

RESEARCH ARTICLE

# The emergence and the failure of an East-West-German project (1988/89) on the “history of mathematics during the Nazi period”

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## Argument

In the decade between 1983 and 1993, Herbert Mehrtens in West Berlin and I in East Berlin communicated closely about our parallel work on mathematics under the National Socialist (NS) regime. For a short period (1988–89), we worked on a joint book on this topic. We agreed that the book should be based primarily on empirical historical material, using a theoretical approach largely guided by Mehrtens’ work on social systems in mathematics (Mehrtens 1981, 1987a). However, parallel work for his habilitation thesis on modernity in mathematics increasingly captivated Mehrtens’ interests. This, together with ongoing resistance among older mathematicians and the insecurities of our individual careers during times of considerable political change, particularly in East Germany, led to the failure of our joint project.

This paper aims at reconstructing—mostly by drawing on correspondence—parts of the dialogue between Mehrtens and me at the time. Our dialogue was influenced by our different upbringing and socialization in the two parts of Germany, and by different, though complementary, views about the combination of empirical and theoretical approaches to the historiography of mathematics.

In the epilogue, I describe how my later work in the decades from the 1990s on the history of mathematics profited much from Mehrtens’ early theoretical and empirical work but was less influenced by his book on modernity. That later work of mine was, however, mostly done at a time when Mehrtens had largely left the field and considered himself increasingly as a “cultural scientist” (Kulturwissenschaftler).

**Keywords:** East-West-German collaboration; History of mathematics under NS regime; political turn in East Germany 1989; modernity in mathematics

## 1. First contact and the emergence of the project

In 1983, Mehrtens contacted me from West Berlin after he had become aware of my parallel research in East Berlin.<sup>1</sup> As Germans dealing with our common past of the Nazi regime, we were looking for reasons and explanations for the adaptation and instrumentalization of mathematics for political use during the National Socialist (NS) period. We wanted to understand the “sense in the nonsense,” where some others only saw the pathological, extreme, and criminal. Other historians, such as Mitchell Ash and Mark Walker,<sup>2</sup> contributed to the topic for their disciplines,

Dedicated to my friend Herbert Mehrtens (1946–2021), from whom I learned much.

<sup>1</sup>In 2012, in a letter to me to be quoted below, Mehrtens spoke of a “parallel history” in our biographies. For a discussion of numerous other aspects of East-West German cooperation in the field of the history of mathematics, see my biographical essay on Hans Wußing (Siegmund-Schultze 2012). For a biographical essay on Mehrtens, see Siegmund-Schultze 2022a.

<sup>2</sup>See the contributions by Ash and Walker in this issue. Ash’s discussions of Gestalt psychology and of general science politics were stimulating. Walker’s book on the German uranium bomb project (Walker 1989) was one of the first influential publications.

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and we were in close discussions with them. Mehrtens and I soon realized that we both had only limited access to the sources (archives, persons) due to the political divide of Germany. We therefore exchanged manuscripts and detailed information in our field of common interest.

Mehrtens, seven years older than me, had from the beginning the broader approach, co-editing and contributing to the volumes *Sciences, Technology, and NS Ideology* (Mehrtens and Richter 1980) and *Social History of Nineteenth Century Mathematics* (Mehrtens, Bos and Schneider 1981). His sociological ideas were influenced, among others, by Niklas Luhmann's theory of "social systems," and culminated in his article "The Social System of Mathematics and National Socialism: A Survey" (Mehrtens 1987a). This article was reprinted several times and can be considered a kind of theoretical synthesis of Mehrtens' empirical findings in his work on mathematics in the Third Reich.<sup>3</sup> Among the more empirical works behind it were Mehrtens' studies on the political "Gleichschaltung" (toeing the line) of German mathematical societies and associations (Mehrtens 1989a), biographical studies on Felix Hausdorff (1862–1943),<sup>4</sup> the Nazi victim (Mehrtens 1980), and Ludwig Bieberbach (1886–1982), the Nazi culprit (Mehrtens 1987b), investigations of school mathematics in the Third Reich (Mehrtens 1989b), and studies of applied mathematics in the NS period (Mehrtens 1996a).

In the 1980s I published several works on mathematics during the Nazi era: on Theodor Vahlen (1869–1945)—the other leading Nazi (besides Bieberbach) in German mathematics, on Nazi strategies for dominance in European mathematics (1986), on mathematical reviewing (1987), and on the mathematical institute of Berlin University in the Third Reich (1989). In addition, I was much occupied with research on the history of mathematical ideas, in particular in function theory and functional analysis, not restricted to Nazi Germany.

Coming from the East with its all-pervading ideology of "dialectical materialism," I was particularly attracted by Mehrtens' liberal and pragmatic methodology, which nevertheless connected to some of the same sources and emancipatory convictions, among them Marxist historiographic thinking. As he put it in a widely read essay of 1981: "Drawing on 'classic' Marxist historiography of science like the works of Hessen, Struik, or Needham and using the developed historiographical tradition of Eastern Marxist work (e.g. Wußing . . .), as well as the theoretical tools of a sophisticated and diversified Western Marxism, more intriguing results have turned up and may be expected" (Mehrtens 1981, 260).

Not being educated as a philosopher or theorist of science, I liked Mehrtens' unprejudiced, self-declared unsystematic, philosophical approach, as revealed in the same methodological essay of 1981:

Although I believe philosophy of mathematics to be necessary for historiography to some extent, I should rather argue that any philosophical prescription for historiography sets undue limits upon it. The historian has to be pragmatic about his conceptions of mathematics. Otherwise he will restrict his possibilities of approaching mathematics in different cultures. (Mehrtens 1981, 267)

Further down in the essay, in a passage that also seemed to guarantee Mehrtens' respect for the empirical side of historical research, he writes:

Thus the best advice to the historian might be to ruthlessly exploit the offerings of theoretical disciplines while scrupulously checking the applicability and explanatory range of the pieces used against his empirical material. This should also be a plea for the value of single-lined and even speculative approaches – as long as the limitations are clear to author and reader. Historiography itself is a social process, and specific studies will add up to shape and criticize, and reshape again the general picture. (Mehrtens 1981, 271)

<sup>3</sup>I add some remarks on this article below in the "epilogue."

<sup>4</sup>See this issue for David Rowe's contribution on Hausdorff's role in the discussion of the foundations of mathematics around 1900.

Mehrtens and I shared some common experiences with the “apolitical” ideologies of our leading mathematicians/scientists on each side of the political divide, which made them amenable to facile talk about science as a vehicle of “progress,” as promoter of “humanism,” and as a victim of “abuse” under oppressive regimes. In the East this talk was superficially and ostensibly complemented by declarations of the “social and political responsibility” of science and mathematics, apparently, in order to reach conformity with the leading ideology. As far as the history of mathematics and science during the Nazi period was concerned, one can safely say that this field of historical research was of no primary concern in the East and therefore not inviting for careers either.<sup>5</sup> The main reason for that was the grey zone of the political role and behavior of science and its practitioners in the NS period, in contrast to the political, economic and military developments that were most interesting for the official East German historiography of “fascist” Germany.<sup>6</sup> The various apparent and seeming parallels between the Nazi regime and the “socialist democracy” of the East, with their ruling parties in both cases, were further and obvious obstacles to critical historiography of NS in the German Democratic Republic (Siegmond-Schultze 1999). There were, in addition, particular problems and phenomena such as “anti-Semitism” (in its difficult relationship to class-structure), nationalistic militarism in “humanistic scientists,” and the opposition of bourgeois scientists to the “bourgeois government” of the Weimar Republic.<sup>7</sup> These were difficult to handle within an historiographic tradition that stressed the underlying class-structure of the various and very different monarchist, parliamentary, and dictatorial German societies between 1900 and 1945.

Under these political circumstances it is no wonder that I experienced Mehrtens’ approach as liberating. An important part of the picture was that closer collaboration had only become possible in the more relaxed political atmosphere between the East- and West Germany of the 1980s, in particular after “Glasnost” in the Soviet Union from 1985. Nevertheless, communication between Mehrtens’ and myself remained difficult, at least in technical terms, as long as the “Wall” (Mauer) which divided both Berlin and Germany as a whole was in existence. For the first five years, we maintained the distant “Sie” instead of the more informal “Du” in addressing each other in our communication, which was mostly by ordinary mail.

In January 1988, I sent an eight-page book proposal, “Mathematics in Fascist Germany—Studies, Theses, Documents” to my former doctoral advisor, Hans Wußing, at the Karl Sudhoff Institute in Leipzig. This was after learning that he, together with Erwin Hiebert (Harvard University), was planning a new series of publications on the history of science, in keeping with the zeitgeist of the gradual political opening between East and West. The new series was “Science Networks,” an East-West project undertaken by VEB Deutscher Verlag der Wissenschaften (Nationally owned German publisher of scientific books) and Birkhäuser-Verlag. The year before, I had defended my habilitation thesis at Humboldt University, which focused thematically on mathematical reviewing in the Third Reich. In the GDR, it was almost impossible to publish specialized scientific monographs that could not directly serve teaching purposes, especially if they also touched on sensitive political issues. I had already experienced this in 1979 with my doctoral thesis,<sup>8</sup> and

<sup>5</sup>This may explain resistance in the East to publishing an extensive study of mine on the Nazi mathematician Vahlen, who, after all had been a leading representative of the Berlin Academy, something which did not fit well into the East German Academy’s plans for the memorialization and cultivation of their traditions. The same seems to apply to my failed efforts to publish my habilitation thesis (1987) on the *Jahrbuch über die Fortschritte der Mathematik* under the Nazis, which came out as a book only in 1993 in the unified Germany.

<sup>6</sup>In the latter topics East German historical research reached internationally recognized results, often based on thorough archival study (see, e.g., Eichholtz 1969–1996).

<sup>7</sup>I vividly recall how much effort it required to convince fellow historians of science in the East that the majority of professors and many students at the Universities of the Republic of Weimar were in opposition to many government measures, in particular if the latter could be represented as fulfilling the Versailles treaty.

<sup>8</sup>I then published this work on the emergence of functional analysis in parts in the *Archive for History of Exact Sciences* in 1982 and 1986, before the fall of the Berlin Wall.

therefore saw an opportunity in this new publication series, with its potentially larger readership in the German-speaking countries. This necessarily also put me in a certain competitive situation, at least as I felt it, with Mehrtens, who had not had to experience such restrictions.<sup>9</sup>

To this day, I am not entirely clear whether Mehrtens had planned such a monograph in early 1988 or before. Wußing wrote me something at the time about an “earlier project” of Mehrtens’ for the same series, but it seems to me that the initiative at that earlier time had come from the publisher rather than from Mehrtens himself. In any case, after Wußing’s notice, I had no choice but to curb my personal ambition and propose a collaborative publication.

Mehrtens replied to my proposal on August 12, 1988:<sup>10</sup>

I will, of course, continue to look for a job, and therefore have to do things that are conducive to selling my labor. This year I want to finally complete a habilitation thesis. This is what should<sup>11</sup> one day be the first chapter of a book on Math in German Fascism, namely the period 1890–1914 (working title: *The Politics of Pure Thought: On the Double Modernization of Mathematics*).<sup>12</sup>

From this situation, I am certainly not a reliable partner for a serious book project. Secondly, I have simply been fed up with fascism for quite some time, certainly with the historical details. What I was still interested in was more of a theoretical analysis. But I think I’m through that stage. Thirdly, I have in mind as a favorite project a more essay-like analysis as parallel work or at a later point of time.

Well, basically all this is just a warning. I think that a joint project could certainly be tackled if, first, it is long-term (you [Sie] write four years), second, you (and Hans Wussing, whom I have turned down for the time being) are clear about the risk that follows from my professional situation. I think that I can continue to work well on mathematics beside the new project,<sup>13</sup> but should something change and require my concentration, then I will concentrate where it is most needed . . . .

I don’t think it makes sense to do a unified large text. Thus [we would produce] a stitched-together collection [zusammengestoppelte Sammlung] with distributed roles, whereby one would have to agree on the (source-wise) feasible topics, the indispensable topics, the additional topics, and the interpretive passages.

The letter from Mehrtens describes his ambivalent situation and mood at that time, and should probably have been a warning to me.

In the same letter, however, there is already a two-page rough conception of a joint book.<sup>14</sup> This begins with: “1. Initial Situation: Mathematics in the Weimar Republic – Structures, Conflicts,

<sup>9</sup>His dissertation on the history of lattice theory was published as a book in German (Mehrtens 1979).

<sup>10</sup>All translations of German quotes in this paper are mine if not indicated otherwise.

<sup>11</sup>The word “should” (sollte) here obviously refers to a past plan of Mehrtens’ that was not ultimately realized.

<sup>12</sup>In German original: “Arbeitstitel: Die Politik des reinen Denkens: Zur doppelten Modernisierung der Mathematik.”

<sup>13</sup>Apparently, by “new project” Mehrtens meant his own more theoretical analysis along the lines of his habilitation thesis, and by “mathematics,” the historiographic project which I had proposed.

<sup>14</sup>It is perhaps not unimportant to mention that Mehrtens had been writing his manuscripts on a PC for years, a tool that was not available to me at the time. This, of course, gave him the upper hand in writing synopses and the like. Communication by email only began in the 1990s.

Tendencies.” This seemed to me a more natural “first chapter of a book on Math in German Fascism,” than Mehrtens’ habilitation thesis, which was focusing on “the period 1890-1914.”<sup>15</sup>

On November 22, 1988 Mehrtens sent me a more detailed ten-page conception. By this time we had changed to the “Du.” In his November letter, Mehrtens reacted to my original book proposal for Wußing from January 1988:

I am relatively critical of your [Dein] exposé because it does not show the intended completeness . . . I am sure that a more chronological order makes better sense for both the publisher and the reader . . . However, I find it excellent to emphasize Gumbel,<sup>16</sup> which is justified in terms of content, politically meaningful, good from a literary point of view, and finally it helps the poor memory of mathematicians a little bit . . . I’d rather stick with the narrative style . . . Planned 490 + 200 pages (2nd part) . . .

The outline (here essentially in its main headings) was:

1. Introduction
2. Prologue: Mathematics during the Weimar Republic: Structures and conflicts
3. ‘Gleichschaltung’: Expulsion, threat, adaptation
4. Mathematics and ideology (40 pp. responsible HM).

[More in detail:]

On the concept of ideology/Anti-rationalism and ‘reactionary modernism’ in Nazi ideology/ Preconditions in mathematics/Bieberbach and ‘German mathematics’/ Other racisms in Math./The salesman rhetoric (Hamel et al.)/Will, character and heroism/The ‘necessity of the subject’/Mathematics in the web of ideologemes.

5. Mathematics in the fascist system (175 p. responsible RSS)
6. Mathematics and politics in the Nazi state
7. Mathematics in the Second World War (125 of which 75 resp. HM, war work in mathematics resp. RSS)
8. Epilogue: The years after the war, summary.

[more in detail:]

Appendices: chronology, tables: Universities, THs (Technische Hochschulen = technical universities), faculty & student numbers, school curricula, expulsion and emigration of mathematicians, overview professions of mathematicians etc.

<sup>15</sup>In fact, Mehrtens’ book on modernity in mathematics (Mehrtens 1990) does not cover the Weimar Republic in much detail and could therefore have been a “first chapter” only in a very broad sense.

<sup>16</sup>Mehrtens was here alluding to my book proposal from January 1988. Emil Julius Gumbel (1891-1966) was an outstanding mathematical statistician and an activist on the political left, who, in several publications, pointed to conspiracies against the Weimar republic and thus became a hate figure for the conservatives, among the latter several leading mathematicians. He was dismissed from Heidelberg University following attacks from colleagues and had to seek refuge in France even before Hitler rose to power (Vogt 2021).

## Document section (2nd volume)

## 01: A resolute observer: E. J. Gumbel

Short biography and annotated edition of the most important works of E. J. Gumbel on Math. and Fascism: *Quadratur des Kreises*, *Ein wissenschaftlicher Briefwechsel*, two contributions from 'Freie Wissenschaft'.

## 02: Documents on the individual chapters

One must add that even in the subchapters, not given here in detail, terms are missing, such as "Mathematics as a Social System," "Market and Legitimation of Mathematics," "Foreign and Domestic Politics of Mathematicians,"<sup>17</sup> "Self-Mobilization of Mathematics in War,"<sup>18</sup> which Mehrtens used in parallel works such as the more general and sociological one on "The Social System of Mathematics and National Socialism" (Mehrtens 1987a). The word "anti-modernism" appears only once in a subchapter to "Prologue: Mathematics during the Weimar Republic." Mehrtens had agreed with "intended completeness," which I aimed at, and even argued against the somewhat more problem-oriented structure of my January 1988 draft: "I am sure that a more chronological order makes better sense for both publisher and reader . . . I would rather stick to the narrative style."

Even less do topics occur in Mehrtens' conception that were later to play a central role in his habilitation and in his book on modernity in mathematics, such as "language of mathematics," "number as an act of creation," "counter-modernity," [Gegen-Moderne] or "feminism in mathematics." It is also striking that Mehrtens had no problem using terminology cultivated in GDR historiography, such as the concept of fascism.<sup>19</sup> In any case, he had been using the word fascism, applied also to the German case, for years in his own papers.

To me, at least in retrospect, it looks as if Mehrtens was actually no longer very interested in empirical research ("facts") back in 1988, according to his earlier letter to me of August 12, although he had sufficiently demonstrated his aptitude for this kind of historical work in his studies on the political coordination of the German Mathematicians' Association (DMV) (Mehrtens 1989a), on Bieberbach, and on war research. Nevertheless, Mehrtens apparently considered a chronologically structured and fact-oriented book on mathematics during NS as quite useful at that time. Apparently, he hoped that I would above all provide the necessary help for empirical work and for assessing some mathematical developments. He wrote to me on November 22: "I am now leaning very much toward YES and am quite willing to compromise."

On December 4, 1988, I reported to Mehrtens about a conference on the history of mathematics at the Mathematical Research Institute [Mathematisches Forschungsinstitut] Oberwolfach in early December, which I had been able to attend even before the fall of the Berlin Wall (November 1989) due to the political thaw. There, among other things, I had unsuccessfully tried to obtain access from the director of the institute, Martin Barner (1921–2020) to the estate he administered of the chairman (Vorsitzende) of the DMV, Wilhelm Süss (1895–1968), who had been influential during the Nazi period. Research on mathematics under the Nazi regime tended to be hampered, even in the 1980s and 1990s, by German mathematicians, especially if their

<sup>17</sup>"Foreign politics" here means in relation to other social groups even within Germany.

<sup>18</sup>I refer to the contribution by Mitchell Ash in this issue, which discusses Mehrtens' frequent and fruitful use of the notion of self-mobilization, partly inspired by the historian of technology Karl Heinz Ludwig (1974).

<sup>19</sup>Specifically on this problem, he wrote me on 11 November 1988: "As for trifles like the term 'fascism,' such things should be settled in an introductory paragraph." Authors who used the originally Italian word "fascism" (fascismo) in the German context were often accused of ignoring important differences between Mussolini's Italy and Hitler's Germany. Recent research has demonstrated the existence and demagogic function of anti-Semitism in Italy for a period long before the Italian racist Laws of 1938.

teachers could potentially be the subject of historiography and if historians wanted to do more than just look at the production of “apolitical and pure” mathematics.<sup>20</sup> Several applications for funding of the topic “Mathematics in the NS,” in particular one that David Rowe submitted to the German Research Foundation in 1996 on my behalf, were rejected by mathematical reviewers. As late as 1997, interested historians (Kneser, Epple, and Speck 1997) could not retrieve important files concerning Süß, which several years before had been temporarily accessible for a historical contribution to the centenary volume of the DMV (Schappacher and Kneser 1990). It was not until the late 1990s that younger historians of mathematics, especially Moritz Epple and Volker Remmert (Remmert 2012), succeeded in obtaining access for historians to the DMV files and to the Süß Nachlass. These files are now in the archives of the University of Freiburg/Breisgau, Süß’ place of work, near which the Oberwolfach Institute, founded in 1944 under Nazi rule, is located.

At the Oberwolfach meeting in December 1988, there had also been a discussion with the prospective publisher about our book project. An impression of the reluctance to discuss political topics in the history of mathematics, even among publishing house employees, is given by a letter that Hans Wußing sent to Mehrtens on December 9. In this letter, Wußing was responding to a positive reaction from Mehrtens on November 12 regarding the book project, and then wrote:

A few colleagues were very skeptical about so-called “political” titles. The majority, however, is in favor, including the choice of the author Mehrtens (and Reinhard). But all expect—and I have expressed this clearly—that the book should not deal merely with politika, institutional, etc., but should be brought as near as possible to the content of mathematical development itself.

I then sent Wußing the preliminary table of contents of the book on January 13, 1989, and wrote:

Of course, about 90% of the page count will be taken up by the relationship between society and mathematics and its institutions; after all, the working title of the book is “Mathematics in Fascist Germany” and not “Mathematics between 1933 and 1945.” If you could be so kind as to confirm to Herbert or me that you approve of this intention, it would be nice.

With the new year 1989, the cooperation between Mehrtens and myself became more intense, despite the still existing division of Germany. Questions of interpretation came more to the fore in our discussion. In addition to Mehrtens’ empirical work, his more interpretive work also became important to me. I certainly did not want to restrict my part of the project to a pure collection of “facts.” I was impressed by Mehrtens’ 1984 article, published only in German, and entitled “Anschauungswelt und Papierwelt” (World of Intuition versus World on Paper) (Mehrtens 1984). Here he pursued the ideological-historical dimension in the transition of mathematics to the Third Reich. The paper contains a reinterpretation of the dispute on the foundations of mathematics (Grundlagenstreit) between intuitionism and formalism, and was a nucleus of Mehrtens’ future book on modernity in mathematics (Mehrtens 1990). I was particularly impressed by how Mehrtens—when discussing pre-Fascist ideologies or ideological continuities in general—always spoke in a nuanced manner of historical “possibilities” and “potentials,” and dismissed the idea of necessary connections. In the book and partly already in the 1984 paper, Mehrtens would interpret the anti-Semitism in Bieberbach’s racist “German Mathematics” within the broader framework of the alienation from “Anschauung” and the abandonment of the ontological binding of mathematical objects brought about by modernism. I still feel today that several aspects of the 1984 article, in particular the discussion of the well-known “Forman thesis” about the influence of

<sup>20</sup>In a congratulatory article on the occasion of Mehrtens’ sixtieth birthday, Moritz Epple describes the warnings that a former leading functionary of the DMV sent to Süß’ widow. In these, he advised her not to allow Mehrtens access to crucial files because Mehrtens was allegedly lacking “objective” judgment (Epple 2006, 123).

Weimar culture on physics and mathematics (1971), could have been used with profit for Mehrtens' book on modernity as well, and would thus have connected the latter more closely to the topic of mathematics under NS.

When preparing our book, Mehrtens and I discussed Bieberbach's role intensely, and from various angles, in particular his ambiguous and changing position vis-à-vis mathematical axiomatics, and its relation to his seemingly sudden conversion to National Socialism in 1933. In my habilitation thesis (1987), I had discussed the policies and strategies of the classical German reviewing journal *Jahrbuch über die Fortschritte der Mathematik* (1987), which was heavily influenced by Bieberbach at the Academy of Sciences in Berlin. When looking at the competition between the *Jahrbuch* and the more modern *Zentralblatt* from 1931, I found that Bieberbach, and some other more conservative German mathematicians, saw a subliminal connection between the systematic, collecting function of the *Jahrbuch* and the foundational, rigor-assuring function of mathematical axiomatics. Bieberbach approved of the latter function of axiomatics, but he was suspicious of the creative, expansive functions of axiomatics, as well as of uncontrolled and unsystematic mathematical reviewing. Again, more on the empirical side, I was impressed by Mehrtens' finding that Bieberbach's racist and partly intuitionistic "Deutsche Mathematik" lost support within the regime in the second half of the 1930s, once it had fulfilled its function of giving a rationale for the expulsions of Jewish mathematicians, and once pragmatic mathematical work was needed in preparation for the war (Mehrtens 1987b).<sup>21</sup> All this would have found a place in our book.

Although, as described at the beginning, I was looking for new interpretations, and, in particular, had left behind the idealizing and anthropocentric view of science as a "humanistic pursuit of knowledge," I could not follow Mehrtens in all directions. On December 11, 1988, for example, I wrote to him:

Can one really speak of a "power politics immanent in science" or of "fascism capability [Faschismusfähigkeit] of natural sciences"? Doesn't one go there into the proximity of fashionable irrationalisms? You once wrote to me in a letter (18.5.84): "I do not believe that science is politically-morally valuable, rather the opposite, then as now." From where comes your conviction "rather on the contrary"?

Mehrtens answered me on January 2, 1989, among other things with the following:

That what is driven as history and philosophy of science etc. is still to more than 90% the repetition of the success and progress history, in which it is time to believe no more. The problem is the uncontrolled dynamics, and acceleration effects the NW [natural sciences] had all times in the history. Therefore "rather the opposite." ... I am—in all caution—inclined to consider psychoanalytical explanatory approaches. Should you mean this by "fashionable irrationalisms," then I immediately confess to my concept of rationality, which may be different from yours.

Partly reacting to a discussion paper (Mehrtens 1988) which Mehrtens had sent me attached to his letter, I ventured a few more objections in a response on January 13, which today, shortly after the Corona pandemic, may again sound reasonable and at the same time once again appear like a futile appeal:

I believe in the necessity and enforceability of societal reason [gesellschaftliche Vernunft]. This is also true of the control of science, and fascism was certainly not the system that could

<sup>21</sup>Cf. Mark Walker's paper in this issue, which stresses Mehrtens' discussion of the twofold integration of science and mathematics into the NS systems, once (and temporarily) as "Aryan science" (*völkische Wissenschaft*), and once as science in the service of "national tasks" for the "German people" (*Volksganze*).



guarantee this control in the interest of man. I know that mathematics and science are not capable of equipping individuals or groups with this societal reason. Nevertheless, I would not go so far as you that natural scientific reason in its institutionalized form directly undermines societal reason (perhaps insinuation on my part!). I'm also a little afraid that capitalism and fascism will be too much exonerated in this way.

Passages in Mehrtens' discussion paper like the following had been hard for me to swallow:

Opening up to critical analysis the social domination inherent to natural science and its taboos (which is more or less shared by all areas that associate themselves with the "quasi-religion science") would be the most important goal of a science research that is so "responsible" to also question itself in the process. There are approaches to this, the sharpest attacks on taboo boundaries probably in feminist analysis. Incidentally, it could be that the idea of "science" completely dissolves in the process. (Mehrtens 1988, 108)

But I conceded:

"I admit that I clearly have some catching up to do there, that I simply lack some food for thought. Therefore, I have some vague resentments—for example, I think feminism as a worldview is weird—but maybe that's premature."

The latter resentment was perhaps related on the fact that the emancipation of women in the GDR was more advanced than in West Germany. I felt myself to be a spontaneous and matter of course "feminist"<sup>22</sup> and probably for that reason could not quite understand the call for "feminist theory," although my mother's experiences had sensitized me to the inequalities that remained in the East as well.

## 2. Mehrtens' habilitation thesis on mathematics and modernity and the decline of our project

On June 26, 1989, Mehrtens fulfilled his warning from August of the previous year and sent me the draft of his approximately 400-page habilitation thesis. On September 24, in a first remark on it, I wrote to him along the lines of my previous reservations: "Of course I do not understand the 'phallic One' [phallische Eins] and related topics."<sup>23</sup> Previously, on September 15, 1989, I had sent Mehrtens four pages of notes on his manuscript, which was to be published a year later as his book on *Modernity in Mathematics*.<sup>24</sup> Among other things, I wrote to him:

Mathematics [had], according to you, largely become a theory of itself . . . This could give mathematical laymen a skewed picture of mathematics. I would anyway relate the discussions of modernity and counter-modernity much more strongly to concrete problems of the content of mathematical research, to discipline-political positions there. This motivation comes up short [in Mehrtens' manuscript] compared to the general philosophical, political etc . . . Most of these mathematicians realized that logic and imagination, heuristics in mathematics belong

<sup>22</sup>In the years that followed, I published several times on the women mathematicians Hilda Geiringer and Emmy Noether, among others, and their struggles for recognition. I have also reflected on my mother's career as a professor in the GDR (Siegmond-Schultze 2019).

<sup>23</sup>Mehrtens had alluded to the role of the natural number One (1) as counterpart to the erectile organ in the Lacanian psychoanalytic theory of mathematics. Later in my work I occasionally recognized the role of psychoanalysis in philosophical and psychological reflections made by some mathematicians (Siegmond-Schultze 2022b).

<sup>24</sup>A somewhat more detailed discussion of Mehrtens' book from 1990 is in my biographical essay for Mehrtens in *Historia Mathematica*. See (Siegmond-Schultze 2022a).

together. What was up for discussion was mainly the historically necessary relationship in a concrete problem situation . . . . I have doubts whether Poincaré, the poet and philosopher, compared to Hilbert, can be labelled as a representative of “counter-modernity,” even with regard to mathematics. For philosophy in general and cultural theory he certainly cannot. But as “perhaps the most important spokesman for non-Euclidean geometry in France” [quoting here Mehrtens’ manuscript] and given his conventionalist positions, it seems doubtful to me even for mathematics. Poincaré and also Weyl were just people who thought strongly in contradictions and were perhaps representatives of both modernism and counter-modernism.<sup>25</sup>

It seems to me today that I had partly misunderstood or interpreted Mehrtens too narrowly here, especially with regard to his notion of counter-modernism. Mehrtens himself explained in a later article:

The counter-modernist attitude arises with modernism. It is part of modernity, of the modern world. That is why I chose the term counter-modernism instead of anti-modernism. It is the counterpart to modernism, insisting on the question whether there is not some natural substance to the truth and meaning of mathematics. (Mehrtens 1996b, 522)

But I presume that some readers understood even less than I did when they read Mehrtens’ 1990 book.

With the publication of this book, the collaboration between Mehrtens and myself was essentially over. I should have taken his August 1988 warning more seriously. As late as 2006, he said the following in an interview about the priority he had given to his modernity book:

The book on mathematics in National Socialism, which I actually wanted to write, I never finished, because the first chapter had already turned into a book of its own, “Moderne Sprache Mathematik.” . . . But I had published quite a bit in the field of political history of science, but rather generally, on the one hand, and lectured on mathematics in a way that was praised as being understandable to historians, on the other hand. Most historians of mathematics are unable to do that and don’t even try because they just live among themselves. (Mehrtens 2006, 4)

The remark about historians of mathematics is perhaps somewhat unfair and, at the same time, somewhat at odds with Mehrtens’ own earlier empirical work. The passage in the interview, which should perhaps be taken more as a spontaneous utterance, also contradicts his own vacillation between our project and his habilitation in the late 1980s. But the interview probably does reflect Mehrtens’ gradual alienation from mathematics and the history of mathematics, which had been fostered by some experiences, especially conferences in Oberwolfach.

On December 19, 1999, Mehrtens congratulated me—now by email, of course—on my appointment to Kristiansand in Norway. He then referred to a workshop planned for the end of January/beginning of February 2000 in Oberwolfach, with the title “The History of Mathematics of the 20th Century”: “See you then in O’w’ach. I can’t quite get away from the subject, I keep getting talked into doing something. Well . . .”

The abstract for HM’s presentation was:

National Socialism and Mathematics as Cultural Techniques

Mathematical cultural techniques (counting, ordering, mapping . . .) are a neglected historical phenomenon. Social control and organization played an enormous role for

<sup>25</sup>I refer the reader to Jeremy Gray’s article in this issue and his discussion of Henri Poincaré (1854-1912) in comparison to Mehrtens 1990.

National Socialism and ought to be studied in relation to the tools used. The mathematical in such fields plays an ideological role and a functional role simultaneously. This view of the tools of control and self-control of modern societies relates to the basic question of “ambivalence and modernity” (Zygmunt Baumann).

In the discussion, several mathematicians and historians were very critical of this lecture, and regretted the lack of reference to mathematical research work or teaching in the NS, (i.e. any specific reference to “the mathematical” as they understood it). I was no support for Mehrtens in the discussion either. I had a bit of a guilty conscience afterwards and therefore wrote to him one day after the end of the workshop on February 6, 2000:

I simply cannot understand that you voluntarily and one-sidedly go back to the level of philosophers who only understand about science and mathematics that they have to do with “quantity” and “number.” . . . Or do you argue the other way round: just in front of philosophically uneducated mathematicians I emphasize these questions, in front of philosophers, however, rather the scientific ones? That would be an argument, maybe it would have tamed the people, if you had announced it at the beginning.

Mehrtens replied immediately on February 7, 2000:

I really did not understand your question in the discussion . . . . It came in the series of rather annoying attacks . . . . My offending the audience [meine Publikumsbeschimpfung]<sup>26</sup> has the form: The history of mathematics is a village where I have some good old friends. When I get there, I’m happy to see them again, but it very quickly becomes clear to me why I left the village. There are a few unpleasant characters everywhere, that’s not the problem. It’s the inflexibility and intellectual modesty with which people fit into their village life that gets on my nerves. I felt the same way four years ago when I was back in Oberwolfach after an even longer break, and I feel the same way now; the mathematicians<sup>27</sup> have made it even worse.

How do you actually come up with “philosophers”? I don’t present to philosophers and I read relatively little philosophy. At the moment I’m doing a seminar with a literary scholar and one with Ute Daniel, with whom I’m discussing historical theory quite intensively.

I would describe my position as that of a cultural scientist [Kulturwissenschaftler], and what I understand by cultural science has a lot to do with theory. If the villagers have slept through two decades of intellectual development, then it’s no wonder that they get all worked up when someone comes along and tells them that the world has changed and is continuing to change, and then they beat the messenger because they don’t want to hear about it. It is much too exhausting to turn on one’s own head. Of course, there are quite a few exceptions.

I live somewhere else, and I don’t work on academic mathematics anymore. I send you the last publications for normalization.

You realize the experience still upsets me a bit.

<sup>26</sup>Mehrtens is alluding here to a well-known play (1966) by the Austrian winner of the 2019 Nobel Prize for Literature, Peter Handke.

<sup>27</sup>Alluding to the pure mathematicians taking part in the most recent workshop.

### 3. Epilogue

I have been in occasional contact with Mehrtens—from Norway—in the years after 2000. He invited me to a German conference on the history of science in Wittenberg in 2002. There I lectured on the Marxist Dutch-American mathematician and historian of mathematics Dirk Jan Struik (1894-2000), whom we both admired, and whom I had interviewed in Boston in the 1990s.

On September 26, 2011, shortly after his retirement from Braunschweig and resettlement in Berlin, Mehrtens responded to the draft of my biographical essay on the East German historian of mathematics Hans Wußing, who had just died, in the following way:

Dear Reinhard,

Nice to hear from you. I started reading your “Elaborat”<sup>28</sup> yesterday evening and found it very exciting, because I have a parallel story, so to speak. I didn’t have a particularly intensive relationship with Hans Wußing, but it was a sympathetic acquaintance.

In this epilogue, I will conclude by saying something about the stimuli that Mehrtens’ theory-driven and empirical historical work of the 1980s—not so much his modernity book, which I may never have properly understood—gave me. In part, I will quote from articles of mine. In one I wrote about Mehrtens’ article, “The Social System of Mathematics and National Socialism” (Mehrtens 1987a):

The theoretically most informed approach to the history of mathematics in Nazi Germany (and, incidentally, to the history of science as a whole) is that by Herbert Mehrtens . . . . On the social level he considers, partly inspired by P. Bourdieu, mathematics as a system that exchanges knowledge products plus political loyalty in return for material resources plus social legitimacy. (Siegmund-Schultze 1998, 36)

The scientists’ amoral quest for social legitimacy of their research and the rulers’ ruthless search for scientific competence led to alliances that were also visible in the reconstruction of the science system in East Germany after the war, as I stated in an article which was certainly influenced by Mehrtens’ work on the social system of mathematics. There I wrote about a leading German number theorist and his behavior under the NS and in the GDR:

In Hasse’s case, the SED [i.e. the leading party] made a practical separation of professional competence and political responsibility (even more so than the Soviet authorities who were in charge at the time). In much the same way, the SED was quick to talk of “humanistic bourgeois scholars” in other cases, and to construe from supposedly selfless and disinterested scientific research a “higher morality” possessed by scientists and operative also outside of science. (Siegmund-Schultze 1999, 70)

This was also connected to Mehrtens’ discussion of the alleged and self-declared “resistance” of scientists in the Third Reich, by which they meant their rejection of ideological intrusions like Bieberbach’s “Deutsche Mathematik” (Mehrtens 1987b), while in reality they served the system in many ways, particularly during the war (Mehrtens 1996a).

Mehrtens and I were convinced that membership in the Nazi party was in itself no real criterion of guilt (though it had been misconstrued as such both in East and Western Germany after the war), and that younger scientists were often forced into formal political loyalty in order not to ruin their careers. This again invited comparisons to science in East Germany:

<sup>28</sup>Alluding to my self-ironic description in the preceding cover letter.

In neither system were established scientists forced to make such a strong declaration of political loyalty as joining the Party. By contrast, younger scientists undoubtedly furthered their careers by taking that step, if they had not already done so out of political conviction. For instance, the East Berlin mathematician Kurt Schröder joined the NSDAP in 1939 to advance his career, but in East Germany he attained eminent positions—including the rectorate of Humboldt University—without joining the SED. (Siegmond-Schultze 1999, 79)

Mehrtens would approve of careful comparisons between NS and GDR, even given the dangers of anti-communist simplifications as within the theories of “totalitarianism.” He wrote: “The comparison of the GDR and the Nazi state is necessary and meaningful, and a comparison made with awareness shows the differences as well as the similarities, and above all it is aware of the limits of comparability” (Mehrtens 1994, 14). I tried to use a nuanced concept of political engagement of scientists, for instance in my biographical studies on Helmut Grunsky, B. L. Van der Waerden, and others who had been one-sidedly accused by other historians and mathematicians of strong involvement in Nazi policies. As far as the international relations of German mathematicians during the NS are concerned, I profited much from Mehrtens’ article on the “Gleichschaltung” (toeing the line) of the DMV, where he showed that “Gleichschaltung” was delayed due to necessary regard for the international relations of German mathematicians (Mehrtens 1989a).

On the other hand, existing international contacts of dissenting mathematicians could be used by the Nazis as political arguments against them. Most importantly, international relations were misused to pursue strategies of a German dominance in European mathematics. My own contributions in continuation of our failed project went to a large extent into the direction of an analysis of the international dimension of German mathematics, culminating in my books on refugee mathematicians from NS-Germany (1998, 2009), on Rockefeller and the Internationalization of mathematics (2001), and on the International Congress of Mathematicians in Oslo 1936 (2020).

These are only a few of many inspirations and stimuli which I and other historians gained from Herbert Mehrtens’ research during the 1980s. I leave it to other, more competent writers to analyze the importance and influence of his book on mathematics and modernity. A comprehensive book on mathematics under the NS regime in all its aspects has not been written yet. The valuable book by Segal (2003), which is very much based on previous German publications, focuses on individual mathematicians and less so on institutions, general policies, and mathematical developments. Maybe in the future there will be a renewed effort for such a synthesis, using the work of a younger generation of historians that has since appeared. Personally, I feel safe to say that our, ultimately unsuccessful, project for a book on mathematics during the NS regime helped to prepare the ground for critical studies of the social and political history of mathematics during a difficult and crucial period for Germany and the world.

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