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OBERWOLFACH IN THE FRENCH OCCUPATION ZONE: 1945 TO EARLY 1950s

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Abstract. — This paper is part of a larger research project dealing with the history of the *Oberwolfach Research Institute for Mathematics* between its foundation in 1944 and the early 1960s. While the history of its foundation is relatively well understood, the development of the institute after 1945 has scarcely been touched on by historians (of mathematics). After World War II the challenge faced by the institute was twofold. On the one hand, it had to virtually reinvent itself, i.e. to strip itself of the agenda of war-related mathematical research and find a new identity suited for the post-war situation. On the other hand, the institute was without a budget as it had completely relied on funds from Berlin, which permanently stopped flowing with the end of the war. To understand how the institute and its director, Wilhelm Süss, dealt with this twofold challenge, the consequences of the institute coincidentally being situated in the French occupation zone, and the potential implications of this political happenstance for the history of mathematics in post-war Germany, will be centre-stage in what follows. The history of the Oberwolfach Institute in the late 1940s and early 1950s cannot be understood without embedding it into the political and cultural context of the French occupation zone, which had a long-term impact on its institutional identity. Co-operation with French mathematicians and with

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the French authorities became crucial for developing a new vision for the institute's institutional identity.

Résumé (L'institut Oberwolfach dans la zone française d'occupation : de 1945 aux années 1950)

Cet article fait partie d'un projet de recherche de plus grande envergure sur l'histoire de l'*Institut de recherche mathématique d'Oberwolfach* de sa fondation en 1944 au début des années 1960. Tandis que le contexte de la fondation de cet institut est relativement bien connu, son développement après 1945 a peu été étudié par les historiens des mathématiques. La fin de la Seconde Guerre mondiale a placé l'institut face à un double défi. Contraint, d'une part, à se réinventer afin de se débarrasser du programme fixé par la guerre à la recherche mathématique, l'institut s'est cherché une nouvelle identité conforme au contexte d'après-guerre. Il s'est d'autre part trouvé dénué de tout budget suite à l'arrêt définitif des financements venus de Berlin et dont il avait été entièrement dépendant durant la guerre. L'objectif principal de cet article est d'étudier la manière dont cet institut, avec son directeur Wilhelm Süss, a relevé ce double défi en s'inscrivant dans la conjoncture, nouvelle, de la zone d'occupation française. Il s'agira ainsi de saisir les implications de cette conjoncture politique spécifique pour l'histoire des mathématiques dans l'Allemagne d'après-guerre. De la fin des années 1940 au début des années 1950, l'histoire de l'Institut d'Oberwolfach ne pourrait être comprise hors du contexte politique et culturel de la zone d'occupation française tant ce contexte a participé à une redéfinition de l'identité de l'institution sur le temps long. La coopération avec les mathématiciens français et les autorités françaises était désormais devenue essentielle au développement d'une nouvelle vision de l'Institut.

This paper is dedicated to David E. Rowe on the occasion of his 70th birthday

One of the first contacts the then *National Institute for Mathematics* (*Reichsinstitut für Mathematik*) in Oberwolfach had with French officials took place on Saturday, May 26, 1945. In his diary entry for that day, William Threlfall (1888–1949), deputy director of the Institute at the time, wrote:

> Süss is back from Freiburg. Second lieutenant Prudhomme of the Institut Pasteur comes to inspect the Institute and takes a calculating machine away with him. [1]

John Todd (1911–2007) visited the Oberwolfach Institute in early July 1945 as a British Naval officer on behalf of the *Admiralty Computing Service* affiliated to the *Combined Intelligence Objectives Sub-Committee* (*CIOS*) while undertaking a survey of applied mathematical research in Germany [Todd

[1] Diary of William Threlfall, May 26, 1945: "Süss aus Freiburg zurück. Vom Institut Pasteur kommt Prudhomme Souslieutenant, um das Institut zu besichtigen, nimmt eine Rechenmaschine mit." I am grateful to Klaus Volkert for a copy from the Threlfall diary; cf. [Volkert 2018].

1983, 19]. In 1946 he reported that "Süss had been interrogated on May 26 [1945] by Souslieutenant Prudhomme of Institut Pasteur" [Todd & al. 1946, 17].

While we know nothing about the interview or about the interviewer Prudhomme, these remarks indicate that the Oberwolfach Institute seemed to have somehow come to the attention of the French as well as the British in 1945. What did they find in Oberwolfach?

1. THE OBERWOLFACH INSTITUTE 1944/45

The *National Institute for Mathematics* in Oberwolfach had been founded in autumn 1944 as an institution geared towards organising and carrying out war-related mathematical research. The developments leading to the founding of the Oberwolfach Institute are well-known [Epple et al. 2005; Mehrtens 1996; Remmert 1999]. The Freiburg mathematician Wilhelm Süss (1895–1958), as president of the *German Mathematicians Association* (*Deutsche Mathematiker-Vereinigung*, *DMV*), had been the driving force behind the founding. He became the first director of the institute and stayed in office until his death. Süss, while not at all a first-rate mathematician, was a first-rate organiser and had a golden diplomatic touch [Remmert 1999, 13f]. He had been president of the *DMV* since 1937 until the *DMV* petered out of existence after the war (to be newly founded without and against him by Erich Kamke in Tübingen in the French occupation zone in 1948) and rector of Freiburg University from 1940 to 1945. Thus, he was on rather good terms with the *Ministry of Education and Research* in Berlin as well as the *Reich Research Council* and the relevant Nazi officials in Berlin. I repeat my summary assessment of Süss' political comportment, especially as president of the *DMV*, during the Nazi period as expressed in [Remmert 1999, 37]:

> [...] the *DMV*'s professional policies had become closely entangled with issues at the very core of the Nazi state: its anti-Semitism, its anti-internationalism and its striving for autarky. The *Ministry of Education and Research* pursued the objective to transmit these issues to the sphere of the sciences. The collaboration of the *DMV* board and especially of Süss in this program, which was beyond their control, was the basis of their influence and their successful professional activities during the war.

And, indeed, Süss's efforts were rewarded with the foundation of the Oberwolfach Institute in the Black Forest in 1944, funded by the *Reich Research Council*, with a clear agenda to undertake and organize war-related

mathematical research. To be fair, Süss was not exclusively interested in founding an institute for war-related mathematical research, but at the same time strove for "an institution that would dedicate itself, even beyond the (victorious) end of the war, to a wide spectrum of pure and applied mathematical research" [Epple et al. 2005, 151], in a model combination of the Italian institutes of Mauro Picone, the *Istituto Nazionale per le Applicazioni del Calcolo* (*INAC*), founded in 1933, and of Francesco Severi, the *Istituto Nazionale di Alta Matematica* (*INDAM*), founded in 1939. [2]

The official application for the Oberwolfach Institute, written by Süss in the summer and submitted in early August 1944, defined three essential tasks: (a) "Promotion of the mathematical sciences and their applications in the broadest possible sense," (b) "expansion of departments into *calculation institutes* and *mathematical production institutes* with specific mathematical and technical equipment" and, finally, (c) "general tasks" including "a central office for mathematical reports," "the drawing-up of a card-index on mathematicians for the tracing and optimum use of workers," as well as "the establishment of a central information and inspection office for mathematical problems." [3] These tasks were not aimed at actual mathematical work, but rather at the organization and consolidation of resources. The staff Süss envisioned consisted of a director (Süss), his deputy, three heads of department at the rank of professor, ten scientific and five technical assistants, and two draughtswomen, as well as librarians and further support staff. Such extensive plans could, of course, not be carried out in autumn 1944 as there was no way to secure the intended number of staff. However, the Oberwolfach Institute slowly started work under its director Süss. He appointed Emanuel Sperner, one of his colleagues on the board of the *DMV*, deputy director (to be replaced by William Threlfall, who knew French, in April 1945, as Sperner had been a member of the Nazi party since 1933). Sperner had done war-related mathematical research with the meteorological research group in Hamburg and brought his assistant Walter Stakowski to Oberwolfach. [4] The Dutch mathematician Gerrit Bol, who had taught in Greifswald from 1942 to 1945, and Herbert Seifert, who had worked at Adolf Busemann's

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2 On Picone and the *INAC* see [Epple et al. 2005, 141–148]; [Remmert 2017]; on Severi and the *INDAM* see [Goodstein & Babbitt 2012]; cf. [Guerraggio & Nastasi 2005, passim]; [Remmert 2017]).

3 Walter Gerlach's application to the *Reich Research Council*, August 2, 1944 (University Archives Freiburg (UAF), C 89/4). On this and the following see [Epple et al. 2005, 152–154], paraphrased and quoted here.

4 Mentioned by Threlfall in his diary, Sept. 14, 1944.

Institute for the Dynamics of Gases in Braunschweig were appointed heads of department. Moreover, Hermann Boerner, who had formerly worked with the *Reich Meteorological Service* (*Reichswetterdienst*), and Wilhelm Maak, from the University of Hamburg, joined the institute as assistant scientists. All of them had experience in war-related mathematical research.

These staff members were joined by mathematicians who were granted guest status having taken refuge in Oberwolfach from throughout the German Reich: Heinrich Behnke who had been bombed out in Münster; William Threlfall, like Seifert, had come to Oberwolfach from Braunschweig; and Henry Görtler, one of the leading mathematicians at Prandtl's *Institute for Fluid Dynamics* in Göttingen who was designated for a professorship of applied mathematics in Freiburg, stayed in Oberwolfach from late 1944 and made a formal request to establish a "unit for mathematical fluid dynamics";[5] George Lorentz, Wilhelm Magnus, Theodor Schneider and Leopold Vietoris spent time in Oberwolfach between October 1944 and May 1945.[6] Moreover, mathematicians from Freiburg, which had been massively bombed in late November 1944, came to Oberwolfach as well—not only Süss and his family, along with his assistants Hans Schubart and Hermann ter Hell, but also the Freiburg-based French mathematicians Frédéric Roger and Charles (Karl) Pisot. Hellmuth Kneser, Süss's long-time friend and main mathematical advisor, visited from Tübingen frequently with his wife.

Given that the war was nearing its end, the war research agenda of the Oberwolfach Institute could not be realized. Thus what the French and the British intelligence units found in Oberwolfach in May 1945 was the nucleus of an institute furnished with a library (mostly taken from Strasbourg and soon to be returned by Pisot) and a few calculating machines, but devoid of a mission and with its funding from Berlin cut off [Remmert 2019].

For Süss as director of the institute the challenge this posed was twofold. On the one hand, he had to virtually reinvent the institute, i.e. to strip it of its agenda of war-related mathematical research and find a new identity suited for the post-war situation. On the other hand, the institute was without a budget as it had completely relied on funds from Berlin, which per-

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5 Görtler to Süss, April 9, 1945 (UAF, E6/1): "Anerkennung der Arbeitsgruppe für mathematische Strömungsforschung als eigene Abteilung des Mathematischen Reichsinstituts".

6 Cf. the abstracts in the first abstract book (Vortragsbuch), starting in September 1944 with a talk by Pisot, accessible online via the Oberwolfach Digital Archive (`https://oda.mfo.de/`).

manently stopped flowing with the end of the war. To understand how Süss and his colleagues dealt with this twofold challenge, the consequences of the institute coincidentally being situated in the French occupation zone, and the potential implications of this political happenstance for the history of mathematics in post-war Germany, will be centre-stage in what follows.

2. OBERWOLFACH 1945/46: KEEPING THE INSTITUTE AFLOAT

In order to adequately assess the situation of the Oberwolfach Institute in 1945 it is important to keep in mind that generally people in Germany could not have foreseen what we now know well, namely that between 1945 and 1949 no sovereign state would exist in Germany. For the Oberwolfach Institute this was particularly problematic as this implied that there was no central political actor who was competent in the field of science policy [Osietzki 1984; Stamm 1981; cf. Szöllösi-Janze 1996] and no institution that felt responsible for the institute. Money from Berlin ceased to flow and that was the end of it in 1945.

After 1945, mathematics in Germany lay pretty much in ruins, as did Germany in general. [7] The sacking of Jewish mathematicians from German universities had been an immense loss for the discipline [Bergmann & Epple 2012; Siegmund-Schultze 2009]. International contacts had become increasingly fraught with difficulties given the political framework during the Nazi period [Remmert 2004, 228–234; Remmert 2017]. Opinions as voiced by first-rate mathematician (and close ally of Süss during the Nazi period) Helmut Hasse in a letter to Marshall Stone in 1939, "that there is a state of war between the Germans and the Jews", did not really help to ease the situation. [8]

During the war all universities suffered from a severe lack of academic staff, as many of the junior academic talents served in the war. Furthermore, many university mathematicians, such as Gustav Doetsch, Helmut Hasse, Wolfgang Krull, Herbert Seifert or Emanuel Sperner, just to name a few, were drafted into war-related mathematical research and thus withdrawn from research and teaching in universities. Often their research results were classified as secret and consequently, and because Jewish mathematicians were increasingly kept from publishing in German journals, publication activity was decreasing. On the other hand, publishing opportunities were severely restricted during the war by the rationing of paper. To

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7 This passage draws on [Remmert & Schneider 2010, 265–267].

8 Hasse to Stone, March 15, 1939 (UAF, E4/44); cf. [Siegmund-Schultze 1993, 164].

put it bluntly, mathematical Germany fell from a peer position to the second league between 1933 and 1945.

Given the devastation in many German universities and the daily economic hardships, the rebuilding of mathematics and the mathematical publishing system progressed very slowly after 1945. Only after political and economic conditions had considerably improved in the 1950s did mathematical culture in Germany begin to develop dynamically. Before that mathematicians in Germany were in dire straits: the gaps that the firing of Jewish mathematicians had left in universities and specific subdisciplines, such as abstract algebra, could not be filled. International co-operation, while being resumed more speedily than after World War I, was still recovering slowly—not least due to travel restrictions in the early post-war years. The lack of paper persisted after the war (just as in France and other countries) and resulted in an enormous lack of teaching material, enhanced by the war losses in public and private libraries as well as in publishing houses, many of whose backlists had been destroyed (Teubner's for instance). These developments were reflected in the fact that no mathematical journals were published in the immediate post-war years in Germany (see Section 9 below). At the same time mathematical literature and up-to-date knowledge from abroad did not easily flow into Germany.

3. GAINING OFFICIAL SUPPORT: JOHN TODD (MAY 1945), SZOLEM MANDELBROJT (OCTOBER 1945) AND FRENCH FIAT (MARCH 1946)

Of the two visits mentioned above by Prudhomme and Todd, the latter turned out to be crucial for the Oberwolfach Institute. Not so much because Todd "saved" the Oberwolfach Institute, but because he recommended that Szolem Mandelbrojt visit it.

The story of John Todd, "saviour" of the Oberwolfach Institute ("John Todd der Retter"), has often been told, in particular in the hagiographic brochure on the institute's history that Süss's widow compiled in 1967 [Süss 1967, 32] and also, more modestly, by Todd himself [Todd 1983, 21; cf. Todd 1997]:

> We were having a discussion on the patio when there arose a commotion among the servants. It was caused by a foraging party of Moroccan troops who wanted to occupy the building. I quickly got into proper dress with hat and in my best French persuaded them to leave the mathematicians and "même les poules" undisturbed. The very distinguished sergeant asked if he would be permitted to shake the hand of a British naval officer. Of course I said, "Yes", and

they left to try their luck elsewhere. However, they later appropriated Threlfall's Mercedes-Benz.

This incident kept "Lorenzenhof" [= the institute] intact until the local government was set up.

Whether or not Todd's calling the "foraging [...] Moroccan troops" to order by his authority as a (white) British naval officer and thus saving the Oberwolfach Institute seems a plausible story is not essential. However, what really mattered for the institute's future was that Todd informed Szolem Mandelbrojt (1899–1983) of its existence and recommended that the Oberwolfach Institute be supported by the French. [9]

Mandelbrojt, an early member of Bourbaki and the successor of Hadamard at the *Collège de France* in 1938, emigrated to the United States in 1940 where he taught at Rice University [Mandelbrot 1998; 2012]. In 1944 he, along with Jacques Hadamard, became a member of Louis Rapkine's *Mission Scientifique Française en Grande-Bretagne* in London, founded to fill the research gap that had accumulated in France since the German invasion in 1940 and soon to be merged with the liberated *CNRS* [Dosso 1998, 353–356, 376–380]; [Guthleben 2009, 78–83, 95f]. Todd had been in close contact with Hadamard and Mandelbrojt in London and upon his return from Germany he wanted to "brief them about Oberwolfach, since it was in the French Zone" and not yet known to French mathematicians. The two had, however, already returned to Paris where Todd visited them in a *CNRS* office "when Mandelbrojt was being outfitted for a visit of inspection to Oberwolfach. He insisted on trying the revolver which had been issued to him—and there are presumably still two bullets in the floor of a *CNRS* office!" [Todd 1983, 21f]

Indeed, Mandelbrojt visited Oberwolfach twice, on October 23, staying at least one night, and on October 31. In between he went to Tübingen where he met Kamke. [10] Mandelbrojt was not alone in going to the French occupation zone to check out German scientific resources, as by October 1945 the *CNRS* had already sent ca. 150 scientists on up to 400 such missions, including trips to the two universities, Freiburg and Tübingen, and the thirteen Kaiser-Wilhelm-Institutes in the French occupation zone [Defrance 2001, 8; Guthleben 2009, 99–104]. Mandelbrojt wrote to Todd in

9 Todd to Süss, October 16, 1945 (UAF, E6/11).

10 Süss to Kamke, who had given Mandelbrojt a letter for Süss, October 31, 1945 (UAF, C 89/6). Cf. the list of guests Süss sent to the French administrator on January 29, 1947 (UAF, C89/108), mentioning that Mandelbrojt had arrived in Oberwolfach on October 23, 1945. Threlfall mentions Mandelbrojt's second visit in his diary for October 31 and regretted having missed him at Tübingen the day before.

November 1945 that his trip to Germany had been very interesting and that he would write a formal report on his journey, promising Todd a copy. He regretted that he had not been able to go to Göttingen, "due to flats (8!) and even more serious automobile accidents, but what I have seen, especially in Wolfach, in Tübingen, is very interesting". [11]

Mandelbrojt mentioned his trip to Germany twice in the ensuing correspondence with Todd. On January 1, 1946 he wrote to Todd, excusing himself for having been unable to go to London after the trip to Germany. He included two letters (now apparently lost) by Erich Kamke who had invited him to come back to Tübingen and give some lectures. However, Mandelbrojt could not bring himself to accept the invitation because, as he wrote, "Kamke is a fine man, I have all confidence in him, and if all the German mathematicians were like himself I would certainly accept his invitation, but you know, I know, and Kamke himself knows perfectly well that this is not the case". [12] Mandelbrojt was in good company in his assessment of Kamke who had lost his professorship in 1937 because his wife was Jewish. Abraham Fraenkel in 1947 considered Kamke to be one of only four German mathematicians who had stood their ground during the Nazi period (the others being Erich Hecke, Oskar Perron, and Heinrich Scholz) [Remmert 2004, 245]. Thus, it is not surprising that Mandelbrojt in his letter to Todd made it clear, that he "really [was] not in favor of going to Germany otherwise than for military purposes". And, to be true, the group of mathematicians he knew to be affiliated with Oberwolfach, such as Görtler, Kneser, Süss, Sperner, and Threlfall, definitely had not stood their ground during the Nazi period. Already in November 1945, after his return from Germany, he had made his stance on mathematicians in Germany quite clear, referring to two letters by Görtler and Kamke he had received: "I think I could arrange some advantages for those of the mathematicians who were sympathetic to my kind", referring to his being Jewish. [13]

In February 1946 Mandelbrojt wrote to Todd that the report on his trip to Germany was "being typewritten" and Todd would be sent a copy. As it was for the *CNRS*, he told Todd, he "did not speak at all of the 'romantic' side of the story" because the *CNRS* was "not interested in the political

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11 Mandelbrojt to Todd, November 18, 1945 (Caltech Archives and Special Collections (CASC), Todd papers, folder 9.18, Mandelbrojt).

12 Mandelbrojt to Todd, January 1, 1946 (CASC, Todd papers, folder 9.18, Mandelbrojt).

13 Mandelbrojt to Todd, November 18, 1945 (CASC, Todd papers, folder 9.18, Mandelbrojt).

opinions of German mathematicians, nor in their material (I mean financial) situation". [14] We do not have a copy of Mandelbrojt's report, but it can be surmised that Mandelbrojt spoke positively about the Oberwolfach Institute. In his letter he mentions that in Oberwolfach Süss had told him "that the financial situation of the Institute was bad". However, Mandelbrojt had been able to arrange "a rendez-vous between him [Süss] and the French Directeur of the Universities at Baden-Baden", Louis Sauzin, who had promised Mandelbrojt "to give the Institute the possibility to work", probably by trying "to connect the Institute to the University of Freiburg."

In fact, Mandelbrojt's intervention was successful, as we will see shortly. Süss, for his part, was immensely grateful to Mandelbrojt, as he frequently stressed in letters to colleagues in the next two years. Only a few days after Mandelbrojt's visit to Oberwolfach, Süss wrote to a colleague in Heidelberg that due to Mandelbrojt's intervention the Oberwolfach Institute "seemed to be safe as financial support had been promised". [15] And in early December he wrote a letter to Mandelbrojt, the first in a series that Mandelbrojt did not respond to, thanking him heartily and reporting that he had in the meantime met with Sauzin, who had been very supportive of the Oberwolfach Institute and had even allotted the institute a modest budget. At the same time Süss suggested that some of the colleagues at the institute would like to further pursue their wartime work, namely Sperner in the field of meteorology, as well as Görtler and Seifert and Threlfall (in their cases he did not mention the context). [16] Indeed, in October Süss had given Mandelbrojt several manuscripts by Sperner and Görtler hoping that they might be of interest to the French or the British.

It is not easy to assess whether or to what extent military-related mathematical work was done for the French in Oberwolfach or Freiburg (see Section 5 below). However, Mandelbrojt, while apparently and clairvoyantly keeping his personal distance from Süss, still used his influence to support the Oberwolfach Institute after his return to Paris. In particular, together with Joseph Pérès (1890–1962), who began to play a leading role in the *CNRS* at the time [Blay 2011; Charle 1989], Mandelbrojt apparently made some suggestions to the *Section française d'information scientifique et*

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14 Mandelbrojt to Todd, February 24, 1946 (CASC, Todd papers, folder 9.18, Mandelbrojt).

15 Süss to Karl Freudenberg, November 3, 1945 (UAF, C 89/5): "Es hat uns jetzt ein in der mathematischen Kriegsforschung leitender französischer Fachkollege in den letzten zwei Wochen manche Erleichterung erwirkt und das Reichsinstitut [...] scheint gesichert, nachdem nun auch finanzielle Zuschüsse zugesagt sind."

16 Süss to Mandelbrojt, December 6, 1945 ([Süss 1967, 58–60]; UAF, E6/11).

technique in Offenburg as to how to use the Oberwolfach Institute. The *Section française d'information scientifique et technique* in Offenburg had been founded in July 1945 on the model of the American and British *Field Intelligence Agency, Technical* (*FIAT*), and also became known as *French FIAT*. While the original mission of *FIAT* had been to systematically exploit German research in science and technology [Gimbel 1990], *French FIAT* eventually took a different approach by shifting the emphasis to controlling German science [O'Reagan 2019]. The precursor of *French FIAT*, the *Section T* of the First Army, had already collaborated closely with the *CNRS* from the beginning of 1945. However, the *CNRS* mission in Germany only took off in the second half of 1945 when it was integrated with the *French FIAT* under the leadership of the geophysicist Louis Cagniard (1900–1971) in Offenburg—just 50 kilometres, still a long way in 1945/46, from the Oberwolfach Institute [Defrance 2001].

While we do not know what exactly Mandelbrojt and Pérès suggested, Süss was very excited about it. He wrote to his old friend and closest advisor Hellmuth Kneser on April 1, 1946, telling him that he urgently needed to talk to him in person regarding several plans the *French FIAT* had proposed. The only specific plan he mentioned, counting on Kneser's absolute discretion ("bitte absolut schweigen!"), was the idea to publish a new mathematical journal. He also stressed that Cagniard had discussed these ideas with Mandelbrojt and Pérès as well as with the people in charge of the American and British *FIAT* missions. [17] Given later developments it seems that these were the first steps towards two essential projects that would keep the Oberwolfach Institute afloat in the next few years: the publishing of a new journal, *Archiv der Mathematik*, starting in 1948 (see Section 9 below), and of the *FIAT Review Reine Mathematik* (see Section 6 below). In September 1946 Süss explicitly thanked Mandelbrojt for his "gracious intervention" that was "extremely valuable for the institute and gives us the opportunity to really work together" (with the French). [18]

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17 Süss to Kneser, April 1, 1946 (Niedersächsische Staats- und Universitätsbibliothek Göttingen (SUBG), Kneser papers, A 82: Süss).

18 Süss to Mandelbrojt, September 8, 1946 (UAF, C 89/7): "Wie Sie wohl gehört haben, arbeiten wir jetzt für die Section d'Information Scientifique (French FIAT, C.N.R.S.) an der FIAT-Review für Mathematik. Diese Verbindung mit Herrn Colonell [sic] Cagniard von der Section d'Information Scientifique verdanke ich Ihrer liebenswürdigen Vermittlung vom vorigen Sommer. Sie ist für das Institut ausserordentlich wertvoll und gibt uns Gelegenheit zur praktischen Zusammenarbeit." Cf. Süss' last, very similar letter to Mandelbrojt, November 26, 1947 (UAF, C89/332).

4. NEW MATHEMATICAL ORBITS: CHARLES EHRESMANN (APRIL 1946), BOURBAKI (AUGUST 1946) AND HENRI CARTAN (NOVEMBER 1946)

After the war Franco-German relations in Oberwolfach clearly profited from the relative proximity of Oberwolfach to Strasbourg—roughly 70 kilometres—where Henri Cartan and Charles Ehresmann turned out to be highly supportive of the regional Franco-German rapprochement. The Oberwolfach Institute did not have too many options in 1946, if they wanted to meet and discuss mathematics with colleagues. Life in general was pretty much restricted to the French occupation zone and travelling beyond these confines, be it to Heidelberg in the American occupation zone or Basel in Switzerland, was nearly impossible for Germans. There were only three mathematical institutes in the French zone: Freiburg, Oberwolfach, and Tübingen. A fourth would be founded at nascent Mainz University in 1946. Thus Strasbourg was, in a way, a natural place to turn to, as was Basel. In order to attract mathematicians from abroad to visit Freiburg and Oberwolfach, Süss secured the support of the French authorities as early as 1946. The French were very interested in fostering academic and cultural life in their occupation zone, considering it to be a natural part in the process of rééducation [Defrance 1994; Högerle 2013; Zauner 1994]. Süss himself was very much aware of this when he wrote to his old friend, astronomer Paul ten Bruggencate (1901–1961) in Göttingen, that with respect to cultural affairs the French showed a lot of "sympathy as well as good will". Süss thought "that the French would be the ones most likely to take into consideration the necessity to salvage the remains of European culture".[19] This European perspective would reverberate in later policies of the Oberwolfach Institute (see Section 8 below).

In these rather high spirits, Süss also wrote to Charles Ehresmann in Strasbourg in March 1946, inviting him to come to Oberwolfach.[20] He mentioned that Mandelbrojt had given his support to the Oberwolfach Institute and that Jacques Lacant (1915–2002), the officer responsible for controlling Freiburg University, had approved the invitation. While Lacant did not officially have a say in Oberwolfach affairs, Süss dealt with

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19 Süss to ten Bruggencate, March 13, 1946 (UAF, C89/5): "Gerechterweise muss man anerkennen, dass gerade in unserem Bereich die Kulturangelegenheiten mit viel Verständnis und gutem Willen und auch individuell behandelt werden. Die Notwendigkeit, den Rest der europäischen Kultur zu retten, wird ja wohl auch am ehesten von den Franzosen berücksichtigt werden."

20 Süss to Ehresmann, March 6, 1946 (UAF, C89/5).

him frequently as director of the Freiburg Mathematical Institute and former rector of Freiburg University. Mathematicians from abroad would often formally be invited to Freiburg (with Lacant's consent) and then also travel to Oberwolfach.

Ehresmann was very sympathetic to the invitation and visited Oberwolfach from April 25–27, 1946, his being the first entry in the institute's guest book. He had early on been very interested in going to Oberwolfach in order to meet topologist William Threlfall. In December 1945 he wrote to Heinz Hopf in Zürich that he had hoped in vain to go to Oberwolfach to meet Threlfall during Christmas break. But, implicitly, he gave another reason for getting in touch with the Oberwolfach Institute, namely that mathematics in Strasbourg needed to be rebuilt in its international context. He invited Hopf to Strasbourg, stressing that "our Mathematical Institute would be very honoured to re-establish by your visit the relations with the mathematicians in neighbouring countries".[21] In a way, Strasbourg and Oberwolfach as well as Freiburg shared the problem of a certain international isolation in the early post-war period.

After his first visit in April 1946 Ehresmann went to Oberwolfach quite often and lent his support to the institute in various ways, for instance by putting Süss in touch with Cartan in 1946, introducing the institute to Bourbaki in 1946, joining the editorial board of the *Archiv der Mathematik* in 1948 (see Section 9 below), and taking his student Georges Reeb (1920–1993) with him to Oberwolfach in 1949 (see Section 8 below).

It seems that Cartan and Süss had met before the war, but as can be seen from the correspondence between the two, Ehresmann acted as go between to re-establish contact in April 1946 by delivering a letter from Süss to Cartan in Strasbourg.[22] Süss started by offering his commiseration on the "sad fate" ("trauriges Schicksal") of Cartan's brother Louis, who had been executed as a member of the Résistance in December 1943. He went on to refer Cartan to Ehresmann for news about the Oberwolfach Institute and invited Cartan to Oberwolfach, pointing out that he had secured the consent of the French military government to extend such invitations, which had to be handled via Lacant in Freiburg. Cartan reacted kindly to Süss' letter and stressed that he was glad to have received—orally via Ehresmann—news about his old friend Heinrich Behnke (1898–1979), whom he had first met in Münster in 1931. Behnke had travelled to

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21 Ehresmann to Hopf, December 28, 1945 (ETH Zürich, library: Hopf papers, Hs 621: 465): "Notre Institut de Mathématique serait très honoré de renouer par votre visite les relations avec les mathématiciens des pays voisins."

22 Süss to Cartan, April 26, 1946 (UAF, C89/5).

Strasbourg in September 1941 to secure Cartan's mathematical papers from Cartan's apartment and deposited them in the Freiburg university archives. These papers included the notes of the first Bourbaki meeting in 1935. Cartan came to Oberwolfach in November 1946, having made sure that he would meet Behnke there [Cartan 1999, 783f; Remmert 2002]. The early visits by mathematicians from France (Cartan) and Switzerland (Hopf came from Zürich in August 1946) were very important for the international image and recognition of the institute. They were considerably facilitated through Behnke's network. Behnke had done his best to keep in touch with mathematicians outside Germany under the critical eye of many a colleague in Germany as well as the Nazi authorities, not without difficulty. Behnke had at the same time given Süss advice when he started to seriously think about launching the Oberwolfach Institute [Remmert 2002].

After Cartan had left Strasbourg for Paris in 1947 Süss did not succeed in luring him to Oberwolfach again before 1950, but he did not quite give up on trying to secure Cartan's goodwill for the benefit of the institute, and in 1948 Cartan agreed to jointly organise the Franco-German workshop that took place in Oberwolfach in August 1949 (see Section 7 below).

In between the visits of Ehresmann and Cartan, Bourbaki arrived in Oberwolfach in August 1946. Of course, some knowledge about Bourbaki may have reached Freiburg and Oberwolfach earlier via Charles (Karl) Pisot, who had been a member of Bourbaki in the late 1930s. As an Alsatian, Pisot had found himself in a difficult position in 1940 and chose to work in Germany after his demobilization from the French army, starting at the Freiburg Mathematical Institute, spending a year in Greifswald in 1941/42 and then returning to Freiburg until the end of the war [Remmert 1999]. While Pisot had been out of touch with the Bourbaki group for five years, Ehresmann, a Bourbakiste since 1934, was well-aware of the group's activities and publications. In August 1946 he sent the four Bourbaki volumes that had been published up to that point to Oberwolfach in exchange for books that Süss had given him in April (Set Theory 1939, four chapters of Topology 1940/42, first chapter of Algebra 1942). [23]

Apparently, the reception of Bourbaki in Oberwolfach was rather enthusiastic, if we believe Süss' report in letters to Cartan and Ehresmann in January 1947:

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23 Cf. Süss to Ehresmann, August 23, 1946, acknowledging the receipt of the books, and Ehresmann to Süss, August 24, 1946 (UAF, C89/5).

> It is with great interest that we at the institute have looked at the writings edited under the name of Bourbaki. From the inner circle of the colleagues it has been suggested to translate these writings into German and possibly publish them. We have not yet discussed this idea outside the institute and accordingly we do not know whether such a publication would be feasible at all. But we would be grateful to hear what you and your Bourbaki friends think about this. By way of such a translation the institute, which has set itself the task to foster international scientific contacts and in particular those with our neighbours, would see a possibility to pursue such a mediating role. Please consider this as a purely confidential request. [24]

We know that Hellmuth Kneser definitely was quite intrigued with Bourbaki's work and working methods (see Section 8 below). Süss, as it seems, was more interested in Bourbaki's political potential for the Oberwolfach Institute, as he was not shy to say in the letter. Cartan quickly promised to convey the idea to his Bourbaki friends ("mes amis de Bourbaki") and, if they agreed, to discuss it with their publisher. [25] Süss for his part jumped at this promise, invited Cartan to Oberwolfach to discuss the details, and suggested that Bourbaki's publisher, Hermann, take "charge of publishing the translation". [26] In a way this was a typical manoeuvre on Süss' part, as he well knew that publishing mathematics in Germany was impossible for the time being (see Section 9 below). Cartan, too, was well aware of this and put it bluntly, when reporting Süss's idea to André Weil (and Jean Dieudonné) in São Paulo in February:

> Süss proposes a possible translation into German. I don't know whether this is a serious option for the near future given the current quasi-impossibility to publish in Germany. It is true that Süss proposes that Hermann takes charge of

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[24] Süss to Cartan, Ehresmann, January 10, 1947 (UAF, C89/5): "Mit grossem Interesse haben wir die unter dem Namen Bourbaki bisher herausgegebenen Schriften im Institut angesehen. Im engeren Kreis der hiesigen Kollegen ist nun der Gedanke aufgetaucht diese Schriften in die deutsche Sprache zu übersetzen und eventuell die Übersetzung zu veröffentlichen. Wir haben bisher mit niemand darüber gesprochen, wissen also auch nicht, ob eine derartige deutsche Veröffentlichung sich praktisch durchführen lässt. Vor allem anderen aber wären wir dankbar, hauptsächlich zunächst einmal Ihre und der französischen Freunde von Bourbaki Ansicht hierzu erfahren zu können. Das Institut, das sich ausdrücklich die Aufgabe stellt, fachlich die Verbindung mit dem Ausland und insbesondere mit den Nachbarn Deutschlands zu pflegen, würde in einer solchen Übersetzung eine derartige Vermittlertätigkeit gerne verwirklichen. Bitte betrachten Sie die Anfrage als zunächst ganz vertraulich gestellt."

[25] Cartan to Süss, January 23, 1947 (UAF, C89/5).

[26] Süss to Cartan, January 31, 1947 (UAF, C89/5).

> the printing! But I think that you will agree with me that it is already quite a challenge for him to print the original [meaning the coming chapters]! [27]

The reaction came quickly. Weil and Dieudonné didn't see how this project could be achieved given the well-known difficulties and suggested to postpone it to the future, lamenting that "an English translation would be much more interesting, but nobody proposed it". [28]

Süss did not give up easily, and tried to pursue the idea further via Ehresmann, but nothing came of it. This did not, however, mean the end of Bourbaki's impact on the Oberwolfach Institute (see Section 8 below). However, even if we take a certain amount of rhetoric into account, the assessment of Bourbaki Süss gives in a letter to Ehresmann from August 1947 is very interesting. In early August 1947 Christian Pauc, who was working with Otto Haupt on the revision of his textbook on the calculus and slipping some Bourbaki into it [Haupt et al. 1948], had visited the Oberwolfach Institute. On this occasion, as Süss enthused, Pauc had given three talks and,

> once again, we were left with a deep impression of the great importance to build mathematics on a modern fundament such as the Bourbaki project entails. Our continuous interest in Bourbaki has once more been reinforced. Thanks to your [= Ehresmann's] visit last year we learned about the overall plan in so far as Pisot had not already made us aware of it. Pauc said that new volumes are about to be published. French science can only be complimented on this. [29]

Süss went on to discuss a possible translation, which in his view could soon be published in Germany, but this topic then petered out in his correspondence with Cartan and Ehresmann.

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27 Cartan to Weil, February 14, 1947 [Audin 2011, 174]: "*Questions Bourbaki:* tout d'abord, Süss soulève la question d'une éventuelle traduction en allemand. Je ne sais pas si c'est bien sérieux pour l'avenir immédiat, étant donné la quasi-impossibilité actuelle des publications en Allemagne. Il est vrai que Süss suggère que Hermann se charge de l'impression! Mais je pense que vous estimerez comme moi que c'est déjà bien assez d'avoir à lui faire imprimer la version originale!"

28 Weil to Cartan, February 24, 1947 [Audin 2011, 182]: "Une traduction anglaise serait bien plus intéressante, mais personne ne nous la propose!"

29 Süss to Ehresmann, August 15, 1947 (UAF, C89/5): "dabei haben wir wieder einen tiefen Eindruck von der grossen Bedeutung des Aufbaus der Mathematik auf moderner Grundlage empfangen, wie das französische Bourbaki-Unternehmen sie darstellt. Unser stetes Interesse daran ist also nur noch mehr verstärkt worden. Ihnen verdanken wir dabei die Kenntnis des Gesamtplans durch Ihren Besuch im vorigen Jahr, soweit nicht Herr Pisot schon unsere Aufmerksamkeit darauf gelenkt hatte. Wie Herr Pauc erzählte, steht das Erscheinen einiger neuer Bände von Bourbaki bevor, wozu man die französische Wissenschaft beglückwünschen kann."

All in all, even if nothing came of it, the idea to translate Bourbaki was very much in the mathematical spirit of the time (and in this respect the Oberwolfach Institute may have been ahead of quite a few contemporaries in Germany) as well as politically highly opportune in the French occupation zone.

5. A NEARBY MODEL FOR OBERWOLFACH?

In June 1946 Süss attended a workshop on atmospheric physics at the *Laboratoire de recherches de Saint-Louis* in Alsace, a branch of the *Laboratoire central d'armement* in Paris.[30] He had attended the meeting by invitation of the institute's (technical) director, Hubert Schardin (1902–1965). Schardin, one of the leading ballistics experts in Germany since the mid-1930s, had been director of the *Institute for Technical Physics and Ballistics* of the *Technical College of the German Air Force* in Berlin-Gatow since 1935 and had been deeply involved in war-related research projects [Baumann 2007; 2008; Maier 2007, 261]. In 1945 he and a large part of his group relocated from Berlin to Biberach an der Riß in South West Germany, where they worked for the French military government from May 1945. For a while the French contemplated moving the institute to Paris. However, following the new French strategy to keep German scientific institutions within (or near) the French occupation zone [O'Reagan 2019, 80f and 90f], it was then decided that it was preferable as well as more to the benefit of the French to set it up in Saint-Louis in Alsace near the border to Germany, that is to integrate it into the French research system while the German researchers and employees could live nearby in Germany (in Weil am Rhein). Eventually it grew into the binational *Institut franco-allemand de recherches de Saint-Louis* inaugurated in 1959.

Apparently, for a short while in 1946 Süss saw something like a model for the Oberwolfach Institute in Schardin's institute and was very keen on co-operating with him. As he did not really have much to offer in terms of joint research interests, he instead helped Schardin receive an honorary professorship at Freiburg University.[31] The workshop in June had been the second of three that Schardin organized in 1946, the other two were on nuclear physics and gas dynamics [Schall 1988; Baumann 2007, 246.][32] Süss was very impressed by what he experienced and learned at the insti-

30 Cf. the programme and the correspondence with Schardin (UAF, C89/363).

31 Cf. his correspondence with Schardin in 1946/47 (UAF, C89/363).

32 For a short report on the third meeting see *Zeitschrift für angewandte Mathematik und Mechanik* 25/27(1947), 32.

tute in Saint-Louis and at Schardin's home in Weil. Shortly after the event he wrote to Helmut Hasse that Schardin had managed to set up an "almost international scientific meeting" of a "remarkable scientific level". Meeting with "French and Swiss colleagues had been often friendly and always collegial". [33] Süss had also told Schardin, who had a few mathematicians such as Robert Sauer (1898–1970) in his team, about Hasse's war-related research and suggested that Hasse get in touch with Schardin, who thought that he might give a paid research grant to Hasse.

All in all, Süss' visit to Schardin's group and workshop may have been important for the future shaping of the Oberwolfach Institute in two respects. On the one hand, it showed that the French might be willing to support meetings of French, German and Swiss mathematicians, and Oberwolfach might be the right place for that. On the other hand, it made clear that doing war-related or military research for the French, as Schardin's group did, might be an interesting and realistic option for the Oberwolfach Institute.

As has been mentioned earlier, the group Süss had brought to Oberwolfach had in principle the potential to engage in military-related mathematical work. However, based on the sources it is difficult to assess whether any was done or to what extent, even though some projects of Görtler and Sperner were closely related to their earlier war-related research (cf. table 1) and as such had to be approved by the French authorities.

In general, research in Germany was closely monitored by the allies after the war [Osietzki 1984, 86f; Cassidy 1994; Heinemann 2001]. The *Allied Control Council*, in charge of the four occupation zones in Austria and Germany, dealt with the control of research in law no. 25 of April 29, 1946, and decreed in article 3 that "fundamental scientific research of a wholly or primarily military nature shall be prohibited" (Allied Control Authority Germany 1946, 103). Naturally this was a rather flexible definition, even though it was further specified in the law and in later implementary regulations by the *Allied Control Council*. [34] For research institutes such as the Oberwolfach Institute this meant that they had to be "authorized by the appropriate Zone Commander", and technical reports in form of standardized questionnaires had to be handed in to the local military authorities every four months showing details of all its activities, with sufficient data to enable competent persons to verify the correctness of the results reported, together with all publications of the establishment and a complete report

33 Süss to Hasse, July 1, 1946 (UAF, C89/303).

34 The French text was published in: *Journal officiel du Commandement en chef français en Allemagne* (= *Amtsblatt des französischen Oberkommandos in Deutschland*) 23(1946), 174–177; the implementary regulations followed in 54(1947), 553–557.

listing the title of each problem studied, its scope, possible applied uses, sources of funds, amounts of funds expended, and the person in charge, and any other matter required from time to time by the Zone Commander". Moreover, "all research and technical personnel employed in a research establishment" had to be "registered with the appropriate Zone Commander" (Allied Control Authority Germany 1946, 104f). While these reports were rather tedious to prepare, they now allow for a good overview of the official activities of institutes such as the Oberwolfach Institute.

In this context two aspects were important for the Oberwolfach Institute. On the one hand the continued existence of the institute seems to have been approved by the French authorities by 1946.[35] On the other hand the obligation to regularly report on the institute's activities offered an excellent opportunity for Süss to propagate and establish the relevance of the Oberwolfach Institute, as the recipients the reports targeted, the French authorities, were very specific (cf. table 1). To Süss the reports provided a platform and a forum for the "management of relevance" [Knorr-Cetina 1981, 110–112] of the Oberwolfach Institute as the central place for mathematics in Germany, just as he had planned it during the war. Naturally the rhetoric shifted a bit [Remmert 2019]. In the technical reports for 1947 and 1948 Süss gave three main reasons for the importance of the institute, namely (1) the editing of the *FIAT reviews* for *French FIAT*, (2) the project to translate and adapt "the reconstruction of mathematics through the French publications of Bourbaki",[36] and, finally, (3) the self-given and rather expansive "mission to foster mathematics in every possible way".[37]

Süss gave a detailed agenda of the Oberwolfach Institute in a document for the French military government probably dated late 1946 (as it already mentioned the *FIAT reviews*). While drawing on the original application of August 1944 in describing the institute's responsibilities he went beyond this text in assigning "general tasks" of a wide range for the future, namely mathematical research projects, a modest fellowship programme, workshops on specialized topics, promotion of research assignments, mathematical evaluation and information, procurement of

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35 I have, however, not been able to find formal documentation of this.

36 Süss, technical report (Tätigkeitsbericht) for the military government for 1948 (Staatsarchiv Freiburg (SAF), C37/1, Nr. 737): "Bearbeitung des Neuaufbaus der Mathematik durch die franz. Bourbaki-Veröffentlichungen".

37 Süss, technical report (Tätigkeitsbericht) for the military government for 1947 (SAF, C37/1, Nr. 737): "Aufgabe, die mathematische Wissenschaft in jeder Weise zu fördern".

Table 1. Some of the projects of the Oberwolfach Institute mentioned in reports to the French

responsible	*title*	*origin*	*date*
Süss (coordinator)	*FIAT*[38]	*French FIAT*	1946/47
Gerrit Bol	Monograph: *Projective Differential Geometry*[38]	Süss' publishing programme (pre 1945) [Remmert 1999, 40]	1946/47
Emanuel Sperner	Textbook: *Analytic Geometry*[38]	Süss' publishing programme (pre 1945)	1946/47
Emanuel Sperner	Monograph: *Theoretical Meteorology*[38]	war-related research	1946/47
Süss (coordinator)	"foster mathematics in every possible way"[39]	self-given mission	1947
Süss (coordinator)	International contacts (Pauc, Stiefel, Hadwiger)[39]	self-given mission	1947
Hermann Boerner	*Representation Theory of Groups*[39]	Süss' publishing programme	1947
Hermann Boerner	*Algebras of Dirac and Kemmer*[39]	?	1947
Henry Görtler	*Introduction to Mathematical Praxis*[40]	Süss' publishing programme	1947
Henry Görtler	Research project: *On the Theory of Laminar Boundary Layers*[41]	war-related research	1947
Henry Görtler	Research project: *Oscillations in Fluids with Density Stratification and in Rotating Fluids*[42]	war-related research	1947
Süss (coordinator)	New journal: *Archiv der Mathematik*[43]	self-given mission, *French FIAT*	1948
Süss (coordinator)	"the reconstruction of mathematics through the French publications of Bourbaki"[44]	self-given mission	1949

specialized literature, promotion of mathematics teaching on all levels (including schools), organisation of vacation courses, and the editing of math-

38 Süss, technical report (Tätigkeitsbericht) for the military government for Sept.-Dec. 1946 and Jan.-April 1947 (SAF, C37/1, Nr. 737).

39 Süss, technical report (Tätigkeitsbericht) for the military government for 1947 (SAF, C37/1, Nr. 737).

40 Ibid.: "Einführung in die mathematische Praxis".

41 Ibid.: "Zur Theorie der laminaren Grenzschichten (Forschungsvorhaben)".

42 Ibid.: "Schwingungen in Flüssigkeiten mit Dichteschichtung und in rotierenden Flüssigkeiten".

43 Süss, technical report (Tätigkeitsbericht) for the military government for Jan.-April and May-August 1948 (SAF, C37/1 Nr. 737).

44 Süss, technical report (Tätigkeitsbericht) for the military government for 1948 (SAF, C37/1 Nr. 737).

ematical journals. [45] Süss concluded by stating that the funding was to be provided by the Baden *Ministry of Culture and Education* in Freiburg. [46]

On November 1, 1946 Jacques Lacant, the French cultural officer who was responsible for Freiburg University, visited the Oberwolfach Institute together with his deputy, Paul Falkenburger (1923–2010), apparently on the occasion of Cartan's visit. Lacant's report to his superiors stressed that the institute was geared towards "supporting mathematical research in all its domains" and thus testified to the fact that Süss had well succeeded in legitimizing the Oberwolfach Institute with the French. [47] Lacant gave a short description of the institute's facilities (library, collection of offprints, [48] lecture room), which afforded the exchange and discussion of ideas in groups and workshops. He stressed that German mathematicians from other occupation zones as well as guests from abroad, especially from France, visited the Oberwolfach Institute to participate in the discussions (Cartan, Ehresmann, Joseph Pérès). Lacant also reported on the institute's aspirations to publish a series of mathematical textbooks (see Section 9 below), much needed in view of the lack of mathematical literature in Germany as "everyone could easily see" ("une importance qui n'échappera à personne"), as well as on the work on the *FIAT Reviews* commissioned by *French FIAT*. After mentioning that the government of Baden in Freiburg had allotted the institute a modest budget of 10.000 Reichsmark, he summarized that the institute had left the favourable impression of a place of calm and serious work ("laisse une impression favorable de travail calme et sérieux"). The projects, Cartan had asserted, would also be of interest to French mathematicians and were in accordance with the regulations on the control of research.

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45 Undated overview with French translation (Archives de l'occupation française en Allemagne et en Autriche (1945–1955), Paris: 1BAD1262): "a) laufende mathematische Forschungen, b) Förderung verdienter Fachleute, c) Arbeitsbesprechungen über Spezialgebiete, d) Förderung von Forschungsaufträgen, e) Mathem. Gutachten und Auskünfte, f) Beschaffung von Fachliteratur, g) Förderung des math. Fachunterrichts aller Stufen, h) Einrichtung von Ferienkursen und Herausgabe von Fachzeitschriften."

46 Ibid.: "Mittel werden gestellt vom Bad. Ministerium des Kultus und Unterrichts".

47 Lacant to Commissaire de la République, Délégué pour le G.M. de Bade, November 4, 1946 (Archives de l'occupation française en Allemagne et en Autriche (1945–1955), Paris: 1BAD1262): "Le but de l'Institut est en premier lieu de permettre et d'aider la recherche mathématique dans tous ses domaines."

48 Kurt Hensel's collection of offprints ("Separatensammlung") had been sent from Strasbourg to Oberwolfach in late 1944; cf. Karl Strubecker to Süss, October 7, 1944 (UAF, E6/15).

Table 2. List of staff, August 31, 1947 [49]

name	*position*	*salary paid by*
Süss, Wilhelm	professor in Freiburg, director	Freiburg
Sperner, Emanuel	professor in Freiburg, deputy director	Freiburg
Bol, Gerrit	professor in Freiburg, staff member	Freiburg
Boerner, Hermann	adjunct professor (Munich), staff member	Oberwolfach Institute
Bilharz, Herbert	lecturer (Dozent) in Freiburg, staff member	Freiburg
Gericke, Helmuth	lecturer (Dozent) in Freiburg, staff member	Freiburg
Schwarzenberger, Rudolf	staff member	Freiburg
Stakowski, Walter	student assistant	Oberwolfach Institute
Hofmann, Joseph E.	adjunct professor (Berlin), teaching assignment in Freiburg	no longer active
Bertling, Maria	student assistant	no longer active

Indeed, the lists of projects (table 1) and staff (table 2) that Süss regularly produced suggested significant activities at the Oberwolfach Institute, while in reality much of it relied on the staff of the bombed-out Freiburg Mathematical Institute.

6. THE FIAT REVIEWS OF GERMAN SCIENCE AND OBERWOLFACH

After the intervention of Mandelbrojt and Pérès, the Oberwolfach Institute was commissioned with the publication of the volume on pure mathematics in the series *FIAT Reviews of German Science*. The goal of the series was to provide an overview of German findings in medicine, science and mathematics, covering the period between 1939 and 1946. The three *FIAT* branches, American, British and French, collaborated on the project, which eventually expanded to more than eighty edited volumes in the fields of medicine, pharmaceuticals, biology, chemistry, earth sciences, mathematics and physics published in English and German (as *Naturforschung und Medizin in Deutschland, 1939–1946*) [O'Reagan 2019, 138–141]. Seven of the volumes covered mathematics, Alwin Walther

[49] Süss, technical report (Tätigkeitsbericht) for the military government for May-August 1948 (SAF, C37/1, Nr. 737).

(1898–1967) in Darmstadt editing five volumes on applied mathematics [Walther 1948] and Süss two on pure mathematics [Süss 1948]. Naturally, such a massive publishing project could hardly avoid drawing on co-operation with the old academic elites, irrespective of former Nazi affiliations. Thus, it is not surprising that Süss, well-informed about mathematics in Germany as (former) president of the *DMV*, seemed a good choice, when the French authorities were commissioned with the volumes on biology, geography and mathematics in the *FIAT Reviews of German Science*.[50]

By early June 1946 Süss knew that he would be entrusted with the mathematics volumes, even though the official letter to that effect by the *French FIAT* was only sent on July 16, 1946.[51] Given his arrangement with *French FIAT* to cover both applied and pure mathematics he may have been surprised that on July 9 the *American FIAT* office had already delegated large part of the mathematics project to Alwin Walther, who eventually edited the five volumes on applied mathematics.[52]

Already in June Süss started to write to prospective authors. The majority agreed to contribute to the project, including Max Deuring, Helmut Hasse, Hellmuth Kneser, Wilhelm Magnus, Herbert Seifert, William Threlfall, Helmut Wielandt, and Hans Zassenhaus, just to name a few. Clearly, the authors had many reasons to write for the *FIAT Reviews*, as historian of science Douglas O'Reagan put it, "in part to reconnect to the world's scientific community, in part to receive a pay check in a brutal economy, and in part to rewrite their own collaboration with the Nazi government" [O'Reagan 2019, 140]. Indeed, the first aspect was very much stressed by the *FIAT* flyer coming with *French FIAT*'s letter of invitation, which made the point, that "cooperation with German scientists must be obtained by pointing to the fact that the *Reviews* would help to re-establish contact with the international science community".[53] Süss

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50 The division of labour is mentioned in a letter by Cagniard to Lacant, July 26, 1946 (Archives de l'occupation française en Allemagne et en Autriche (1945–1955), Paris: 1BAD1265).

51 L'Ingénieur Général Gaston de Verbigier de Saint Paul to Süss, July 16, 1946 (Archives de l'occupation française en Allemagne et en Autriche (1945–1955), Paris: 1BAD1265).

52 *American FIAT* to Walther, July 9, 1946 (copy in UAF, C89/115); cf. Walther to Süss, June 18, 1946 (UAF, C89/115).

53 Flyer included in the letter of Verbigier de Saint Paul to Süss, July 16, 1946 (Archives de l'occupation française en Allemagne et en Autriche (1945–1955), Paris: 1BAD1265): "La coopération des savants allemands doit être obtenue du fait que les *Reviews* aideront à rétablir le contact avec la science internationale."

himself highlighted this aspect of the re-internationalisation of mathematics in Germany in his letters of invitation. In terms of remuneration nothing could be offered to Süss' team of writers as *French FIAT* made clear in October. Because participation in the *FIAT Reviews* was such a good chance to catch up with international research, they argued, "contributors were expected to participate on a purely voluntary basis without dreaming of being paid in whatever way". [54]

The importance of the *FIAT Reviews* for the Oberwolfach Institute cannot be overestimated, because in 1946 and 1947 work on them was the institute's only official task. Süss made this clear in a letter to the *Ministry of Culture and Education* in Freiburg in November 1946, demanding the financial support for the institute that had been promised earlier that year. Summarising the institute's current situation, Süss, who was never shy to aggrandize himself and his endeavours, stressed that while it had "continued working undisturbed and expanded its agenda" its "main task in the near future lay in finishing and printing the great *FIAT Review Mathematics* for the *United Nations*". [55]

Apart from the overarching goal to keep the Oberwolfach Institute in existence, cooperation with *French FIAT* on the *FIAT Reviews* had several significant side effects:

- to establish close and sustainable ties with the French Military Government,
- to secure the financial support of the *Ministry of Culture and Education* in Freiburg, if only to a modest extent,
- to safeguard Süss' political influence within the discipline of mathematics,
- to allow the staff at Oberwolfach/Freiburg to continue their work (including war-related research such as Görtler's),
- to further the re-internationalisation of mathematics in Germany with the Oberwolfach Institute as a node, a strategy in accord with the French cultural policies [O'Reagan 2019, 138],
- to procure books and journals for the institute's library, albeit on a modest scale.

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54 *French FIAT* to Süss, October 4, 1946 (UAF, C89/9): "en demandant une participation purement bénévole à ses collaborateurs, sans vouloir songer à une retribution quelconque".

55 Süss to the Ministry, November 11, 1946 (SAF C25/3, Nr. 243): "Das Institut hat seine Arbeiten ungestört und unter Ausdehnung der Aufgabengebiete [...] fortgesetzt. Seine Hauptaufgabe für die nächste Zeit besteht in der Fertigstellung und Herausgabe des großen FIAT-Berichts Mathematik für die Vereinten Nationen".

The manuscript of the *FIAT Reviews* on pure mathematics was submitted on May 31, 1947. When the two volumes were published in 1948 they were an excellent piece of propaganda for the Oberwolfach Institute. On the one hand, they featured Süss and seven other authors (such as Hermann Boerner, Helmuth Gericke, Joseph Ehrenfried Hofmann, Emanuel Sperner and Georg Tautz) as members of the Oberwolfach Institute, thereby highly exaggerating the institute's staff. On the other hand, Süss used the preface to highlight the role the Oberwolfach Institute had played in "planning and organising the work as well as seeing the review to the press" and, at the same time, refashioned the institute's character by concluding:

> The *Review* will show that even in the times of this deplorable war the garden of true scientific research has been silently tended to by his friends. May it soon be in full blossom again! [56]

Naturally, Süss envisaged a central role for Oberwolfach in achieving this goal, and indeed, soon the idea of Oberwolfach as a "paradise for mathematicians" began to spread within Germany (and beyond). [57]

In 1952 Fritz Joachim Weyl (1915–1977) wrote a technical report for the *British Office of Naval Research* on a meeting on complex analysis he had attended in Oberwolfach in October 1951. He, too, picked up the thread of the "pleasant surroundings" of Oberwolfach inviting "peripatetic discussions, mathematical and otherwise" [Weyl 1952, 1]. But he also gave an interesting assessment, having obviously been briefed by Süss, of the influence that the production of the *FIAT Reviews* had had on the Oberwolfach Institute [Weyl 1952, 4]:

> The end of May 1947 saw the completion of the *FIAT Review*, and with it was terminated the presence of a permanent research group at Oberwolfach. The subsequent annual allocations of DM 10,000 by the Land Baden to the Institute covered little more than up-keep and rent of the premises. The year 1947/48 was a quiet one at the Lorenzenhof. In the meantime, however, the transient presence of refugees and *FIAT-Review* writers alike had transformed the shirt-sleeve colloquia of the established group into shirt-sleeve symposia, held on topics of their selection by those who happened to be present. The log book, continued in compliance with the research control act, gives evidence that the char-

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56 [Süss 1948, I, preface]: "Der Bericht wird zeigen, daß der Garten echter wissenschaftlicher Forschung auch in der Zeit dieses unseligen Krieges von seinen Freunden in der Stille gepflegt worden ist. Möge er doch bald wieder zu voller Blüte kommen!"

57 Horst Tietz used the phrase "Mathematiker-Paradies" in a letter to Süss, July 1, 1955 (UAF, C89/385).

acteristic style of presentation, inviting group participation—well prepared yet showing clearly all loose ends—had on the whole been preserved.

Out of this tradition has grown the activity of the Institute during the last three years, in the course of which it has been the meeting place for numerous gatherings, organized around one theme or another, either of a mathematical or regional character.

What is hinted at here as being, in a way, a by-product of the work on the *FIAT Reviews*, namely the new format of "gatherings, organized around one theme or another, either of a mathematical or regional character", is another testimony of the importance Süss attributed to the *FIAT Reviews*—irrespective of whether the link really existed, which is difficult to assess from the source material. However, from 1949 onwards thematic workshops gradually became the main characteristic of the Oberwolfach Institute, and their evolving into the typical Oberwolfach research tool was closely related to the specific situation in the French occupation zone.

7. THE BEGINNING OF THE WORKSHOPS IN OBERWOLFACH IN 1949

In July 1948 Süss wrote to Cartan, inviting him to return to Oberwolfach, and informing him that a delegation from the Sorbonne had visited Freiburg University, including Georges Darmois (1888–1960). Süss had used the opportunity to tell Darmois about the Oberwolfach Institute and proposed that it might be a good idea "to gather a small group of especially talented mature French and German students for one or two weeks in Oberwolfach in order that these young people could by working together come into intellectual and personal contact. Such contact often has a decisive lifelong influence and should be of priceless value for the future of our peoples".[58] Süss asked Cartan for his support with the relevant authorities in Paris and Cartan made a note on the letter that he'd take care of it. The result of this was the Franco-German workshop in August 1949 [Remenyi 2011]. While this was not the first workshop held at the Oberwolfach Institute—pride of place goes to the topology workshop organized around Heinz Hopf's visit to Oberwolfach in April 1949 -, it was

58 Süss to Cartan, July 24, 1948 (Cartan papers, I am grateful to Michèle Audin for a copy of this letter): "ob wir nicht in diesem Sommer einige wenige, besonders tüchtige, ältere französische und deutsche Studenten auf eine oder zwei Wochen in Oberwolfach zusammenbringen könnten, damit diese jungen Menschen in gemeinsamer Arbeit fachlichen und persönlichen Kontakt miteinander gewinnen könnten, der ja sehr oft für das ganze Leben entscheidenden Einfluß besitzt und für die Zukunft unserer Völker von unschätzbarem Wert sein dürfte."

originally the first that had been planned. Moreover, it was substantially subsidised by the French authorities.

In organising the Franco-German workshop Süss did not only rely on Cartan's support, but also got in touch with Dieudonné, who promised to send an article for the new journal edited by the Oberwolfach Institute, *Archiv der Mathematik* [Bourbaki 1949], as well as to visit Oberwolfach in August 1949, independently of the proposed Franco-German workshop. [59] In January 1949 Süss reported to Cartan that the *Institut Français* in Freiburg had agreed to support the French visitors during the workshop while the *Ministry of Culture and Education* in Freiburg would cover the costs for the German visitors. [60] Süss suggested that Cartan should find six to eight French students while the Oberwolfach Institute would invite a similar number from Freiburg, Heidelberg, Mainz and Tübingen. In a follow up letter from February Süss asked whether Cartan and Dieudonné would like to take the occasion of the Franco-German workshop to come to Oberwolfach with members of the Bourbaki group. [61] Further details were arranged in spring in cooperation with Georges Deshusses, the director of the *Institut Français* in Freiburg, which was in close touch with Freiburg University. [62] At the same time Cartan was very actively trying to find volunteers to attend the Oberwolfach meeting. In April he wrote to Deshusses, that "despite of his (oral) propaganda among his colleagues he had only two commitments". While one of the reasons he saw, was a lack of language skills among the younger generation, he conceded "that there also were without doubt other reasons" ("il y a aussi sans doute d'autres raisons"). [63] Obviously most of the young French mathematicians were not too keen on going to Germany. Jean-Pierre Serre later recalled that Cartan had "ordered us to go to Oberwolfach" [Remmert 2008, 1].

However, in late May Cartan came up with a preliminary list of ten possible participants: Jean Braconnier, Michel Cazin, Bernard Charles, Jean Colmez, Roger Decombes, Mercier (he did not give a first name), Jean Nordon, Georges Reeb, Jean Riss and René Thom. In July the list had been modified to still include Braconnier, Charles, Nordon, Reeb

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59 Dieudonné to Süss, November 9 and 24, 1948 (UAF, C89/288).

60 Süss to Cartan, January 21, 1949 (UAF, C89/286).

61 Süss to Cartan, February 14, 1949 (UAF, C89/286).

62 Cf. the correspondence in the *Institut Français* file (Centre des Archives Diplomatiques de Nantes: Fribourg 236PO/1/96). On the *Institut Français* in Freiburg see [Sid-Otmane 1992; Zauner 1994, 258ff; Högerle 2013, 105–142].

63 Cartan to Deshusses, April 4, 1949 (Centre des Archives Diplomatiques de Nantes: Fribourg 236PO/1/96).

and Thom, but Jean Arbault had been added as well as Jean-Pierre Serre and his wife. [64] With the exception of Nordon, who was supplemented by Alfredo Pereira Gomez, they all attended the meeting as did Dieudonné, while Cartan could not travel to Oberwolfach due to a traffic accident. As the workshop has been amply described by Maria Remenyi, I do not further discuss the details here [Remenyi 2011]. Suffice it to say that it marked a turning point for Oberwolfach in several respects:

– Together with the topology meeting in April 1949 it set the stage for a series of conferences in the years to come (see table 3), with full moral and occasional financial support by the French authorities, and thus became the prototype of the new concept of conferences as the central research tool of the institute.
– It was a deliberate and successful step towards a Franco-German rapprochement in mathematics.
– It was a first small triumph of Süss' ambitious and ultimately successful programme to not only keep the Oberwolfach Institute going, but to turn it into a focal point of mathematical research and communication in Germany as well as
– an essential place for the re-integration of mathematics in Germany into the European (and international) community.
– It further strengthened the interest at the Oberwolfach Institute in Bourbaki and their meeting model, the *congrès Bourbaki* (see Section 8 below).

8. FRANCO-GERMAN MATHEMATICAL RELATIONS IN OBERWOLFACH

As we have seen, Cartan, Dieudonné, and Ehresmann were highly supportive of the Oberwolfach Institute in the late 1940s: they visited Oberwolfach, they made suggestions as to whom amongst the French mathematicians to invite to Oberwolfach (see table 4 for a list of visitors), they brought along Bourbaki, and they supported the idea of workshops in Oberwolfach in person as well as in spirit. From a practical point of view Ehresmann was crucial in this process as not only did he frequently visit Oberwolfach, but the mathematical energy he unfolded in Strasbourg in the 1940s and 1950s reverberated up to remote Oberwolfach. As mentioned above, Ehresmann was convinced that mathematics in Strasbourg needed to be rebuilt in its

64 Cartan to Deshusses, May 29 and July 7, 1949 (Centre des Archives Diplomatiques de Nantes: Fribourg 236PO/1/96).

Table 3. Workshops in Oberwolfach, 1949–1952

date	*topic*	*significant French funding*
1949, April 2–4	Topology	
1949, August 9–25	Franco-German workshop	×
1949, October 27 to November 1	Logic and foundations of mathematics	
1950, November 24–26	Meeting of mathematicians from both sides of the Rhine	×
1951, August 27–31	Modern algebra and theory of numbers	
1951, October 20–26	Complex analysis	
1952, March 26–29	Geometry	
1952, June 1–6	Logic and foundations of mathematics	
1952, September 16–22	Modern algebra and theory of numbers	

international context. As it happened his own field of topology may have been particularly suited to achieve this goal. On the one hand some distinguished topologists, such as Beno Eckmann in Lausanne/Zürich, Heinz Hopf in Zürich, Georges de Rham in Lausanne were (relatively) nearby in the late 1940s (as well as Seifert and Threlfall who frequently went to Oberwolfach), and Ehresmann was in close touch with them. His seminar, *colloque de topologie de Strasbourg*, was a focal point of topology in the 1940s and 1950s [Audin 2008, 366f]. On the other hand topologists already had a certain, if young tradition to convene in specific, international conferences such as the meetings in Moscow and Geneva in 1935 [James 1999, 840ff; Apushkinskaya et al. 2019]. [65] The latter had been attended by de Rham, Ehresmann, Hopf, Seifert, and Threlfall [CISM 1935, 119f], who in April 1949 reconvened in Oberwolfach for the topology workshop, the first organized by the institute. In 1947 a meeting on algebraic topology was organized in Paris [James 1999, 844f], among whose participants Ehresmann, Hirsch and Hopf also came to the topology meeting in Oberwolfach in 1949. Thus Ehresmann was part of a closely interwoven international group and happy to share contacts and invitees with the Oberwolfach Institute (if the formalities could be arranged with the French authorities). To give just one example, Ehresmann wrote to Hellmuth Kneser in March 1949, informing him that he would come to Oberwolfach on April 3 in the

65 I am grateful to John McCleary for pointing this out to me.

Table 4. French visitors at the Oberwolfach Institute [67]

year	*name*
1944	Pisot (cf. abstract book: first entry), Roger
1945	Mandelbrojt, Pisot, Roger
1946	Cartan, Cerf, Ehresmann, Pauc, Pérès
1947	Pauc
1948	(currency reform in Western Germany)
1949	Bouligand, Dieudonné, Ehresmann, Reeb, Vicensini—Franco-German workshop
1950	Bouligand, Braconnier, Cartan, Chabauty, Charles, Deny, Ehresmann, Koszul, Nordon, Reeb, Thom
1951	Ehresmann,
1952	Charles, Favard
1953	Brelot, Charles, Deny, Fourès (= Yvonne Choquet-Bruhat), Godeaux, Koszul, Lelong, Lichnerowicz, Pauc, Siddiqi, Thom
1954	Ehresmann, Gauthier, Lazard, Libermann, Lichnerowicz

company of ("in Begleitung von") Hopf, Eckmann, Hirsch and Reeb. [66] This kind of support, sanctioned and encouraged by the French authorities [O'Reagan 2019, 138], helped the Oberwolfach Institute to develop close relations with French and Swiss mathematicians and allowed Süss to pursue his programme to re-integrate mathematics in Germany into the European (and international) community.

Ehresmann also introduced his student Georges Reeb (1920–1993) to Oberwolfach. Reeb later fondly recalled his first trip to Oberwolfach, together with Ehresmann, in April 1949, and returned quite often [Reeb 1994]. In particular, he stayed at the institute for six months from April to September 1950. Such visits usually had the full support of the French authorities, as it had become a French policy to control science in their occupation zone by placing French trainees (stagiaires) in German research facilities [O'Reagan 2019, 91]. While Reeb, who had taken his PhD in 1943, was not typical for such a "student spy" as O'Reagan calls them [O'Reagan 2019, 78], he still wrote a two-page report on his stay for the French authorities (*Institut de Mathématiques du Lorenzenhof*, see appendix). [68] Similar to the report Weyl wrote in 1952 Reeb had apparently been well-informed by Süss about the official view on the institute's

66 Ehresmann to Kneser, March 18, 1949 (SUBG, Kneser papers, A 20: Ehresmann)

67 The table is probably not complete. It draws on the abstract and guest books as well as the correspondence of Süss.

68 Copy of the 1950 report in: Archives de l'occupation française en Allemagne et en Autriche (1945–1955), Paris: 1BAD1262.

history and objectives. Reeb started out by praising the "particularly pleasant atmosphere" in Oberwolfach, mostly due to Süss' gift as a host, and pointed out that the institute had two main objectives, namely its publication activities and the "organisation of workshops and colloquia on specialised subjects". Reeb went on to succinctly describe the "French influence" on the Oberwolfach Institute, highlighting the "important role of the influence of Bourbaki", which extended beyond the institute into university teaching in Germany and had been welcomed with enthusiasm by Hellmuth Kneser. As examples he mentioned the spreading of the use of Zorn's Lemma (Théorême de Lorx [69]) and of the concept of filters. Inversely he pointed to the vitality of algebra in Germany as an instance of German influence on mathematics in France.

Reeb's eulogy was known to Süss, who in October 1950, ever the politician, used the opportunity to stress the international character and mission of the Oberwolfach Institute in a letter to Pierre Pène (1898–1972), French commissioner to Baden, while thanking him for a contribution of 3 000 DM to the institute's budget:

> Indeed, we are convinced that each individual can contribute to the realization of a better future for Europe by practical work. As mathematicians we try to achieve this by professional co-operation with our colleagues beyond our borders and we are fortunate to have found a wide echo and have had good results in such a short time. [70]

Naturally Süss made the point that in the wake of the Franco-German meeting a further step towards a Franco-German rapprochement in mathematics was imminent, namely the meeting of mathematicians from both sides of the Rhine in Oberwolfach in November 1950 (see table 3).

A few years later, in the first extended report on the Oberwolfach Institute's work and achievements (not specifically directed at French authorities), Süss again stressed the importance of the Franco-German workshop of August 1949 and of Bourbaki's impact for the Oberwolfach Institute [Süss 1953, XIIf]:

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69 I have to confess that I have no idea why it is called "Théorême de Lorx" by Reeb. Possibly L*OR*X was just a misreading for Z*OR*N while the report was being typed.

70 Süss to Pène, Commissaire pour le Land Bade, October 30, 1950 (Archives de l'occupation française en Allemagne et en Autriche (1945–1955), Paris: 1BAD1262): "Es ist in der Tat unsere Auffassung, daß jeder Einzelne von uns seinen Beitrag zum Zustandekommen einer besseren Zukunft Europas in der praktischen Arbeit leisten kann. Wir Mathematiker versuchen dies in der fachlichen Zusammenarbeit mit unseren Kollegen jenseits der Grenzen, und wir sind glücklich, dabei in wenigen Jahren ein so weites Echo gefunden und so gute Erfolge errungen zu haben."

> For us Germans it was essential to not only be allowed an almost complete survey of the ambitions and works of the Bourbaki group, that has already published twelve books in the last few years, but also to get to know quite a number of their collaborators in their work on specific problems while employing the methods of Bourbaki. The impact of these methods can already be seen at the universities of Berlin, Mainz and Tübingen. For the most part this impact goes back to the [Franco-German] workshop in Oberwolfach. [71]

This assessment reflects the deep appreciation for Bourbaki in Oberwolfach, which in turn left a distinct mark on the institute's agenda. This development was not welcomed by all mathematicians in Germany. Wilhelm Blaschke (1885–1962), for instance, voiced criticism in a letter to Süss in September 1949, deprecatingly judging that "it would not be right to exclusively flirt with Bourbakistan" ("einseitig nur mit BOURBAKISTAN anzubändeln"). [72]

However, Süss was determined to further forge the close alliance of Oberwolfach with Bourbaki. At the outset of the Franco-German meeting, on August 9, 1949, Dieudonné had presented the Bourbaki project in Oberwolfach (*Exposé du but, de la méthode et du plan des "Eléments de Mathématique" de N. Bourbaki*). [73] Apparently Dieudonné had also expressed his surprise that none of the Bourbaki volumes had yet been reviewed in the institute's newly founded journal, *Archiv der Mathematik*. In January 1950 Süss wrote to his old friend Kneser, saying that he could understand Dieudonné's surprise in view of "the close contacts we have to this French circle", and asked him whether he would be willing to write a report on the Bourbaki project for the *Archiv*, the goal being to "objectively point to this after all rather important French project that is still rather unknown in Germany". [74]

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71 "Für uns Deutsche war es von großer Bedeutung, nicht nur einen fast vollständigen Überblick über die Bestrebungen des BOURBAKI-Kreises zu erhalten, der ja in den letzten Jahren bereits 12 Bücher publiziert hat, sondern auch eine große Zahl der Mitarbeiter in ihrer Arbeit an speziellen Problemen nach den BOURBAKI-Methoden genauer kennenzulernen. An den Universitäten Berlin, Mainz und Tübingen ist der direkte Einfluß dieser Methoden bereits auch stark zu erkennen. Er geht im wesentlichen auf jenes Kolloquium in Oberwolfach zurück."

72 Blaschke to Süss, September 16, 1949 (UAF, C89/277).

73 Abstract book I, 17. Ralf Krömer is currently working on an assessment of Bourbaki's activities in Oberwolfach and beyond in Germany in the 1940s and 1950s.

74 Süss to Kneser, January 5, 1950 (UAF, C89/316): "Dieudonné hat sich im Sommer darüber gewundert, daß wir im ARCHIV noch gar keine Besprechung von Bourbaki-Veröffentlichungen hatten. Die engen Beziehungen, die wir gerade zu diesem französischen Kreis besitzen, rechtfertigt [sic] diese Verwunderung. [...] Vollständigkeit in der Beurteilung des Stoffes ist ja nicht nötig, sondern mehr ein sachlich gut fundiertes

Kneser, in line with the enthusiasm for Bourbaki he had professed since 1946, wrote a glowing review [Kneser 1949]. He started by sketching out the overall design of the Bourbaki project—familiar to him from Dieudonné's presentation in August 1949—and characterised the enterprise "to build the foundations of mathematics in this new order as an enormous and timely challenge" ("umfangreiche und zeitgemäße Aufgabe"). He emphasised that the books were suitable for talented mathematics students as experience in Germany had shown. Kneser stressed that he had "often particularly relished reading the historical notes, and even more so as no national barriers could be felt, that came so naturally and even in good presentations of this kind". In concluding he expressed his high estimation for the Bourbaki group: "I believe that mathematicians of the decades to come will be grateful to Bourbaki that he has taken on this burden." [75]

Kneser was an excellent, widely read and (internationally) highly respected mathematician with a broad range of research interests [Wielandt 1974; Hofmann 2008, 132; cf. Kneser 2005] and Oberwolfach's mathematical mastermind. Reeb put this nicely in his 1950 report, when he described Kneser as the "assiduous host of the Oberwolfach Institute, known for his almost universal knowledge of mathematics" ("hôte assidu du Lorenzenhof, connu pour sa connaissance à peu près universelle des mathématiques"; appendix). In 1946 he had shown immediate enthusiasm for Bourbaki (also mentioned by Reeb). In contrast to Süss, who as a mathematician with a certain lack of breadth and depth had, as it seems, mostly embraced Bourbaki for political considerations (see Section 4 above), Kneser's work in the late 1940s shows clear traces of his mathematical engagement with Bourbaki. Both in his mathematical diary and in his correspondence with Süss the framework of the *Topologie générale* came up repeatedly, for instance, when following a hint of Ehresmann he requested that Süss look up the definition of absolute convergence of an infinite sum because he did not have a copy of the volume in Tübingen. [76] With

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Hinweisen auf diese immerhin recht bedeutungsvolle und in Deutschland noch wenig bekannte französische Unternehmung."

75 "Diese Noten zu lesen ist öfters ein besonderer Genuß: insbesondere ist nichts von den nationalen Schranken zu verspüren, die ja sehr natürlich und auch in sonst guten Darstellungen dieser Art manchmal bemerkbar sind. [...] Ich glaube, die Mathematiker der nächsten Jahrzehnte werden Bourbaki dafür dankbar sein, daß er diese Mühe auf sich genommen hat" [Kneser 1949, 301f].

76 Explicit references to this can be found in his diary (*Tägliche Bemerkungen*) on June 11, 1946 (SUBG, Kneser papers, D14: Absolut konvergente unendliche Summen und Produkte), and in his letter Süss of September 2, 1946 (UAF, C89/6).

respect to Kneser's own contacts with Bourbaki his interest in Bourbaki's "Lemme fondamental" (*Zorn's Lemma*) is more relevant. This had occupied him in August 1948 when he referred to the "Lemme fondamental" in the *Éléments de Mathémathique* in his mathematical diary. [77] The missing proof led to an exchange of letters with Jean Dieudonné between May and September 1949—before and after the Franco-German workshop—and eventually both of them published a proof [Bourbaki 1949; Kneser 1950]. [78] Dieudonné had sent his proof to Kneser who forwarded it to Süss suggesting that it might be published in the *Archiv der Mathematik*. Süss jumped on this idea and wrote to Dieudonné in September 1949 asking whether he would consent to this idea, arguing that if "we published such a fundamental theorem in our *Archiv* we would also once again formally show our [i.e. the Oberwolfach Institute's] ties to the group of M. Bourbaki". [79] Dieudonné discussed the idea at the Bourbaki meeting in Paris where no objections were raised and in October promised to submit "a small paper signed N. Bourbaki" ("un petit article signé N. Bourbaki"). [80] In his follow-up letter Süss inquired whether Bourbaki would also be willing to publish "a survey of the whole Bourbaki project as he had presented it in Oberwolfach". Dieudonné did in fact send the survey for Süss' personal use, pointing to the fact that it was not to be published as it still was "very imprecise and would surely have to be modified". [81] In the wake of this exchange with Dieudonné, Süss asked Kneser to write a review of the Bourbaki volumes that had been published up to that point.

Obviously Süss saw the political importance and the potential of cooperation with the Bourbaki group, namely Cartan, Dieudonné and Ehresmann who had all been extremely friendly towards the Oberwolfach Institute. In September 1949 he clearly stated this in a letter to Wilhelm Blaschke, praising the Bourbaki group for their "willingness to ignore

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77 Entries in August 1948: "Beweis des "Lemme fondamental" von Bourbaki (*El. de math. IR*, p. 37)" (SUBG, Kneser papers, D14).

78 For his correspondence with Dieudonné see: SUBG, Kneser papers, A17: Dieudonné. On the history of Zorn's Lemma see [Campbell 1978].

79 Süss to Dieudonné, September 27, 1949 (UAF, C89/288): "Wir würden dadurch auch äußerlich erneut unsere Verbundenheit mit dem Kreis des Herrn Bourbaki dokumentieren, wenn wir ein so grundlegendes Theorem in unserem ARCHIV bringen."

80 Dieudonné to Süss, October 13, 1949 (UAF, C89/288).

81 Süss to Dieudonne, October 26, 1949; Dieudonné to Süss, November 10, 1949 (UAF, C89/288): "Ce plan, qui comporte beaucoup d'imprécision et sera sans doute modifié ou complété par le suite, ne doit pas être publié, et je vous demande donc de le considerer comme confidential."

the past in favour of a better future and to consider questions of prestige as well as personal or national vanities as secondary". [82] As we have already seen, Blaschke quickly reacted, warning Süss not "to exclusively flirt with Bourbakistan". Kneser, for his part, seems to have been deeply impressed by the Bourbaki method, including the *congrès Bourbaki* as a meeting model, and, crucially, by the consequences this might have for the future structure of mathematical research [Remmert 2021]. He became a fervent propagator of "teamwork" in mathematics in the 1950s against the opposition of the majority of elder mathematicians in Germany (Siegel being the most prominent, but, possibly, also the most old-fashioned one). When the future of the Oberwolfach Institute was at stake in the late 1950s Kneser did not tire to propagate the fundamental role of "teamwork" in modern mathematics and the importance of Oberwolfach as the place that had fostered this new way of doing mathematics in Germany via the specialised workshops the institute organised. His position was concisely put on record in 1960 when a committee of the *Max Planck Society* discussed the possible foundation of a *Max Planck Institute for Mathematics* and the Oberwolfach Institute's relation to it:

> The critical status of current mathematical research is mainly due to the high pace of progress. Given the "structural change" ("Strukturwandel") within mathematics new theories and results can so quickly come up and be further developed in the centres of current research that mathematicians who only learn about it in print cannot contribute to this work. It is a problem of communication. Frequent meetings between various teams are necessary to foster a healthy development. Because of the mobile character of mathematical work, it is possible in mathematics to a large extent that such results and methods cannot only be mutually communicated, but that this opens the way to real research. [83]

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82 Süss to Blaschke, September 12, 1949 (UAF, C89/5): "Überhaupt schien mir der Bourbakikreis gewillt, über alle Vergangenheit zu Gunsten einer besseren Zukunft hinwegsehen zu wollen und dabei Fragen des Prestiges ebenso wie persönliche oder nationale Eitelkeit als zweitrangig anzusehen."

83 Kneser's commentary, January 5, 1960: "Die kritische Lage in der heutigen mathematischen Forschung hat ihren Grund vornehmlich in dem Tempo der Fortschritte. Bei einem Strukturwandel", wie er sich in der Mathematik vollzogen hat, können an den Zentren der aktuellen Forschung neue Theorien und Ergebnisse so schnell entstehen und weitergebildet werden, dass der Forscher, der erst durch den Druck davon erfährt, oft gar nicht in diese Arbeit eingreifen kann. Es ist also ein Problem der Kommunikation: Häufige Begegnungen zwischen den verschiedenen Arbeitsgruppen sind nötig, um eine gesunde Entwicklung zu fördern. Infolge des beweglichen Charakters der mathematischen Arbeit ist es in der Mathematik in besonderem Masse möglich, dass bei solchen Begegnungen nicht nur Ergebnisse und Methoden gegenseitig mitgeteilt werden, sondern dass dabei echte Forschung geschieht" (MPG com-

Naturally, for Kneser, Oberwolfach was the perfect place in Germany to further pursue this new way of doing mathematics.

9. THE PUBLICATION PROGRAMME, ESPECIALLY THE *ARCHIV DER MATHEMATIK* AND THE *STUDIA MATHEMATICA*

It has already become clear that publication strategies played a crucial role in the early years of the Oberwolfach Institute as they furnished a method to enhance the institute's visibility and create a research agenda. From this perspective, the editing of the *FIAT Reviews*, the idea to translate Bourbaki, and the founding of the new journal *Archiv der Mathematik* are all in line with the general thrust of Süss' endeavours to keep the institute afloat and with the drive to gain the support of the French authorities by pushing Franco-German co-operation. The history of the *Archiv der Mathematik* is a very good example to illustrate this process and its ramifications.

As has been mentioned above (see Section 3 above) the idea to launch a new mathematical journal to be edited by the Oberwolfach Institute came up in March 1946, apparently following a suggestion of Mandelbrojt and Pérès and with full support of the French Military Government. Given the fact that no mathematical journals were published in Germany in the immediate post-war years (see table 5) and that it was totally unclear whether or when the major mathematical publishing houses, such as de Gruyter, Springer, or Teubner, would be able to start publishing again [Remmert & Schneider 2010, 265–268], it seemed worthwhile to contemplate the idea of establishing a new journal. While the British and US military authorities in Germany were often slow and sometimes reluctant to issue business or printing permits to established publishers, the French were very interested in fostering academic and scientific culture in their occupation zone [Mombert 1995]. For the Oberwolfach Institute a journal edited by the institute would naturally be a great asset, and for Süss, who had attempted in vain to get a foot into the mathematical publishing system during the Nazi period [Remmert 2000], [Remmert & Schneider 2010, Chapter 8], a new journal offered a chance to maintain his position and expand his influence as a major player in the German mathematical community after World War II.

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mittee "Institut für mathematische Forschung": Hauptstaatsarchiv Stuttgart, EA 13–201 Bue 333–2, page 3).

Table 5. Mathematical Journals published in Germany, 1900–1950

title	1900	1920	1938	1945	1950
Abhandlungen aus dem Mathematischen Seminar der Hamburgischen Universität			×		×
Archiv der Mathematik					×
Archiv der Mathematik und Physik	×				
Deutsche Mathematik			×		
Jahresbericht der Deutschen Mathematiker-Vereinigung	×	×	×		1951
Journal für die reine und angewandte Mathematik	×	×	×		×
Mathematische Annalen	×	×	×		×
Mathematische Nachrichten					×
Mathematische Zeitschrift		×	×		×
Zeitschrift für angewandte Mathematik und Mechanik			×		×
Zeitschrift für Mathematik und Physik	×				

Süss formally submitted a "plan to edit a new mathematical journal" to *French FIAT* in June 1946.[84] He wrote:

> Since the collapse of Germany one of the main problems for German mathematicians has been the complete lack of publishing possibilities. The publishers of almost all mathematical journals who have been active in the past are based in the Russian zone and most of their publishing houses and their printing shops have been destroyed and are unable to work. Moreover, in the other zones the major printing shops capable of printing mathematics who had cooperated with these publishers seem to be in ruins as well. In order not to further paralyse German scientific work in the realm of mathematics because of the lack of a mathematical journal, we present the following plan to edit a new mathematical journal.[85]

84 The following draws on [Remmert & Schneider 2010, 289–293].

85 Süss, June 1946 (UAF, E 6/13): "Eine der wesentlichsten Schwierigkeiten für die wissenschaftliche Arbeit deutscher Mathematiker besteht seit dem Zusammenbruch in dem Fehlen jeder Möglichkeit etwas zu veröffentlichen. Die Verleger fast aller mathematischen Zeitschriften der Vergangenheit haben ihren Sitz in der russischen Zone, wo ihre Verlagshäuser und die Druckereien meistens bis zur Arbeitsunfähigkeit zerstört sind; auch diejenigen größeren Druckereien mit mathematischem Satz in anderen Zonen Deutschlands, mit welchem jene Verleger zusammengearbeitet haben, scheinen durch Kriegsereignisse zerstört zu sein. Um die deutsche wissenschaftliche Arbeit auf dem Gebiet der Mathematik nicht noch länger durch das Fehlen einer mathematischen Zeitschrift lahmzulegen, wird folgender Plan zur Herausgabe einer neuen Zeitschrift vorgelegt: [...]."

Süss suggested an editorial board representing the four centres of mathematical research in the French zone (himself for Oberwolfach, thus implicitly putting it on the mathematical map permanently, Gerrit Bol and Henry Görtler for Freiburg, Robert Furch for Mainz, where the university was just being founded, and Kneser for Tübingen). The journal would be open to papers written in German, English, French and Italian. Cagniard, as the relevant authority of *French FIAT*, quickly agreed to the proposal as it had "been created by our initiative" ("Avis très favourable, cette revue étant créée de notre initiative") and gave *French FIAT*'s full support.[86] Once the project had been authorised, it turned out to be quite difficult to find a publisher. Eventually, an agreement was signed with Braun in Karlsruhe in 1947 and the first issue of *Archiv der Mathematik* appeared in 1948. The *Archiv* was taken over by Birkhäuser in Basel in 1952 and became a well-respected journal over the next few years. In tune with the policies of the Oberwolfach Institute, namely to fashion itself into a place for international co-operation in mathematics, the journal had an international editorial board from the very beginning. Out of 18 members of the board 9 lived outside Germany: Enrico Bompiani (Rome), Charles Ehresmann (Strasbourg), Hugo Hadwiger (Bern), Heinz Hopf (Zürich), Trygve Nagell (Uppsala), Christian Pauc (Cape Town), Johann Radon (Vienna), Jan Arnoldus Schouten (Amsterdam) and Eduard Stiefel (Zürich). Naturally, Süss underlined the international mission of the journal in the foreword of the first issue.

> We are very grateful that many colleagues from Germany and abroad have agreed with our plans and are willing to support us in our efforts to re-establish contact between colleagues irrespective of national borders in unbiased co-operation.[87]

When the news spread in 1946/47 that Süss was about to create a new journal the idea was not universally welcomed among mathematicians in Germany. William Threlfall and Herbert Seifert immediately wrote to Süss that they "would prefer the continuation of existing journals to founding

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86 Note in handwriting, signed by Cagniard on the proposal, June 1946 (UAF, E 6/13).

87 Süss: *Foreword*, in: *Archiv der Mathematik* 1(1948), 2: "Wir sind glücklich, zu unseren Plänen schon die Zustimmung vieler deutscher und ausländischer Kollegen gefunden zu haben, die uns in dem Bestreben unterstützen wollen, in sachlicher Zusammenarbeit die Verbindung der Fachkollegen über die Grenzen hinweg wieder herzustellen."

new ones". [88] Erich Kamke in Tübingen, too, was not supportive as he was trying to get the *Mathematische Zeitschrift* licensed in the French zone. [89] The publisher Ferdinand Springer and his main mathematical advisor F. K. Schmidt also saw the new journal in clear competition to the inactive *Mathematische Zeitschrift* [Remmert 2000, 29].

However, for Süss the *Archiv* had at least two functions in the context of his legitimisation strategies. On the one hand, the *Archiv* played a crucial role in creating an international platform for the Oberwolfach Institute within the mathematical community. On the other hand, the *Archiv* as journal of the Oberwolfach Institute afforded the possibility of exchanging copies with other journals to help to build up a library at the institute in light of its modest budget. This had been among Blaschke's motives in establishing the *Abhandlungen aus dem Mathematischen Seminar der Hamburgischen Universität* after World War I [Remmert & Schneider 2010, 159–163]. To this effect Süss had ensured that the publisher Braun guaranteed three free copies of the *Archiv* for the Oberwolfach Institute as well as the option to purchase as many copies as they needed at cost price. [90]

The book series the Oberwolfach Institute started to edit under Süss' auspice, *Studia mathematica*, basically followed the same rationale as the *Archiv der Mathematik* [Remmert & Schneider 2010, 274–281]. The scarcity of available and purchasable mathematical books in Germany was a crucial impediment to university teaching in mathematics. Süss clearly saw a chance here for himself and the Oberwolfach Institute and got in touch with the Göttingen publishing house Vandenhoeck & Ruprecht, being well aware that Hellmut Ruprecht (1903–1991) wished to expand Vandenhoeck & Ruprecht's activities into mathematics and the sciences. Until 1945 Süss had co-operated with the *Akademische Verlagsgesellschaft* in Leipzig, which now lay in the Russian zone, and he had had a serious clash with Springer [Remmert 2000, 24–29]. Thus, if he wanted to get a foot into the market for mathematical books, Vandenhoeck & Ruprecht was about the only option he had. As it were, Ruprecht was quite interested in Süss's idea to publish a series of monographs institutionally connected to the Oberwolfach Institute. The first volumes of the series *Studia mathematica*

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88 Threlfall to Süss, June 18, 1946 (UAF, C89/114): "Wir würden die Fortsetzung bestehender Zeitschriften mehr begrüßen, als Neugründungen, die nach Mainzer Methoden schmecken." They refer to the university of Mainz, which had been opened by the French in May 1946.

89 Knopp to Süss, August 23 and October 18, 1946 (UAF, C89/6).

90 Cf. the enclosure to Süss' letter to the publisher, October 14, 1947 (UAF, E 6/13, p. 10–12).

began to appear in 1948 and the series only ceased to exist in 1978 after 30 volumes had been published. Most of the early authors were members of Süss's network:

Vol. 1: Emanuel Sperner: *Einführung in die analytische Geometrie und Algebra* (1948) (cf. table 1),
Vol. 2: Gerrit Bol: *Elemente der analytischen Geometrie* (first part 1948, second part 1949),
Vol. 3: Walter Lietzmann: *Elementare Kugelgeometrie* (1949),
Vol. 4: Gerrit Bol: *Projektive Differentialgeometrie* (1950) (cf. table 1).

The series turned out to be a success for both the publisher and Süss. Ruprecht was pleased by the economic success of the series and by the fact that he had managed to get into a new market (mathematics). Süss had ensured that the series carried the subtitle "mathematical textbooks, edited by the Mathematical Research Institute Oberwolfach" ("Mathematische Lehrbücher, herausgegeben vom Mathematischen Forschungsinstitut in Oberwolfach unter der Leitung von Prof. Dr. W. Süss"), propagating and inflating the importance of Oberwolfach as a research institution.

To sum up, the *Archiv*, following the publication of the *FIAT Reviews*, was an important tool to shape the institute's identity as (1) a mathematical research institute, (2) a place of international co-operation in mathematics, (3) a nucleus of a Franco-German rapprochement in and beyond mathematics, and (4) a leading mathematical centre in Germany. This goal was not only pursued by the resumption of journal publication, but was flanked by further publication projects, that were partly connected to Süss's extensive, but mostly ineffective publishing plans in World War II [Remmert 1999, 39–43], such as the book series *Studia mathematica*, the re-establishment of the *Mathematisch-Physikalische Semesterberichte* as well as a thwarted attempt to take part in the publication of a handbook of mathematics [Remmert & Schneider 2010, 274–281, 293–296].

10. CONCLUDING REMARKS: SHAPING/FINDING A NEW INSTITUTIONAL IDENTITY

This paper is part of a larger research project dealing with the history of the Oberwolfach Institute between 1944 and the early 1960s, when the Thyssen Foundation followed by the Volkswagen Foundation stepped in as major funding institutions, in the aftermath of which most of the

institute's budgetary problems were solved [Gericke 1984, 37f]. [91] While the history of its foundation is relatively well understood (see Section 1 above), the development after 1945 has scarcely been touched on by historians (of mathematics). The project aims at filling this gap, namely, to analyse the history of the Oberwolfach Institute as it institutionally changed from a projected *National Institute for Mathematics* with a wide, but standard range of responsibilities into an *international social infrastructure for research*. This notion was completely new in the framework of German academia for years to come and has only been conceptually codified in 2011 when the term "social infrastructure for research" ("soziale Forschungsinfrastruktur") as a specific category for research institutions was proposed—specifically with the Oberwolfach Institute in mind—as "meeting space for discursive exchange of current and the development of new research questions" ("in der Regel Begegnungsräume des diskursiven Austauschs von aktuellen und der Entwicklung von neuen Forschungsfragen"; [Wissenschaftsrat 2011, 20f]). Granted, the term may be awkward, but a look at the institutional identity of the Oberwolfach Institute shows that it clearly fills a conceptual gap. The *Leibniz Association* as institutional harbour of the Oberwolfach Institute adopted the concept, even though in 2014 only two of its 89 institutes fell in the category, the Oberwolfach Institute and the *Leibniz Center for Informatics/Schloss Dagstuhl* (founded in 1989; Leibniz Association 2014, 33–35).

To historically understand the institutional evolution of the Oberwolfach Institute from *National Institute for Mathematics* to *international social infrastructure for research* means to focus on the evolvement of the institutional identity of the Oberwolfach Institute between 1944 and the early 1960s, namely the development and importance of the Oberwolfach Institute's scientific programme (workshops, teamwork) and the research tools employed (library, workshops) as well as the corresponding strategies to safeguard the Oberwolfach Institute's existence (for instance under the wings of the Max-Planck Society). This process cannot be understood without paying close attention to the French influence as it played out in Oberwolfach in the late 1940s.

For an analysis of the institute's history in the 1950s and 1960s, the concept of an institutional identity as developed and applied by Dania Achermann to the history of the *Institute for Atmospheric Physics* in Oberpfaffenhofen after World War II would be fruitful [Achermann 2016].

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91 The project is funded by the German Research Foundation: *The Oberwolfach Research Institute for Mathematics, 1944–1963: From "National Institute for Mathematics" to an international "social infrastructure for research".*

Achermann, following the work of Stuart Albert and David A. Whetten on organisational identities, conceives of an institutional identity as being shaped by three characteristics reflected in three questions:

> What was the core programme of the scientific institution (*central*)? What feature endured for a "long" time (*enduring*)? And what made this organisation unique and distinguishable from others (*distinctive*)? [Achermann 2016, 248].

For the Oberwolfach Institute the answer seems simple as, of course, seen from today's perspective the workshop programme and the library guarantee these traits. However, further research must be done to better understand the evolution of the workshop programme and the library into the Oberwolfach Institute's central, enduring and distinctive research tools during the 1950s and 1960s. The method Achermann proposes means to analyse the history of a scientific institution by way of understanding the historical transformation of its institutional identity. In 1945 the Oberwolfach Institute had lost its (young and fragile) institutional identity and was searching for a new one [Remmert 2019]. To study this process demands to closely intertwine the work of and at the institute with contemporary science policies as well as political contexts.

The history of the Oberwolfach Institute in the late 1940s is a case in point, as we have seen that it cannot be understood without embedding it into the political and cultural context of the French occupation zone that had a long-term impact on the institute's institutional identity. While control of research according to law no. 25 did not play a relevant role for the Oberwolfach Institute, co-operation with French mathematicians and with the French authorities became crucial for developing a new vision for the institutional identity. This new institutional identity focused on a publication programme and on turning Oberwolfach into a meeting place for mathematicians from Germany and abroad (workshops as well as individual visits), both with full support of the military government. Even though the publication programme did not endure as a research tool, it helped to build up the library as a research tool in times of a scarce budget—that is into the early 1960s. In 1956 Süss characterized the library as "the main tool for research" ("das hauptsächliche Werkzeug für die Forschungsarbeit") [92]. The third crucial influence on the institute's institutional identity was the deep appreciation for Bourbaki in Oberwolfach, which in turn left a mark on the institute's later agenda (Kneser and the structure of mathematical research, teamwork). Finally, the fact that the French authorities

92 Report on the Oberwolfach Institute by Süss for the *Ministry of Culture and Education*, April 26, 1956 (Hauptstaatsarchiv Stuttgart, EA 13–201 Bue 333–1).

modestly subsidised the institute entailed steady, if equally modest financial support from the *Ministry of Culture and Education* in Freiburg.

All in all, this paper has shown the significant impact that its being situated in the French occupation zone in 1945 had on the further development of the Oberwolfach Institute. Beyond the realm of the history of mathematics, the institute is an excellent example of the French policy not to transplant research units, but leave them in place, which eventually was to the benefit of both sides.

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12. APPENDIX

Georges Reeb, 1950: *Institut de Mathématiques du Lorenzenhof*, typescript copy of the original report (Archives de l'occupation française en Allemagne et en Autriche (1945–1955), Paris: 1BAD1262):

Ayant été souvent l'hôte du Lorenzenhof, et ayant séjourné durant cette année pendant six mois à cet établissement, je crois devoir résumer brièvement ici mes impressions toutes personnelles quant à l'activité et l'utilité d'un tel organisme. Avant de parler des questions scientifiques, je voudrais insister dès le départ sur l'atmosphère spécialement sympathique qui règne au Lorenzenhof. Cette ambiance est certainement due à la direction adroite et habile de Monsieur le Professeur W. SÜSS qui excelle dans l'art de réussir dans une atmosphère d'entente et de cordialité des gens de nationalité et de caractères très divers. Les possibilités de col-

laboration scientifique offertes par le Lorenzenhof sont autant de possibilités d'entente sur un plan international. --

Le Forschungsinstitut a été créé en juin 1944 par le Reichsforschungsrat ; le projet et les crédits étaient somptueux. Depuis l'institut vit sur des fonds très modestes mais il a conservé ses objectifs scientifiques :

Édition et participation à l'édition d'ouvrages et publications scientifiques : (Rapport FIAT, Archiv der Mathematik, Math. Phys. Semesterberichte, Studia Mathematica, etc.)

Organisation de congrès et de colloques sur des sujets spécialisés. --

A ces objectifs, le Lorenzenhof en a ajouté un autre : développer les relations et échanges de vue entre chercheurs sur un plan international. --

Je voudrais indiquer maintenant, parmi tant d'autres, quelques exemples où cet objectif a été atteint. --

LIAISON FRANCE - ALLEMAGNE :

Les colloques organisés au Lorenzenhof ont souvent réuni Français et Allemands. Voici quelques résultats obtenus :

a) Influence française :

Il convient de réserver une place importante à l'influence de N. BOURBAKI dont de nombreux élèves (et collaborateurs) ont séjourné au Lorenzenhof. Dans le traité de mathématique qu'il a rédigé, N. BOURBAKI se propose de reprendre la mathématique à la base, et de construire un instrument de travail puissant et efficace. On peut dire que les mathématiciens allemands ont été très intéressés par ces idées neuves, qu'ils ont d'ailleurs très vite assimilées. Je pense en particulier à l'enthousiasme de M. KNESER (Tübingen) hôte assidu du Lorenzenhof, connu pour sa connaissance à peu près universelle des mathématiques. On peut relever les trois points suivants, où l'influence de N. BOURBAKI est très nette :

Enseignement : dans certaines universités allemandes l'enseignement est directement influencé par N. BOURBAKI

Théorême de LORX [*Zorn's Lemma*] : cet instrument était peu connu en Allemagne (où il était remplacé par un théorème moins commode) ; actuellement des mathématiciens allemands se servent du théorème de LORX. --

Filtres : Enfin il n'est pas exagéré de dire que l'impression de méthode, d'ordre et de puissance n'a pas été sans surprendre les Allemands dans certains préjugés. --

Comme d'autres facteurs de l'influence française on peut citer :

La Géométrie Infinitésimale Directe (BOULIGAND, PAUC, CHOQUET ; HAUPT, AUMANN (Allemagne). --

La Géométrie Différentielle et Algébrique Classique (VINCENSENI, d'ORGEVAL). --

Influence des idées allemandes :

Les visiteurs français ont peut-être été frappés par les faits suivants :

Le soucis constant en Allemagne d'éveiller très tôt le goût de la recherche scientifique, et de créer de vocations de chercheurs. L'enseignement prépare très rapidement au travail personnel. --

Le développement du calcul des variations, qui a abouti à la découverte de ``Chemin Royal'' de CARATHEODORY, et de son élève BOERNER

La vitalité toujours considérable de l'Algèbre. Les idées de HILBERT E. NOETHER n'ont rien perdu de leur fécondité et de leur efficacité !-

Terminons par quelques mots sur :

Les relations internationales :

Pour ne citer que quelques faits saillants, on peut dire que le Lorenzenhof a été un terrain favorable pour la confrontation des idées sur les sujets suivants :

Topologie : où l'imposante Ecole Suisse (HOPF, ECKMANN, STIEFEL) a repris contact avec l'Ecole Allemande (SEIFERT) Belge (HIRSCH) Française (EHRESMANN).

Logique :[93] Géométrie différentielle : Les idées de W. SÜSS sur la géométrie différentielle relative, et les nouvelles conceptions de G. BOL sur la géométrie différentielle projective, ont trouvé des auditeurs intéressés. (RUND de Capetown, et d'autres). --

Pour conclure je reviendrai encore une fois au caractère familier et sympathique des colloques du Lorenzenhof, qui favorise les échanges de vues et les conversations privées. Personne n'est pressé ; chacun se sent englobé dans la communauté. Ce climat est propice aux jeunes mathématiciens et étudiants (que M.SÜSS attire volontiers) et leur permet d'approcher leurs aînés dans les conditions qui ne leur sont offertes nulle part ailleurs.

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93 It seems that in the process of copying the report a passage on the 1949 logic meeting in Oberwolfach (Paul Bernays) was skipped.

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