those who are mathematically now forgotten. Not only are the Behnkes and Blaschkes, Hasses and Teichmüllers important, but also the Weyrichs and Weinels, Wegners and Torniers. It also means considering mathematicians as more than just members of a certain academic profession. It is easy to refute the naive idea that mathematicians, being "analytically trained" and educated to examine the validity of hypotheses, ought

mathematics had apparently gone on for several years in the education ministry[436]—mathematics, even applied mathematics, apparently did not matter much to the ministry. Aerodynamics was different because of Göring's patronage. Similarly, at the University of Rostock, applied mathematics apparently had considerable influence, largely due to the status of the Heinkel aircraft factory.[437] However, the Zeiss factory did not enjoy similar influence in Jena. By 1942, the *Diplom* in mathematics or applied mathematics was an idea whose time had clearly come. It had first appeared in (the free city of) Danzig in the 1920s, and although the National Socialist ministry may have introduced it in the interest of cutting short the years to a terminal university degree, especially given the government's new requirements for ideological education as well as wartime conditions,[438] after the war, its worth was still recognized. Thus, at the meeting of the German Mathematical Society in Cologne in September 1949, it was decided virtually unanimously that the *Diplom* should be retained as a degree and that the examinations for it should be determined autonomously by the universities, rather than by the state.[439]

The experience of what had been von Mises's institute for applied mathematics only adds to the impression that applied mathematics mattered little more than "nonapplied" mathematics, even through most of the war. The quarrel between Doetsch and Süss concerning a book publication project was discussed in chapter 4. While both men probably wished for Germany to win the war, the role of applied mathematics therein seems not to have been the real aim of either one. Doetsch was interested in personal self-aggrandizement, and Süss in the protection and employment of mathematicians. Similarly, despite the interest of the Zeiss works, the Winkelmann succession in Jena, also discussed in chapter 4, dragged on and on. In neither case were there authorities who cared enough to put an end to the dispute rapidly in the interest of the war effort, let alone in the interest of science. The Nazi suspicion of academe, despite the "German national" position of most of the professoriat, and the Nazi emphasis on emotion as opposed to intellect, left traditional intellectuals of small actual import, even if their work might have been of value to the state. Hitler's emphasis on achievement through "will" in a mystic religious sense[440] also informally undermined any trust in rational processes. His attitude toward world events seems to have become rather like Humpty Dumpty's toward words: it was only a question of who was to be master. If "will" was the essential fact and only short-term research goals almost immediately convertible into products mattered, then long-term research, whether it was the development of atomic weaponry[441] or applied mathematical research, received slight, disparaging inattention.

[436] Mehrtens 1986: 332.

[437] Mehrtens 1986: 324; Scharlau et al. 1990: 239; *Geschichte der Universität Rostock, 1419–1969*, vol. 1 (1969), 287–288.

[438] Gerd Schubring, "Zur strukturellen Entwicklung der Mathematik an den deutschen Hochschulen, 1800–1945," in Scharlau et al. 1990: 264–278, p. 276.

[439] *JDMV* 54 (1950): Abteilung 2, p. 8.

[440] See, e.g., J. P. Stern 1975: passim.

[441] Walker 1989: passim.

Helmut Joachim Fischer, the Ph.D. mathematician who [illegible] Heydrich's SD (*Sicherheitsdienst*, or Security Service) and whose degree had been forced on the faculty by Udo Wegner,[442] claimed he was among a group proposing a "scientific-technical leadership staff" to advise Hitler. Ernst Kaltenbrunner[443] presented the proposal to Hitler, who greeted it warmly. However, it was November 30, 1944. Fischer lamented the failure to create such a staff years earlier, but also quite accurately recorded the strong possibility that earlier Hitler would have rejected such an advisory staff: "First in 1944 as he [Hitler] had had sufficient bitter experience was [he] in favor of a better connection with science and technology."[444] Only late in the war, when such efforts were too late, were such actions possible: Süss's speech to the Rektors or the Osenberg action recalling scientists from the front are two other examples.

Mathematics in the Concentration Camps

In discussing mathematical institutions under the Third Reich, one that was peculiar to it should not be omitted: the concentration camp. Surprising as it may at first seem, there was organized mathematical activity in this context.[445]

At Plaszów, a suburb of Kraków, Poland, a concentration camp had been established. This camp is the one that figures in the story of Oskar Schindler's rescue of numerous Jews. Its commandant was one Amon Goeth, who was notorious for his brutality.[446] In connection with the ministry for armament, various contracts were assigned to Plaszów, including some in astronomy and mathematics under the general direction of a certain K. Walter. Professor Walter was director of the observatory in Kraków under the auspices of the occupying German government (*Generalgouvernement*). About fifteen Russian prisoners on

[442] See letter of K. Freudenburg et al., Nov. 8, 1947, in Personalakten Wegner, Heidelberg. This lengthy letter mentions *inter alia* other actions of Wegner at Heidelberg affecting mathematics, and attempts to evaluate his sometimes ambiguous behavior under the Nazis. It is partially excerpted in Vezina 1982: 155, in which the "keen National Socialist" Fischer is mentioned. Fischer is mentioned here with forename "Hans," however, this is an incorrect memory; see Fischer 1985, 1:37, for his version of the story.

[443] Ernst Kaltenbrunner was an Austrian lawyer and Reinhard Heydrich's successor as head of the SD and RSHA (*Reichssicherheitshauptamt*, or National Security Office) on the latter's assassination. He was the ultimate supervisor of the extermination camps. Tried for war crimes and crimes against humanity, he was executed by hanging at Nuremberg on October 16, 1946.

[444] Fischer 1985, 2:138–144.

[445] The following (sometimes overlapping) sources have been used in the ensuing discussion: Nuremberg Military Tribunal (NMT) documents labeled NO-1056 and NO-640 (copies obtained from the U.S. National Archives and, of the former document, also the Hoover Institution at Stanford, Calif.); the BDC file for Karl-Heinz Boseck (this file also contains NO-1056 in its entirety); a memoir by Hans Ebert entitled "Mathematiker im KZ 1944/1945," copied from a copy in the possession of Herbert Mehrtens; Fischer 1985, 2: esp. 97–104; U.S. National Archives, Captured German Documents, T-580/125/39. All material about concentration camps not otherwise footnoted can be found in one or more of these references.

[446] See Thomas Keneally, *Schindler's List* (New York: Simon and Schuster, 1982), a "novelized" version of Schindler's humanitarian efforts, which is essentially true. This has also been made into a renowned movie of the same title.

average worked on contracts for the air force, the navy, and the astronomical institute in Berlin (at Dahlem). By the end of July 1944, not only had there been military computations completed, but also a set of mathematical tables "needed by research and industry," and, at the request of Alwin Walther in Darmstadt, translations of some Russian mathematical papers.

However, by the end of July 1944, the Russians were less than eighty miles from Kraków, and the activities of the institute were moved to Germany. Some went to the concentration camp at Ravensbrück and the nearby town of Alt-Thymen.[447] In these places the work was continued in September and included, among other efforts, the numerical solution of partial differential equations connected with ballistic investigations under an industrial contract, as well as the computation of the ephemerides of Mars and Jupiter.[448]

The origins of the mathematical effort at Kraków-Plaszów are unclear but seem to have been at the initiative of the aforesaid Professor K. Walter[449] and were among several efforts of a military nature, including the successful extraction of sulphur from poor natural deposits and the combatting of agricultural pests. On the other hand, the origins of the other mathematical effort within the concentration camps are quite clear. On May 25, 1944, Heinrich Himmler wrote his SS subordinate, Oswald Pohl: "Among the Jews whom we have now received from Hungary as well as also among our concentration-camp prisoners, without doubt are a whole lot of physicists, chemists, and other scientists."[450] Pohl was delegated to establish in some concentration camp a "scientific research establishment" in which "the disciplinary knowledge of these people will be applied to the humanly stressful (*menschenbeanspruchende*) and time-consuming computation of formulas, the working out of individual constructions, and also, however, for fundamental research." The whole operation was placed under the aegis of Himmler's favorite *Ahnenerbe*,[451] with the scientific leadership assigned to its member Walter Wüst.[452] Himmler's order mentions the already extant operation with Russian prisoners.

[447] Many of the larger camps had numerous satellite camps associated with them. For example, the camp at Sachsenhausen discussed below grew out of a smaller camp at Oranienburg, the nearest city, and had sixty-one such satellite camps.

[448] NO-640, memorandum of Wolfram Sievers, Nov. 24, 1944. This is an extract from a report to the RFR that was apparently sent to Karl-Heinz Boseck around December 1.

[449] Not to be confused with Alwin Walther, the computational mathematician at Darmstadt. Such confusion may have existed in the SS hierarchy, as Walther's name is frequently misspelled "Walter." For more about Walter at Ravensbrück, see below.

[450] NO-640. Pohl was an *alter Kämpfer* who had joined the Nazi party as early as 1926, and the SS in 1929. In 1942, he was made head of the chief office for economic administration (WVHA = *Wirtschaftsverwaltungshauptamt*), and had since 1939 been in charge of all SS economic enterprises. He was executed for war crimes in 1951.

[451] *Ahnenerbe*, or "Ancestral Heritage," was an SS organization originally directed toward research on Germanic prehistory, and the collection of evidence of the value of pure Aryan bloodlines. Heinrich Himmler was one of its founders in 1935, and it came to be a place for investigation of anything of interest to Himmler, which included such extremes as the "World Ice Theory" and the skull and skeleton collection of Prof. August Hirt.

[452] According to Fischer (1985, 2:141), Wüst was a scientific incompetent.

Himmler's order envisioned the *Ahnenerbe* working together with the RSHA, where the quondam mathematician H.-J. Fischer was employed, and the matter landed on his desk. Fischer claims in his memoirs that he realized political opponents and prisoners could not be expected to have the requisite inner drive for scientific activity on behalf of the Third Reich, but, not wanting to disappoint Himmler, he hit on the idea of a computational institute connected with militarily important research.[453] Fischer seems to have given himself too much credit, given the existence of the effort in Poland as well as Himmler's explicit mention of a certain SS leader, Koppe, as providing the original suggestion for such a use of skilled concentration-camp labor. Nevertheless, it naturally fell to Fischer, as the possessor of a doctorate in mathematics, to make a selection of the prisoners to be used.[454]

Himmler's original order to Pohl had asked for monthly reports beginning August 1, 1944, and on June 15, Pohl held a meeting at which it was determined that the site for the concentration-camp computational institute would be the camp at Sachsenhausen (about fifty miles from Berlin).[455] By late July, Fischer had visited Sachsenhausen and promised to travel in early August to Dachau and Buchenwald to seek further suitable prisoners.[456] At Sachsenhausen, Fischer saw about seventy prisoners who[457]

> were foreigners and came from almost all European countries that at the time were occupied by the German army. . . . . Throughout, they were political prisoners, recognizable through a red triangle . . . . . [other prisoners], say, asocial individuals, professional criminals, Jehovah's Witnesses, homosexuals, were not represented; also there were no Jews.

In about three hours, Fischer found about thirty of the seventy at first impression usable. However, only fourteen turned out to be so. In Dachau, Fischer found another handful.[458] Fischer also suggested the mathematician Karl-Heinz Boseck as direct supervisor of the operation.[459]

Karl-Heinz Boseck was an *Assistent* in Berlin at Klose's applied mathematics institute. He had earlier worked part-time for the RSHA (which seems to be how Fischer met him) and also had done work for the DFG. At nearly twenty-

[453] Ibid.: 99.

[454] Ibid.: 100–101; NO-640, Wolfram Sievers to R. Brandt, Aug. 14, 1944.

[455] NO-640, Sievers to Brandt, Aug. 14, 1944.

[456] NO-1056; Sachsenhausen and Oranienburg are used interchangeably in the correspondence for what was effectively the same concentration camp.

[457] Fischer 1985, 2:101–102.

[458] Ibid.: 104; Maurer to Sievers, in Aug. 16, 1944, in BDC file on Karl-Heinz Boseck. A memorandum, Fischer to RSHA, in NO-640 details these individually as three mathematicians and eight chemists. The latter were intended for a parallel chemical effort in the concentration camps, but presumably were capable by training for the computation of formulas and the use of logarithmic tables. Fischer, in his memoirs (1985), exaggerated when he put the number at another thirty. It should be added that Fischer was a Nazi apologist who maintained that prior to 1945, there were good conditions in the concentration camps (ibid.: 104–105).

[459] NO-1056.

nine years old, the apparent reason he was not in military service was that he suffered from severe varicose veins in both feet.[460] Boseck declared himself ready to supervise the prisoners beginning August 15, which would be after he had completed his examinations for the *Diplom* degree in mathematics. As of July 28, he had been successful in these. However, Boseck was only willing to undertake the supervision if, "for reasons of his authority," he were made a specialist officer in the SS. His varicose veins were here a difficulty. There were, however, no other suitable personnel, and so on August 30, Himmler agreed that "at least for the duration of the war," Boseck would be an SS officer, specialist class.[461] In fact, to the annoyance of the Sachsenhausen camp commandant, Boseck did not show up on August 15, and difficulty in obtaining suitable calculating machines also delayed the work.[462] Indeed, it was August 21 before Klose was asked to release Boseck from his duties as *Assistent*; Klose agreed "with heavy heart," and in the hope that Boseck's new organization would be helpful to him "in scientific military tasks."[463]

A vivid picture of Boseck at the institute in Berlin has been left by the mathematician Alexander Dinghas, then a student:[464]

> [There] came as [Nazi] disciplinary leader (*Fachschaftsleiter*) the man who for ten years would be unbounded master of the mathematics faculty: Karl-Heinz Boseck. Boseck was no ordinary man. At that time, he indeed was still half a child, displaying, however, already all the signs of the later Robespierre on a small scale. For I am certain; had Boseck been a member of the Convention in the French Revolution, so had he been *no* less than Robespierre or Saint-Just, for he possessed all the qualities through which a fanatic obtains external power: narrow vision, hunger for power, desire to rule over other people, and blind belief in ideas. Chiefly, [he believed] in the ideas of National Socialism, if here one can also speak with difficulty of ideas. . . . Later I came to know other members of his family and ascertained that they all possessed the same fanaticism and belief as Boseck, . . . my situation was weak. I could only then last if I had the support of Boseck, for a word from Boseck would have sufficed to remove me from my position. That this conjecture of mine was correct, I had later confirmed in 1944, . . . Boseck supported me until 1943 without reservation. In 1939, he rang up the ministry and requested that my receipt of a teaching post be expedited. I relate this here only to show what power Boseck had at his disposal in those years. Later, his power would be still greater and Bieberbach[465] sank ever deeper. It is sad that Bieberbach never made the attempt to free himself from Boseck. I believed for a long time that he wished to and just as us, grinned and bore it, until finally in 1944, I convinced myself of the opposite: Bieberbach had had respect for Boseck.

Boseck's appointment took place effective October 1 (a Sunday). By Tuesday, he had examined the physical situation in Sachsenhausen, and on Thursday (October 5) was clarifying his situation vis-à-vis the university, as he did not want to give up the opportunity of becoming a university teacher at Berlin, as well as questions of his pay and associated bureaucratic details. In particular, an agreement was reached with Sievers that only a very limited number of organizations could submit computational requests, including explicitly the SS weapons office, the army weapons office, the various branches of the air force research directory, Walther Gerlach, and Wilhelm Süss (by virtue of their positions in the RFR).[466]

Actually, Wolfram Sievers, the executive secretary of the *Ahnenerbe*, had already informed Gerlach on August 21 of the plans for the computational institute for the "humanly stressful and time-consuming computation of formulas, the working out of individual constructions, and also, however, for fundamental research," and Gerlach had replied enthusiastically on August 29, as well as informing Süss.[467] A week later, Süss himself wrote Sievers, mentioning the case of Ernst Mohr and suggesting him as a suitable participant.[468] Alwin Walther at Darmstadt was also enthusiastic. Fischer had suggested he might provide overall scientific supervision, and in fact, in late July, Walther was already sufficiently involved to declare himself satisfied with Boseck, but to suggest that it were necessary before the work began for Boseck or whomever would be in charge to have preliminarily two weeks' training at his institute in Darmstadt. He was also consulting Werner Osenberg[469] about a possible supervisor.[470]

Sievers, writing to Gerlach, repeated Himmler's original phrase requoted above as to the work to be done in Boseck's institute. Indeed, in almost a parody of the hierarchical transmission of commands, the phrase echoes in letter after letter in the files: it is also in Sievers to Klose on August 21 (where after "constructions" appears the weary "etc." (*usw*). It appears in Sievers to the commandant of the Dachau concentration camp (Weiter) on November 4, 1944, and again in Sievers "to the [entire] personal staff of the national leader of the SS [Himmler]" on December 7 (here again broken off, but with *u.ä* = "and similarly").

Work started at the beginning of October—sort of. The authorities at Sachsenhausen had not yet really started any preparations. Also, Boseck had some doubts about the half-barracks to be devoted to his project: while adequate for an envisioned forty workers, it was proximate to the camp's tuberculosis isola-

[460] *Ibid.* According to Fischer (1985, 2:104), Boseck had suffered a leg injury through an accident.

[461] NO-1056 and NO-640, Sievers to SS Personalhauptamt, Sept. 13, 1944. (This document is also in the BDC file for Boseck, which contains an amplification on September 19 as well.) See also in NO-640, Sievers to Brandt, Aug. 14, 1944.

[462] BDC, Boseck file, Maurer to Sievers, Aug. 16, 1944.

[463] BDC, Boseck file, Sievers to Klose, Aug. 21, 1944; Klose to Sievers, Aug. 25, 1944; OKH (Army High Command) to Sievers, Sept. 12, 1944.

[464] Dinghas 1998: 199–200. Dinghas wrote this in part during his internment in August and September 1945 in a camp at Luckenwald.

[465] Dinghas was a student of Erhard Schmidt; however, of the *Ordinarien*, Bieberbach was presumably the administratively dominant personality. None of the others (including Schmidt) had such interests, whereas Bieberbach did.

[466] BDC, Boseck file, Boseck to Wolf, Oct. 5, 1944.

[467] NO-640, Sievers to Gerlach, Aug. 21, 1944; Gerlach to Sievers, Aug. 29, 1944.

[468] NO-640, Süss to Sievers, Sept. 7, 1944. For Mohr, see above, chapter 4, "Hasse's Appointment at Göttingen."

[469] Above, chapter 5, "The Wartime Drafting of Scientists."

[470] NO-1056 (p. 4); NO-640, Sievers to Gerlach, Aug. 21, 1944.

tion ward. By mid-October, however, the rebuilding of this area was completed. Reference books, equipment, and paper were also acquired. As to personnel, however, of the eleven Dachau inmates chosen by Fischer, only five had arrived in Sachsenhausen by the end of October,[471] and of these, Boseck found only one usable. Consequently, he made trips to Buchenwald, and also for "gleanings" (*Nachlese*) again to Dachau (where Fischer had not had a selection from all inmates). Eventually, fourteen more inmates were selected from Buchenwald, but only nine of these were delivered. Finally, on November 14, actual work began with the nine from Sachsenhausen and one from Dachau. These shrunk to seven, to whom eventually the nine from Buchenwald, and presumably more from Dachau, were added in December.[472]

The detailed small numbers are mentioned because they seem to indicate, in part, how little help was to be had in the camps for the mathematics project, though it came from the highest authority. Indeed, Gerhard Maurer, the head of the branch of the WVHA that negotiated contracts for the use of concentration camp prisoners, seemed annoyed that because of Boseck's failure to arrive on August 15, the inmates were not working.[473] While Sievers praised Boseck as having shown himself "very circumspect, capable, and clever. Good cooperation and successful results are therefore guaranteed,"[474] it is also clear that he had his own reasonable doubts about the complete efficacy of employing concentration-camp labor to do intellectual work for the Third Reich. With respect to the Kraków-Plaszów group, he wrote (and sent as a memorandum to Boseck):[475]

> *In Re:* The employment of prisoners for scientific work.
> The reliability of scientific work is conditional. The results are frequently "cooked" (*frisiert*) in order to achieve relief. It was established that then, if certain relief were granted, e.g., permission to be able to work in ordinary clothing, the investigations were immediately more reliable. During the employment [of inmates] for scientific activity, in trial cases (*Bewährungsfalle*), one should go up to release from imprisonment, in order to achieve the impression that those in question are really active as scientists.

[471] Boseck's somewhat ominous phrase in the circumstances, "since in the meantime the remainder has been disposed of otherwise." See Boseck to *Ahnenerbe*, Oct. 26, 1944, in BDC file on Boseck.

[472] BDC, Boseck file, Sievers's report to Himmler, Dec. 1, 1944 (also in NO-640). For other material, see ibid., Boseck to Sievers, Oct. 5, 1944; Oct. 16, 1944; Oct. 19, 1944; Oct. 28, 1944. Sievers's report contains explicit mention that a professor of mathematics at Prague, who was interned at Buchenwald, was not among those transferred to Sachsenhausen. This was presumably Ernst Mohr. However, F. Litten (1996) claims that Mohr was never in Buchenwald, and that in fact the person meant was Prof. Erwin Lohr, of the technical university in Brünn (Brno) (not Prague), who had also been arrested.

[473] BDC, Boseck file, Maurer to Sievers, Aug. 16, 1944.

[474] BDC, Boseck file, Sievers's report to Himmler, Dec. 1, 1944 (also in No-640).

[475] NO-640, memorandum by Sievers dated Aug. 4, 1944, presumably sent to Boseck with the memorandum mentioned in note 448.

Boseck's institute needed a name so that it could be addressed by contracting parties and deal with procurement problems. This was established as "Mathematical division of the institute for military scientific goal-oriented research of the Waffen-SS and police in the office *Ahnenerbe* of the personal staff of the national leader of the SS," or "Short form: 'Institute for military scientific goal-oriented research, mathematical division, Oranienburg, P.O. Box 63.'"[476] This organization, whose "long-form" title is almost a self-caricature of German, particularly Nazi, hierarchical language, naturally engaged in much correspondence of the sort mentioned, but this could be effective, especially when ordering items, only if it were clear that a service division of the military were involved. Thus,[477]

> The utilization of a service stamp (*Dienstsiegel*) is urgently necessary. Therefore an application is made to make available a service stamp (metal stamp) for the Institute of Military Scientific Goal-Oriented Research, Mathematics Division, with the inscription "Waffen-SS, Institute for Military Scientific Goal-Oriented Research"; in order to avoid mistakes and for a distinguishing mark, it is necessary, in contrast to those already available, that this seal should carry the letter "M" under the national eagle (M = Mathematics Division).

The most mundane bureaucracy therefore ground on at a time when Strassbourg and Aachen had both fallen to the Allies, the American General Patton was establishing a bridgehead over the Saar, and the bloody battle of the Hürtgen Forest had just ended with German retreat, though also with many Allied casualties. It is true that the German resistance to further Allied incursion on Germany itself was very stiff and that the last German offensive (the Ardennes offensive, or "Battle of the Bulge") was about to begin, but one would have thought a Waffen-SS bureaucracy would not at the time be worrying about the nature of new marking stamps.

In what is apparently Boseck's last extant official report, on December 28, he described the workers as three German, six French, three Czechs, three Belgians, one Dane, one Portuguese, and one Jew. Of these, the Portuguese and the Frenchman (the noted physicist Georges Bruhat) were ill—Bruhat would die within a year. By the time of this report (intended for the report due to Himmler at the New Year), various airflow problems, tables of functions defined by integrals, and calculation of altitude maps for characteristic surfaces had been completed, or nearly so. In addition to the tables and machines obtained for the work, the concentration-camp command provided the institute "from liquidated effects" (*aus aufgelösten Effekten*) "a series of good magnifying glasses and lead and drawing pencils." French textbooks were borrowed from the University of Berlin.[478]

The "mathematics division," however, went on until early April. In January 1945, there were complaints about the Italian computing machines requiring

[476] BDC, Boseck file, Sievers' report to Himmler, Dec. 1, 1944, item 7 (also in NO-640).

[477] NO-640, Sievers to "Personal Staff of the Reichsführer SS [Himmler]," Dec. 7, 1944.

[478] NO-640 or BDC file on Boseck, Boseck to Sievers, Dec. 28, 1944.

repair and the need to buy a detailed list of books. By early February, evacuation to some other location was being discussed. Boseck suggested moving near Jena (Buchenwald) or Göttingen. Nevertheless, on February 15, there was talk of Boseck's need for dictionaries, as well as important computations to be done for "long-distance weapons" (*Fernwaffen*). In fact, the V-1 bomb had been introduced about a year previously, and the V-2 the preceding September. Somewhat later, still in 1944, the Germans had introduced a rocket-powered airplane—which had the unfortunate characteristic of spontaneously exploding. Also, Boseck apparently needed assistance, since an ever greater range of problems was being handled, and Pohl sent him as *Unterführer* a certain Franz Lippa, who was a war-wounded SS man. Boseck had been told that he, together with the "mathematics division," must leave Oranienburg by February 15, since after February 16 no army transport would be available. Possible places of removal, such as Dachau and Waischenfeld (where the offices of the *Ahnenerbe* were located), were considered and rejected, the latter because of insufficient space and insufficient guards. On February 23, Pohl believed that the mathematics division was on the march to new quarters in Dachau; but on April 4, Boseck was still in Oranienburg.

After mulling through a number of possible places to relocate, Wolfram Sievers had favored moving to the concentration camp at Flossenbürg. Boseck preferred his own independent establishment. Among other places discussed was Boseck's suggestion of Hostischau (modern Hostisov in the Czech Republic). For Boseck, this recommended itself because there were no air raids, there were easy connections to Prague, it was reasonably far from both fronts, and not least, the possibility of keeping the work secret was enhanced. Boseck even described a building he had in mind and the necessary renovations to it—renovations that Sievers found impossible under German circumstances in March 1945. Indeed, the whole idea of moving from near Berlin to Hostischau was impossible given the situation, as Sievers remarked with sarcasm. In fact, some of the difficulties of going to Hostischau, in addition to distance, were the need for extra guards, the suspicion that the Czech prisoners would attempt to escape, and the certainty that the Nazi National Security Office (RSHA) would not allow Czech prisoners in the "Protectorate of Bohemia." Throughout this correspondence, Boseck was most concerned for the secrecy of his group's work. Whether this was self-importance on his part (all his letters are signed "Dipl[om]-Math. K. H. Boseck, SS Untersturmführer [F]"), or simply willful failure to realize that the German military situation was unsalvageable, is unclear—and hardly matters. Boseck certainly behaved as though his mathematics division were essential to the eventual German victory. On March 5, 1945, he heard of Italian calculating machines finally located in Verona, and on March 23 was complaining that their price was exorbitant, and furthermore they needed repair—talk about business as usual. Boseck even discussed amortization of the calculator price over two years. On March 12, Boseck's financial support was increased. On March 23, he was also complaining that machines sent from Holland for the mathematics division had been mistakenly sent to Dachau.

On March 3, 1945, the concentration camp at Ravensbrück was evacuated into Sachsenhausen.[479] With it came Professor K. Walter's computational group of eight people. This led to the kind of bickering two months before Germany's unconditional surrender that not only illustrates Boseck's primary motivations of personal aggrandizement, but, were it not documented, would be scarcely believable.

As Boseck reported to Sievers on March 5, he interviewed five of this group, all Polish Jews, and found only one of them, a former *Assistent* in the university at Lemberg (modern Łwow), usable. The other four were only "average" in ability, and such men "are always obtainable." Also, three of these, Boseck said, were "already no longer in Sachsenhausen." Since mass gassings at Sachsenhausen began in February, this was presumably their fate.[480] Boseck was also amazed that Walter's group worked without direct oversight—he would visit Ravensbrück every two weeks or so to pick up completed work, and leave new tasks to be done. They also apparently had very little in the way of books or other sources of known results, which, said Boseck, had to be discovered anew.

On March 8, Walter visited Sachsenhausen himself, as it turned out, while Boseck was away at the Army Weapons Office. He attempted to visit the mathematics division, but Boseck's assistant there (presumably Franz Lippa) told him to get out immediately and return when Boseck was present. On the twelfth, Boseck discovered that the camp commandant's adjutant thought the Ravensbrück mathematics people would fit in quite well with the local mathematics division. A meeting of Walter and Boseck was set up for the next day.

Already on March 5, Boseck had told Sievers that it was not his job to worry about Walter's group. Furthermore, he would not even trouble to communicate to Walter the arrival of his men and machines at Sachsenhausen. When the two mathematical entrepreneurs met on the thirteenth, neither wished to blend their programs. In telling Sievers of the meeting, Boseck was sarcastic about Walter's interest in "busying" (*beschäftigen*) the prisoners. In Boseck's view, the task was to give them committed employment (*einsetzen*). Furthermore, he refused to allow Walter to see his stock of machines and material. Walter told Boseck he had originally attempted to use Polish and Russian civilian personnel under the auspices of the Institute for German Work in the East for his mathematical problems, but this proved unsuccessful—"especially the Poles were obstinate." The eight Jewish prisoners from Sachsenhausen worked "diligently and inde-

[479] Sachsenhausen was about twenty miles north of central Berlin and Ravensbrück about thirty miles further north. Though Ravensbrück is known as a female concentration camp, in spring 1941 a small men's camp was adjoined, though officially it was a Sachsenhausen satellite. Presumably it is this which was first evacuated suddenly on March 3 into the main Sachsenhausen camp. Ravensbrück proper was evacuated in late March 1945. See *Encyclopedia of the Holocaust*, vol. 3 (New York: MacMillan, 1990), 1226–1227.

[480] A gas chamber was installed at Sachsenhausen in 1943, but was not used regularly. In February 1945, several thousand prisoners too ill to march were killed in it. Ibid.: vol. 4, pp. 1321–1322. It seems unlikely that the prisoners would have escaped.

pendently," although their work was of uneven quality.[481] It turned out that Walter had obtained through Werner Osenberg's office, as a consequence of his computational activity with the Jewish prisoners, the coveted "indispensable" (*uk*) ranking that prevented him from being drafted into the military. Boseck suspected, probably rightly, that it was to preserve this that Walter was insistent on having his own working group of prisoners (after all, Boseck himself had parlayed the leadership of the mathematics division into an SS rank he otherwise would not have received). The adjutant's plan to put Boseck's and Walter's groups side-by-side was a priori impossible in Boseck's eyes. He stressed the essential secrecy of the work in the mathematics division and that he had prisoners capable of being "heavily employed for theoretical considerations," which required large effort on his part, as opposed to Walter's more nonchalant operation. In the end, Walter's remaining five prisoners received another small corner of Sachsenhausen, since he would not release them to Boseck's supervision.[482]

On March 5, Boseck had pleaded with Sievers about the necessity of a "speedy and orderly" removal of the mathematics division from Sachsenhausen prior to any sudden evacuation of the whole camp. On March 28, Sievers felt Flossenbürg would be best. But on April 4, never flitting, Boseck still was sitting in Sachsenhausen, even though its mass evacuation began at the end of March. When the Russian army arrived on April 21, they found only 3,000 ill prisoners remaining in Sachsenhausen.[483] Boseck's fate is unknown. Thus ended the experiment with mathematical slave labor.[484]

Even at the outset of the program, though, dating it as early as possible, say from Himmler's May order, it is hard to see what might have been expected of it. It is certainly true that calculations were done for Walther's Darmstadt institute and, consequently, presumably for the rocket installation at Peenemünde. It is also true that Himmler himself suggested it be used for meteorological calculations with an aim at long-term weather prediction, a program initiated by a certain Dr. Hans Robert Scultetus (also an SS man) in Königsberg, and broken off because of the war.[485] But Sievers did not get around to apprising Boseck of this until about six months later, when "at present all our Atlantic and many other important weather stations have been lost and we are more than ever thrown back upon ourselves."[486] No doubt this was in Himmler's mind six months earlier as well. Sievers's ruminations cited above and based in part on experience seem nearer the mark—expecting concentration-camp inmates to work intellectually, and accurately (and so willingly), for the Third Reich was, at best, a vexed business. If one has a certain mildly Marxist cast of mind, Boseck's effort and the one at Kraków-Plaszów can be seen as instances of a "new war-determined rationality," using people according to their ordinary qualifications in bourgeois life.[487] However, even at the moment, second thoughts of Sievers's sort must have seemed more "rational." Rather than rational, Himmler's order seems desperate. By May 1944, it was probably clear to many Germans that they would not win the war; the question was, how badly would they lose it; might some sort of agreement be reached with the enemy powers? These were issues, however, that none dared speak of openly for fear of arrest and execution. Himmler's May order was a literally last-ditch attempt to use every conceivable sort of scientific resource left in Germany to the benefit of the Third Reich. Four future concentration-camp divisions were even envisioned (in December 1944) for chemistry, physics, electrotechnics, and construction.[488]

This is not to deny strong elements of rationality and rationalization in the concentration-camp mathematical effort. For one thing, it acknowledged the evolved status of the prisoners. Originally, the declared purpose of the camps was to arrest people for purposes of "re-education," or for prophylactic security reasons. Thus, for example, the mathematician Ernst Hellinger and the psychoanalyst Bruno Bettelheim both spent stints in concentration camps and were then released. The first camp opened, Dachau, was publicly celebrated.[489] Conditions were never particularly good, however, and soon terror took over, as did the realization that the camps were an excellent source of slave labor. As slaves, the inmates could be worked to death and, in general, treated as human material, as, for example, for the various medical experiments carried out in the camps. Thus the original purposes of indefinite "preventive detention" and "re-education" became quickly subsumed by the better-known and more permanent ones of terror and economic/scientific "rationality." The war only accelerated the use of such human material.[490] Terror and sadism were part of this structure, as they were of the extermination camps in Poland. Himmler's May

[481] Presumably these were what was left of those transferred from Plaszow.

[482] Had that occurred, Boseck planned to "separate out" the "useless prisoners."

[483] *Encyclopedia of the Holocaust*, vol. 4, p. 1322.

[484] The story of the end of Boseck's institute is in U.S. National Archives, Captured German Documents, T-580/125/39.

[485] NO-640, Himmler to Pohl, May 25, 1944. Scultetus was also involved in Himmler-initiated researches to justify Alfred Horbiger's crazy *Welteislehre*, or "World Ice Theory." See Michael Kater, *Das Ahnenerbe der SS, 1935–1945* (1974), under Scultetus, and Martin Gardner, *Fads and Fallacies in the Name of Science* (1957). In chapter 7, below, student work on this theory is discussed.

[486] BDC file on Boseck, Sievers to Boseck, Dec. 7, 1944.

[487] Ebert n.d.: 5.

[488] NO-640, Sievers to Pohl, Dec. 7, 1944.

[489] The *Völkischer Beobachter* for Tuesday, March 21, 1933, cited Himmler at a press conference: "On Wednesday in the neighborhood of Dachau, the first concentration camp was opened." Here, he said, various functionaries who threatened state security would be kept since it was impossible to keep them for any length of time in the usual prisons and equally impossible to let them go free. "We have taken this measure without any heed for petty scruples in the conviction of thereby acting for the reassurance of the general population and in their spirit." This report also said Himmler stated that this custody would not be maintained longer than necessary and rejected rumors of bad treatment of such prisoners. On March 23, the first shipment of about sixty prisoners arrived. See, e.g., Paul Berben, *Dachau, 1935–1945, The Official History* (1975), for the original intent of the camps. The opening of the *Völkischer Beobachter* article is reproduced in Berben on the page preceding page 1.

[490] See Pohl to Himmler, Apr. 30, 1942, as cited and discussed in Ebert, n.d.: 5–6.

order was an attempt to utilize the concentration-camp inmates other than in a purely physical way.

The date of Himmler's order is also of some interest. After the German overturn of Admiral Horthy's government on March 19, 1944, because he attempted to make peace with the Russians, Hungarian Jews began to be ghettoized in mid-April, and deportations began May 15. Thence came the language of Himmler's May 25 order reflecting the new supply of Hungarian Jews. In fact, however, no effort was made to use the Hungarian Jews in any such capacity—the transports rolled to Auschwitz-Birkenau, where virtually all aboard were gassed upon arrival. Himmler's May 25 directive to Oswald Pohl may have been more "rational," but the logic of the Third Reich intervened. An added irony is that the Nuremberg Trial Document NO-640 dealing with these matters is labeled *Judeneinsatz* (utilization of Jews), when at most one Jew seems to have been employed in the Sachsenhausen institute.

A second way in which the concentration-camp efforts were rational was the concentration on computation rather than on uncheckable intellectual production. As H. J. Fischer, who selected the original batch of prisoners, and who claimed credit for first thinking of a computational institute, remarked:[491]

> The tasks [set the inmates] were themselves auxiliary tasks for other projects, and the participating computational personnel did not learn for what the results of their work were used. Also, the checking of the computational work was not difficult. It was only necessary to busy two separated, working groups with the same task and then to compare both results with one another.

Whether, in fact, this was done is unclear.

Finally, an attempt was made to combine rationally those prisoners removed from Kraków-Plaszów in Poland and working on astronomical calculations in Alt-Thymen (connected to the concentration camp at Ravensbrück), those other prisoners removed from the same Polish camp to the concentration camp at Flossenbürg, and the group at Sachsenhausen (assembled from there, Buchenwald, and Dachau). This, like the December planning for future scientific institutes, though, seems to have been more in the interest of the self-aggrandizement of the participating supervisors than for any actual achievement of efficiency. However, despite his later disagreement with Walter, Boseck did apparently travel to Ravensbrück to see if he could use any prisoners there.[492]

This chapter has examined some mathematical institutions during the Third Reich, both ordinary ones, like societies and journals, and extraordinary ones, ranging from the institute at Oberwolfach, actuated by the finest scholarly and academic activity, to the gruesome debasement of slave labor under concentration-camp conditions.[493] However, no institution, even the last, was perhaps as peculiar as the movement toward discerning an ethnically German mathematics, or "Deutsche Mathematik," as distinct from other kinds. The next chapter is devoted to it and its principal protagonist, the distinguished mathematician Ludwig Bieberbach.

[491] Fischer 1985, 2:100.

[492] For a discussion of such motivations, see Ebert n.d. For Boseck's trip, see NO-640, Sievers to Sommer, Dec. 7, 1944.

[493] Curiously, in 1962, there appeared in English a short story "Maxwell's Equations" by the Russian physicist Anatoly Dnieprov, in which mathematics is done by slave labor under the aegis of a former German concentration-camp commander. Whether Dnieprov knew of the Plaszów or Sachsenhausen efforts is unknown to me, but having been born in 1919, he was old enough to have been a prisoner in Plaszów, where the mathematical activity explicitly took place with Russian prisoners. This story appears in at least three anthologies, the earliest of which (from which the others borrow) is *Beyond Amaltheia* (Moscow: Foreign Language Publishers, 1962).