

NAZI RULE AND TEACHING OF MATHEMATICS IN THE THIRD REICH, PARTICULARLY SCHOOL MATHEMATICS

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Abstract

The paper investigates the consequences of the Nazi seizure of power in Germany in 1933 for the teaching of mathematics on several levels, particularly for school mathematics. The roles of the Mathematischer Reichsverband and the Förderverein during the political coordination will be investigated. Particular emphasis is put on the reactions by school and research mathematicians, in particular by the leading representative of mathematical didactics, Walther Lietzmann, the research mathematician Georg Hamel, and by the would-be didactician of mathematics, Hugo Dingler. It will be shown that in the choice of the subjects of mathematics teaching, the Nazi rule promoted militaristic as well as racist and eugenicist thinking. Some remarks on the effects of the reform of 1938 conclude the paper. Much emphasis is put on basic dates and literature for further study.

1 NAZI SEIZURE OF POWER, DISMISSALS AND “GERMAN MATHEMATICS”

After the Nazis had seized power in Germany in early 1933 there was of course concern among mathematicians and mathematics teachers about the consequences for mathematics both on the university and school levels.

The most immediate and visible effect were the dismissals. The purge of school teachers seems to have been on a much lesser scale than the dismissals at the universities: apparently much fewer teachers were affected by the “Aryan paragraph” of the infamous Nazi “Law for the Restoration of the Civil Service” of April 7, 1933.¹ One knows of several German-Jewish mathematics teachers who later were murdered in concentration camps,² and the chances of emigration for teachers were slim. But the figures of expulsion from the universities were doubtlessly much higher, due to the high percentage of Jewish research mathematicians, which had sociological and political reasons dating back into the past of the German monarchy.

By 1937–1938, when also professors with Jewish wives had to go, about one fourth of the original teaching staff of 1933 had been dismissed from the universities. Not all of these positions were filled up again with “Aryan” professors, not least because the student numbers dropped seriously as well. At universities the drastic decline of enrolment of mathematics students was probably the most severe problem of teaching in the years to come: between 1932 and 1939, shortly before the war, the numbers of students for mathematics and physics

¹Wilhelm Lorey, in his history of the “Förderverein”, reported in 1938 that 10 out of 3165 of its members had been dismissed from the Verein due to the Aryan paragraph, although this definitely does not reflect the full percentage among teachers dismissed from school (Lorey, 1938, 108).

²Margarete Kahn, Nelli Neumann and others: For dismissals, emigration and victims see Siegmund-Schultze (1998–2008).

at German universities dropped from 7139 to 1270, i.e. down to about 18 % of the original number.³ This decline was apparently partly due to the anti-intellectual atmosphere in the Third Reich. Around the year 1937 there was also much talk about the growing unattractiveness of the teacher's profession, not least due to the opening of alternative careers in the army (Wehrmacht) and in the industry.⁴ But an even bigger part of the decreasing student figures was due to the decline of birth rates during World War I which now affected the universities. One has to look at these more general conditions too, for instance when discussing the fact that women were sometimes forced out of the teaching profession under the Nazi slogan: "Against double-income for families!" As a matter of fact, there were so-called "celibacy-rules" even during the monarchy which led to the dismissal of female teachers once they got married.⁵

Anyway, the consequences of Nazi rule on the student and teacher bodies were, severe:

School and University policies in Nazi-Germany: important dates, particularly with respect to mathematics

1933	April 7	Law for the Restoration of the Civil Service, including the "Aryan" paragraph 3
	April 22	Formation of the National Socialist Student Organization (NSStB)
1933	April 25	Law against "overcrowding" of German schools and Universities (enrolment for Jewish students only up to the average in population of 1,5 %, only 10 % of students to be women allowed)
	Oct.	Nazi-Coordination of Reichsverband (MR) and Förderverein
	Nov.	Abnormal developments in the realm of pedagogy of mathematics (memorandum Dingler)
1934		Labour Service (Arbeitsdienstpflicht): half a year before university
1935	March 16	Reintroduction of general draft for boys: delay of university for another 2 years
		MR — "Handbook for Teachers" with the title "Mathematics in the Service of National Socialist Education" (ed. A. Dorner): many racist and militaristic assignments
		First "National political Educational Institution" (Nationalpolitische Bildungsanstalt = Napola) parallel to normal schools
		Start of student competition ("Reichsberufswettkampf"): only 5 % of students take part
1937		One year pre-university course for future teacher students, which had to be taken at a "Hochschule für Lehrerbildung"
		Beginning shortage of academically trained personnel, reaching out for women to become students
1937/38		"Reorganisation of Secondary School" proclaimed by the ministry in January 1938
1938		The "Förderverein" dissolves itself and becomes part of the NSLB
		Universities accept as students only "half-breeds", no "pure" Jews anymore
1939		Only half of students figures compared to 1932, in mathematics/physics combined only 17,8 %, with mathematics major only 7,4 %
1939/41		Some universities temporarily closed, introduction of trimesters, then abolished due to decline in quality
1942		Introduction of diploma for mathematicians as alternative to teacher
1944		Percentage of women among students 50 %: six times compared to 1939
	July	Stop of registration for universities

³Mehrtens (1989a, 50). The overall figures, not restricted to mathematics/physics, showed a 50 % decline.

⁴Feigl (1937).

⁵Abele et al. (2004, pp. 26 and 115). At least on the level of some individual German states these rules were applied even in the Republic of Weimar.

But how about the changes in the content of mathematics and of mathematics teaching at schools and universities?

Of course there was more than just dismissals and political coordination, there was ideological interference into mathematics and mathematics teaching which became palpable from the very beginning of the regime. Already the dismissals themselves were partly “explained” or given a pretext by the need for a “proper” education of German mathematics students in the sense of a racist purity which was proposed by the infamous theory of “German Mathematics” (“Deutsche Mathematik”), promoted for instance by the capable function theorist Ludwig Bieberbach.

Ludwig Bieberbach in his talk “Persönlichkeitsstruktur und mathematisches Schaffen” (“Structure of personality and mathematical creativity”) before the “Mathematischer Förderverein” in April 1934:

Defending expulsions of Jews based on racist ideology, Bieberbach said on the Nazi-led student boycott in Göttingen against mathematician Edmund Landau:

A few months ago differences with the Göttingen student body put an end to the teaching activities of Herr Landau... This should be seen as a prime example of the fact that representatives of overly different races do not mix as students and teachers... The instinct of the Göttingen students was that Landau was a type who handled things in an un-German manner. (236)

Those “theories” which had parallels in physics, were not really believed by most of the leading mathematicians, Jewish and non-Jewish alike. But they were picked up by others who found in them convenient tools to defend and pursue the expulsion of Jews from the universities, and, not least, to open up new career opportunities for themselves.

Some idea of the fear for their field even among non-Jewish mathematicians is given in a talk, which the Rostock mathematician Gerhard Thomsen held in November 1933 with the title “The danger of pushing back the exact sciences at schools and universities” (Thomsen 1934).

Gerhard Thomsen’s (1899–1934) warning, in November 1933 in Rostock, against the “danger of pushing back the exact sciences at schools and universities”.

Thomsen used national-socialist vocabulary, defending fundamental science with the argument, that also

the whole theory of an improvement of our race... presupposes a long-term process of at least one hundred years. (p. 165)

Thomsen did not call the fascist rearmament policy into question:

We need the sports fields and drill grounds of brain training and concentration schooling for the intellectual special soldiers of the Third Reich. We must realize, that in a future war an ingenious brain, which invents new weapons, can be more valuable than a thousand soldiers. (168)

There are strong indications⁶ that Thomsen’s suicide eight weeks later, on January 4, 1934, was connected with his speech of November 1933 and the resulting political pressure against him.

At about the same time, in November 1933, the old Nazi activist and Nobel prize winner in physics, Philipp Lenard, sent a memorandum, written by the philosopher of mathematics and physics, Hugo Dingler (1881–1954), to the Bavarian ministry of education, which in December that same year sent it on to the Ministry of the Interior in Berlin. It was entitled:

⁶Some evidence for this assumption gives Thomsen’s personal file in the archives of Rostock University.

“Abnormal developments in the realm of pedagogy of mathematics and of the exact sciences in the last half century.”⁷

“Abnormal developments in the realm of pedagogy of mathematics and of the exact sciences in the last half century” (Hugo Dingler, memorandum November 1933)

“Today’s teacher training in mathematics and physics at the traditional and technical Universities is a four years study, where there are taught exclusively topics of mathematics which are of no or almost no use for the teachers’ future profession. . . By way of contrast the subjects which later have to be taught at school are not part of the teachers’ training. . . This unbearable state of affairs is historically understandable but is deliberately perpetuated by the responsible professors at the universities. Mathematics is very much dependent on current fashions, because it is so broad and cannot be developed in all directions simultaneously at any time. This became a danger since the 1860s with the mass invasion of Jewish mathematicians. The natural and harmonious focus on mathematical invention of an individual genius was replaced by the lust for power of cliques with propagandistic promotion of their favorite subjects. . .” (p. 20)

Dingler’s a-historical and hatefully anti-Semitic text, which blamed Felix Klein⁸ for much of the ‘abnormal developments’ in German mathematics could not fail, however, to discuss — at the same time - some general and permanent problems of mathematics teaching in special National Socialist disguise. On that more below.

Mathematicians and mathematics teachers had to react to dangers as those coming from Dingler’s anti-Semitic memo and also from some “German physicists”, such as Lenard, who blamed teaching and research in mathematics for its connections to Einstein’s theory of relativity and similar developments which they found deviant or “abnormal”.

2 COORDINATION (GLEICHSCHALTUNG)

The first reaction of the mathematicians was on the level of their professional organizations. For this reaction we have Herbert Mehrtens’ article of 1985, which was published in English in *The Mathematical Intelligencer* in 1989 and is still fundamental.

Initially, in 1933/34, the organization of research mathematicians and research-minded teachers, the *Deutsche Mathematiker-Vereinigung* (German Mathematicians’ Association), had some qualms to let itself coordinate with the Nazi system,⁹ not least due to consideration for the foreign members and because of the impression this left abroad.

In contrast, the reaction to the Nazi seizure of power by another organization of mathematicians, closer to the real needs of mathematics teachers, namely teaching, was quite different. The “Reichsverband deutscher mathematischer Gesellschaften und Vereine” (Reich Association of German Mathematical Societies and Organisation, short “MR”) was the example of a ‘joyful’ self-coordination in mathematics. The former chair (since the foundation in 1921) and new *Führer* (leader) of the MR, Georg Hamel (1877–1954), himself by the way a good research mathematician, made the following statement in September 1933:

We want to cooperate sincerely and loyally in accordance with the total state. Like all Germans, we place ourselves unconditionally and happily in the service of the National Socialist movement, behind its Führer, our Chancellor Adolf Hitler.¹⁰

⁷Dingler (1933). On Dingler, who as a philosopher was not without merits and counts as a forerunner of modern ‘constructivist theory of science’, see for instance Wolters (1992).

⁸Among other things, Dingler called Klein “at least half-Jewish” (p. 3), which had no basis in the facts.

⁹Later, in 1937, the DMV became by itself very active in expelling the remaining Jewish members: see R Emmert (1999).

¹⁰Quoted from Mehrtens (1989a, 48).

The MR had been founded in 1921 basically within the membership of the DMV “for the effective representation of common interests”,¹¹ among other things because the allotment of mathematics at schools was in danger of being reduced.

Close relations existed between the MR and the “Deutscher Verein zur Förderung des mathematischen und naturwissenschaftlichen Unterrichts” (German Group for the Advancement of Mathematical and Natural Science Instruction), called “Förderverein” (advancement group) in short. It is known that many teachers and particularly their organizations turned quickly to the Nazi party.

The Förderverein associated blatantly with the new state in the spring of 1933. It offered its services, aligned itself with the National Socialist Teachers’ Union (NSLB) and assimilated the “Führer-principle” and the “Aryan Paragraph” into its by-laws.

Hamel spoke on the meeting of the Förderverein in October 1933 on “Mathematics in the Third Reich”. At the conclusion Hamel stated:

Mathematics as a teaching of spirit, of spirit as action, belongs next to the teachings of blood and soil as an integral part of the entire educational process. The unity of body, mind, and spirit in the human parallels the unity of body hygiene, mother tongue, and teachings of blood, soil, and creative spirit in education. Mathematics is the central core of the latter.¹²

One does not have to believe that Hamel actually felt very strongly about blood and soil, bodily hygiene, and the mother tongue. He was only concerned about mathematics. The actions of the Förderverein and the MR were obviously aimed at securing a safe place for mathematics in the National Socialist school curriculum.

In 1934 the MR commissioned a *Handbook for Teachers* with the title “Mathematics in the Service of National Socialist Education”. The editor of the Handbook, the teacher Adolf Dorner, wrote in it, when it appeared in 1935:

This handbook methodically strives to hammer into the people the basic facts that determine the policy of the government.¹³

The Handbook had many assignments of military character but also of the following:

Problem from A. Dorner (ed. 1935): *Mathematik im Dienste der nationalpolitischen Erziehung* (Mathematics in the Service of National Socialist Education)

This collection was commissioned by the “Mathematischer Reichsverband” (Reich Mathematical Association), where the pure mathematician Georg Hamel was the “Führer”

“Assignment 97.: A mentally ill person costs 4 German marks (RM) a day, a cripple 5,50 RM, a criminal 3,50 RM. In many cases a civil servant has only 4 RM per day, a public employee barely 3,50 RM, an unskilled worker not yet 2 RM per head of the family. (a) represent these figures graphically.

According to cautious estimates there are 300 000 mentally ill persons, epileptics etc. in nursing homes. (b) how many loans for young families at 1000 RM without refund¹ could be spent from this money each year?” (42)

Footnote 1: For each child that is born alive in the marriage one fourth of the original loan is relinquished.

Of course, this kind of assignments looks almost criminal today, with us looking back at the period and with our knowledge of Auschwitz. In some respects, for instance for the use of words like “cripple”, one has to consider that these words were in use even before the

¹¹Mehrtens (1989a, 55).

¹²Ibid.

¹³Dorner (1935, 34). All quotations from German publications have been translated by the author.

Nazis came and reflected vocabulary unusual today but common at the time and not just in Germany.

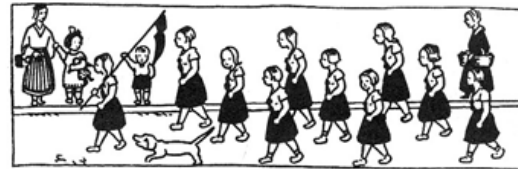
Above all one has to consider that ideologically charged school books were nothing new in the time after 1933. One may compare a *Rechenbuch* which was in use in the South West of Germany in its different editions before (1929) and after 1933:¹⁴



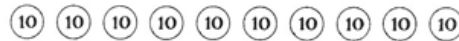
Was die Großmächte für ihre Streitkräfte ausgeben.

Land	Ausgaben auf den Kopf der Bevölkerung in M.			Land	Ausgaben auf den Kopf der Bevölkerung in M.		
	1914	1925	1927		1914	1925	1927
Deutschland				Italien			
Deer.	25,9	6,6	6,8	Deer.	10,5	9,0	11,1
Marine	7,0	2,3	2,1	Marine	7,4	4,1	5,1
Großbritannien				Bereinigte St.			
Deer.	12,7	18,9	17,7	Deer.	4,1	12,5	12,5
Marine	45,4	25,7	24,7	Marine	6,2	11,9	12,3
Frankreich				Japan			
Deer.	19,8	21,3	21,1	Deer.	3,5	6,0	4,8
Marine	12,6	5,9	7,8	Marine	3,7	7,0	7,7

Mein Rechenbuch, Heft 8, Stuttgart 1929 (S.36)



Die Zehnerreihe.



Deutsches Jungvolk und Bund deutscher Mädel.

152. In einem Dorfe sind 17 Jungen beim Jungvolk. Im Nachbardorf sind es 8 mehr.

153. In einer BDM-Schar sind es zuerst 12 Mädchen. Es kommen dazu 6, 5, 8 Mädel.

154. In der Schar von Anna sind es 24 Mädchen, in der Schar von Grete 32.



266. Zur Flaggenhissung sind 240 Schüler angetreten. Eine Klasse mit 40 Schülern wird noch gemeldet.

Paritätisches Rechnen: Pimpfe und Jungmädchen in Rechenaufgaben aus Mein Rechenbuch, Heft 1, Heft 3, Heft 4

In his investigation of the coordination (Gleichschaltung) of various mathematical societies under the NS regime, Herbert Mehrstens comes to the following conclusion:

How much or how little National Socialist conviction stood behind [these statements by Hamel etc.; R.S.] appears immaterial. Hamel and others played a role as representatives of the professional interests of mathematicians and teachers. Where there only [!] school instruction was involved, their politics were accommodating and without scruples. The MR functioned as a buffer for the professional scientific societies, especially the closely allied DMV: because the MR conformed so radically, the DMV could defend its autonomy. I am not aware of any protests against the MR by the DMV or by the GAMM [which was the society for applied mathematics; R.S.].¹⁵

3 DIFFERENT LEVELS OF MATHEMATICAL TEACHING AND DIFFERENT INTEREST GROUPS INVOLVED

As mentioned already above, e.g. with respect to the relation between DMV and Förderverein, there were different interest groups involved in mathematical education.

¹⁴The following reproductions are taken from Genuneit (1984, pp. 207 and 221).

¹⁵Mehrtens (1989a, 54).

With respect to mathematics teaching in the Third Reich we have *at least three different groups of people* who pursued different goals: research mathematicians, mathematics teachers, and non-mathematicians (philosophers, politicians). Particularly the third group again split into many different positions.

While research mathematicians and mathematics teachers shared a common tradition, which is visible in their frequent and revering reference to the great Göttingen reformer Felix Klein (1849–1925) around 1900, the third group was not even necessarily convinced of the benign role of Klein for mathematics or mathematics teaching, which is expressed most blatantly by the anti-Semitic philosopher and Einstein-foe, Hugo Dingler.¹⁶

With respect to the particular problem of school mathematics, which is the focus of this paper, the interests of the three groups differed too. And even among research mathematicians there were different positions with respect to mathematics teaching.¹⁷ Already in 1924 von Mises had opposed those mathematicians who thought or pretended that a defence of the quantity and the pure number of mathematics hours at schools would guarantee a modern approach to education and would, so to speak, automatically lead also to more understanding among the pupils for the urgent demands of contemporary technology. Already then, in the 1920s, the rather superficial interest in school mathematics on the part of many research mathematicians, namely merely its quantity as opposed to its quality, was visible: it was in the interest of the university mathematicians to have enough students for the teaching profession, but what the teachers really did at school was not that much of a concern to the research mathematicians.

Of course, in 1933, Jewish mathematicians such as von Mises had to go. But the old problems of school mathematics remained, exacerbated by the new ideological interference. Even Dingler's extremist memorandum of 1933 could not fail to deal with old problems of didactics, and not everything in the memo is wrong. Look for example at the following passage from Dingler's memo:

Precisely in mathematics, being so secluded and difficult to check from the outside, all kinds of evils can occur. The character of mathematics as a 'secret science' is, not unexpectedly, cultivated by interested circles... There is a tendency to marginalize all those areas and modes of presentation of mathematics which still have a simpler and more comprehensible structure such as elementary mathematics, together with pedagogy and history. Those are stigmatized as inferior...

I deem it necessary that a conspicuous part of the teachers' training at the university is already directed towards the future profession... For the third and fourth semester (later school subjects such as geometry and elementary astronomy) only such men [!; R.S.] are appropriate as university teachers, who have practical experience in school teaching at middle schools (Mittelschulklassen)... The condition that they shall have scientific merits must definitely *not* be upheld for such university teachers.¹⁸

Indeed, also in the 1930s there was the old conflict between a more systematic and theoretical method of teaching as opposed to mathematics teaching oriented towards field of application and daily use of mathematics. There was the question of the place of mathematical didactics at the universities or in preparatory courses. There was the old double

¹⁶I count here Dingler among the "non-mathematicians", although he had studied both mathematics and physics and aspired for a leading position as a didactics professor in mathematics. However Dingler's philosophical and political interests were clearly dominating his career.

¹⁷This I have shown in my talk on the applied mathematician Richard von Mises on the last HPM-meeting in Uppsala in 2004. See Siegmund-Schultze (2004).

¹⁸Dingler (1933), memo, pp. 21–22 and 27.

threshold between school and university at the entrance of the students on the one hand and at the departure of the candidates for the teaching career on the other.

4 DIFFERENT STRATEGIES WITHIN THE COMMUNITY OF TEACHERS, AND IN PARTICULAR THE ROLE OF WALTHER LIETZMANN

While Mehrstens has analyzed the coordination in the early period the Third Reich, an unpublished study by Ursula Guntermann, entitled *Walther Lietzmann und die Mathematikdidaktik im Nationalsozialismus* (1992) analyses the actions of the leading professor for mathematical didactics in the period, Walther Lietzmann (1880–1959). He is in a way *the* central figure to look at, if one wants to understand the continuities and discontinuities of mathematics teaching during the Third Reich compared to the period before.

He published the leading German textbooks on the didactics of mathematics since 1916. The later version of 1941 of his textbook, entitled *Mathematik in Erziehung und Unterricht*, was written together with the clear exponent of Nazi-ideology U. Graf in Danzig. Anyway it could not fail to exhibit traits of that ideology at that period of time.

Lietzmann had to follow the basic doctrines of Nazi pedagogy which can be perhaps most clearly identified as the following four:

Fundamental principles of NS-Weltanschauung and pedagogy According to Nysen (1969)

1. **Race**, biologicistic ideology and anti-Semitism. As overall aim of education: superiority of an Aryan race and right to rule over other people
2. **Elitism**: superiority of some “people’s comrades” (“Volksgenossen”) over others: this led to conservation of the traditional (hierarchic) three-level educational system (elementary school, middle school, gymnasium/real school) + foundation of “National Political Educational Institutions” (“Napola”).
3. **Leader-follower** principle (“Führer-Gefolgschaft”) which demanded indisputable obedience to authorities, subordination of the teacher to the director, the influence of political organizations in the school (Hitlerjugend, BDM etc.). Rejection of democracy
4. Ideology of “**people’s community**” (Volksgemeinschaft): social-demagogic rejection of class differences, based on race theory. Subordination of individual to community.

Lietzmann developed a certain political flexibility to cope with the NS functionaries. He was for instance chosen by the ministry as the “Führer” of the German delegation to the International Congress of Mathematicians in Oslo 1936, although he was basically a school mathematician. The political environment under the Nazis influenced also Lietzmann’s publications as the following list shows:

Walther Lietzmann’s publications before and after 1933: a selection

- *Methodik des mathematischen Unterrichts* (Book since 1916 until 1933)
- “Mathematics teaching and the homeland (Heimat)” (1924)
- “Mathematics teaching and military sciences” (1933)
- “Mathematics and political education of the citizens” (1935)
- “The mental attitude of the mathematician: heredity or education?” (1935)
- “The International Congress of Mathematicians in Oslo” (1936)
- “Military sciences and teaching in mathematics and the sciences” (1937)
- “The current tendencies in the teaching of mathematics and the sciences” (1937: Report to ICME)
- *Early history of geometry on Germanic soil* (book 1940)
- *Mathematik in Erziehung und Unterricht* (book 1941, together with Nazi U.Graf)

The Nazi doctrine of genes and race created particular problems for Lietzmann and other pedagogues as is revealed in his publication of 1935:

Walther Lietzmann (1935):

“The mental attitude of the mathematician, heredity or education?” (“Die geistige Haltung des Mathematikers, Vererbung oder Erziehung?”)

The original question looks critical, and seems to point to dangers of NS-ideology:

Didactics in mathematics has been fighting for decades against the assumption that mathematical talent is a pre-condition of any education at school. Now given that mathematical talent is inherited, is not a continuation of this fight doomed to failure? What task remains for mathematical education under these circumstances? (p. 363)

L. comes to a contradictory conclusion (he means actually inherent potential for development) which still can be read as though he pleads for equal rights of Jewish mathematicians:

Each individual heredity character (Erbcharakter) has particular dangers and particular strengths which are inherent only in him. On danger or strength is decided not by birth or conception but only by education and self-discipline (Selbstzucht). (363)

L. solves the problem by pointing to the individual’s duties to the people’s community:

Even a mathematical genius among our new youth is expected to show physical, social, and national (völkisch) attitudes, he has to be educated to be a full member of the nation (Volk). (364)

In his didactics textbook of 1941 one finds passages such as the following, which by the way alludes with shocking objectivity to the results of the expulsions:

We know today that some races have particular capabilities for spatial intuition which others lack. When we still had Jewish pupils in our classes, we all made the observation that they had difficulties with the intuitive parts of mathematics — by the way also in geography — while the arithmetical-calculational part was their proper domain.¹⁹

Tendencies towards Germanizing international mathematical notions occurred at that time as well.²⁰ They were supported by Lietzmann, although he and Lorey, the historian of the Förderverein, were sceptical with respect to too extreme efforts in this direction:

Fortunately the commission for Germanizing mathematical notions has *not* followed some proposals made by the otherwise very laudable German Language Association (Deutscher Sprachverein), who wants replace ‘Mathematics’ by ‘Science of Quantities’. This proposal is based on an old, now obsolete understanding of mathematics, which was used when I was a pupil.²¹

Lietzmann had to manoeuvre with the more extreme forces of the Förderverein, for instance Bruno Kerst, since 1933 the managing editor of the Förderverein’s journal *Unterrichtsblätter*, who recalled the past of mathematics teaching in the following way:

¹⁹Lietzmann (1941, volume I, 14).

²⁰They can be considered to be a nationalistic and mathematical echo to much earlier efforts by the pedagogue Joachim Heinrich Campe (1746–1818).

²¹Lorey (1938, p. 108). See Hofmann (1935). Lietzmann/Graf (1941, pp. 135–140) has a list of recommended Germanizations.

Bruno Kerst, managing editor of the *Unterrichtsblätter*, the journal of the “Förderverein”, in April 1933 in Erfurt (quoted by Lorey (1938), p. 105):

“In all those years after the [first!, R.S.] war, when pacifism was the big fashion and prescribed by the authorities, it were the school hours in mathematics which gave me and most of my colleagues the opportunity to talk with German boys about German military prowess.”

In 1935, Kerst published the book *Umbruch im mathematischen Unterricht* (= Upheaval in mathematics teaching). Here he recommend to do away with the traditional systematic structure of mathematical subjects and teach mathematics only from the perspective of special fields of application.

With respect to Kerst’s book *Upheaval* (Umbruch) of 1935 Lietzmann received the following letter from another more moderate teacher, Werner Dreetz:

Berlin teacher Werner Dreetz (1887–1960) in a letter to W. Lietzmann, Berlin, 28. November 1935 on the book by B. Kerst “*Umbruch im mathematischen Unterricht*”

“The ‘Upheaval’ (Umbruch) is a total Utopia if things are meant as radically as they are expressed: ‘Not chapters of mathematics but areas of daily life have to be treated.’ If our boys will be permanently exposed to national political assignments, there is going to be a splendid result in a few years time... How shall the boys be able to change school?... If there only would come somebody who cuts these extremists (‘Radikalinskis’) short. That the M.R. (Reich Mathematical Association) in its most recent circular has recommended the ‘Upheaval’ to special consideration is on Hamel’s own initiative and it has scared me somewhat. Please don’t forget to write the M.R. your opinion about Kerst.”

Dreetz’ letter points, once again, to the different interests of school teachers like himself and research mathematicians such as Hamel.

5 CHANGES IN SCHOOL MATHEMATICS, PARTICULARLY THE REFORM OF 1938

Against the backdrop of all this ideological and political pressure, with different strategies acting at cross purposes, what were finally the real changes in school mathematics, in addition to the indisputable changes of the character of assignments, the tendencies to Germanizing the mathematical vocabulary, the undeniable transport of anti-Semitic and militaristic ideology?

There had been the foundation of so-called “National political Educational Institutions” (Nationalpolitische Bildungsanstalt = Napola) in the early years of the regime, which paralleled the school system and where the political indoctrination was particularly gross. But the mathematical curriculum was apparently about the same there as in normal schools.²²

There was a “Neuordnung des höheren Schulwesens” (Reorganisation of Secondary School) proclaimed by the ministry in January 1938, supplementing guidelines issued already in 1937. It was the first major change compared to the guidelines of 1925 as to the percentages of mathematics and the relationship between schools and universities. It was to this reform that Lietzmann and Graf responded with their book of 1941.

Guntermann analyzes the new “Mathematical curriculum for secondary schools” which was published in 1938 in a journal edited by the ministry of education. She finds there passages like the following:

Using unambiguous notions, which are abstracted from the material conditions and from the sense, which are free from moral judgments and gained by pure

²²At least according to Lietzmann (1937a, p. 19), while Mehtens (1989b, p. 210), reports on reduced hours for mathematics in the Napola curricula of 1935.

intuition, mathematics creates for itself a building of doctrines, which is not influenced by any other sciences and can be explained in itself.²³

Guntermann argues convincingly that this quotation shows the traditional systematic and theoretical understanding of mathematics, as opposed to the one promoted by Bieberbach and others with their racist theories of mathematics. It seems to me one could argue that even Bieberbach was cautious not to reduce mathematics too much to applications, and the “pure intuition” in the quote from the ministry could still be interpreted as referring to some racial substratum. In his talk “Structure of personality and mathematical creativity”, held before the “Mathematischer Förderverein” in 1934 and quoted already above, Bieberbach said also:

To prove the importance of mathematics for the people one refers quite often to the applications which figured prominently in Klein’s reforms. . .

It seems to me that also mathematics is an emanation of our racial qualities (Betätigungsfeld völkischer Eigenheit) and everything which reveals our national character (Volkstum) in a forceful manner does not require additional justification.²⁴

The major organizational changes which resulted from the reform of 1937/38 were:

- a one year pre-university course for future teacher students, which had to be taken at a “Hochschule für Lehrerbildung” (University for teachers’ education). The latter institution was at the same time also responsible for training teachers for elementary schools: this resulted for prospective university students in a maximum waiting period of 3 and a half years between school and university, given other services such as army and labour service (Arbeitsdienst)
- a shortening of the 13 years curriculum at secondary schools to 12 years
- a reduction of the minimal time to finish university from 4 to 3 years

The percentage of hours taught in mathematics remained about constant at elementary schools, was reduced from about 16 % to about 13 % at lower secondary schools (Mittelstufe) and from 15 % to 11 % at higher secondary school (Oberstufe). Mathematics instruction at the philological branches of the higher secondary school was reduced to 2 hours a week which was still about as much as physics and chemistry combined.

6 CONCLUSION: LATER YEARS OF THE REGIME, CHANGING PROFESSION OF THE MATHEMATICIAN AND WAR

By the mid-1930s and with the impending war, the formula of the “service to the fatherland” had replaced the requirement of an unconditional conformation to ideology as the basis of National Socialist scientific and university politics.²⁵ The MR, with its traditional lobbying for applied mathematics and school mathematics, could easily adopt itself, in cooperation with the DMV. One result of this ‘pragmatic turn’ was the establishment of a new degree for mathematicians (diploma of 1942), qualifying for jobs outside the teaching profession. During the war, due to the wartime conditions and the dominance of Wilhelm Süss, the president of the DMV, the MR lost its relevance and it no longer existed by the end of the

²³Der mathematische Lehrplan für die höheren Schulen (1938), p. 187. As quoted by Guntermann (1992, p. 68) and translated here. See also Flessau (1984) and Radatz (1984).

²⁴Bieberbach (1934, 243).

²⁵Mehrtens, (1989a, 56).

war.²⁶ However, one has to look at the specific conditions in the schools which — unlike sometimes the industry and the army — could not be considered as political “oases.” The Förderverein had dissolved itself in 1938 and became part of the NSLB (see above). Political indoctrination continued at schools, breeding fanaticism in the youth which was visible until the last months of the war.

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²⁶ibid.

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