# “German Mathematics” – a curiosity with deadly side- and after-effects

Forum for matematiske perler
(og kuriositeter)

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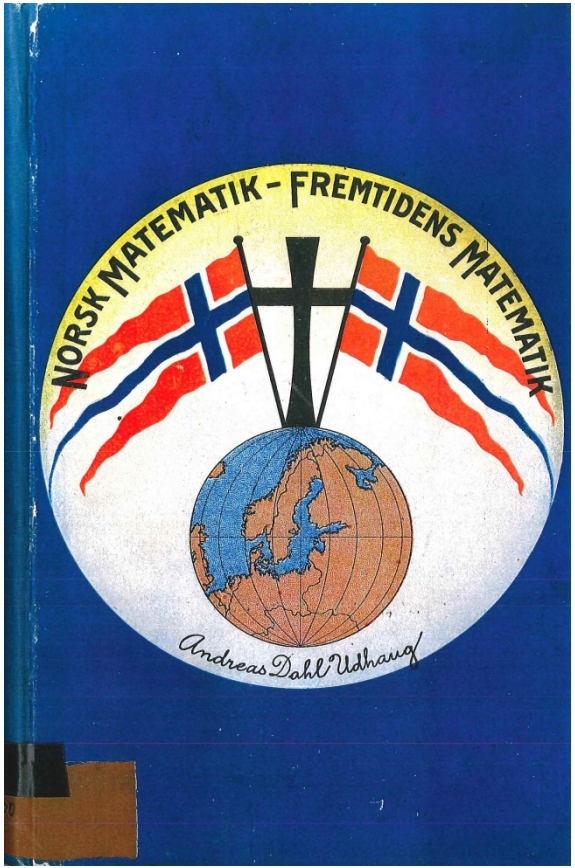
**Abstract**

Discussions of “styles in mathematics” have a long history. They are not necessarily nonsensical, but quite often they have had either nationalistic overtones or have reflected popular misunderstanding of mathematics.

It was reserved to the dictatorial regime of the German Nazis after 1933 that such pseudo-scientific talk about a “German mathematics”, which was allegedly superior at least for teaching “German students”, was supported even by some able mathematicians such as Ludwig Bieberbach. They used it to systematically discriminate against “foreign” and “Jewish” mathematics and to support the persecution of colleagues, in singular cases with deadly consequences. In addition to devastating emigration the foundation of a journal with the same name “Deutsche Mathematik” (1936) was another consequence of Nazi rule, which in the end damaged the development of German mathematical teaching and research.

**Various meanings and reasons for discussing «styles of mathematics» during history**

- Styles of presentation and teaching (logico-deductive versus intuitive-inductive)
- Styles of research (arithmetical-logical versus geometrical-intuitive approach)
- Pure versus applied mathematics, existence proofs versus constructive proofs
- Competition between mathematical schools, both national and international
- Nationalistic and philosophical predilection and prejudice
- Public resentment against mathematics, nurtured by individual experiences at school




**Udgivet privat**

Trondhjem i December 1916

1) Er det ret at kalde et system for eksakt, som vrimler av irrationelle størrelser og begreb, som ikke har noget paaviselig grundlag andet end en yderst mangelfuld logik?

2) Er det ret at opretholde et system, som er saa uhyre vigtig for menneskeheden, men som er i den grad indviklet og vanskelig, at det kun er tilgjængelig for en yderst liden brøkdel av menneskeheden?

3) Er det ret, at mindst 99 % av den ungdom, som har anledning til at lære matematik, skal oplæres i et system, hvis grundprinciper er delvis absolut forkastet av den høiere og den Ikke-Euklidske Matematik som ukorrekte og falske?

4) Er det ret, at børn og ungdom først skal synkverves og maaske tilføies ubodelig skade baade paa legeme og sjæl ved at bli ledet ind paa en vei, som de mere kundskabsrige matematikere ikke selv engang erkjender er den rigtige.

5) Er det ret, at mennesker skal maatte benytte f. eks. 5—6 aar av sit liv for at lære noget, som de mageligt og paa en bedre maade maatte kunne greie paa 1 aar?

Og de seneste begivenheder har opkastet dette tillægsspørgsmaal:

6) Er det ret, at mennesker skal dræbe og slagte hverandre som vilde dyr, og er dette et bevis for, at matematiken og alle de beregninger, som gir et saadant resultat, er korrekt og ret? Kortsagt, har menneskeheden med videnskaben som sin veileder regnet ret?

Der er forøvrigt ingen tid at spilde, da den nye norske cirkelring bestemt ved cir.=3.125 allerede skal være antaget og officielt anerkjendt her i landet i 1917.

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BY

FELIX KLEIN

*REPORTED BY ALEXANDER ZIWET*

PUBLISHED FOR H. S. WHITE AND A. ZIWET

New York
MACMILLAN AND CO.
AND LONDON
1894



Finally, it must be said that the degree of exactness of the intuition of space may be different in different individuals, perhaps even in different races. It would seem as if a strong naïve space-intuition were an attribute pre-eminently of the Teutonic race, while the critical, purely logical sense is more fully developed in the Latin and Hebrew races. A full investigation of this subject, somewhat on the lines suggested by Francis Galton in his researches on heredity, might be interesting.

This quote (1894) from Felix Klein, the great Göttingen mathematician, has often be cited as a "proof" for Klein's "racism", although the modern reader should read the juxtaposition of "naive" and "critical" rather as a proof of philosemitism, which of course can be classified as racism as well. However, Klein thought more about the balance of methods within mathematics.

# The Felix Klein *Protocols*

*Eugene Chislenko and Yuri Tschinkel*

All photographs: Mathematisches Institut Universität Göttingen.

**Felix Klein**

## The Göttingen Archive

unrivalled in quantity and quality": "No single archive is even remotely comparable", not only because Göttingen was "the leading place for mathematics in the world", but also because "no other community has left such a detailed record of its activity ...usually we are lucky to have lecture lists, with no indication of the contents."

The collection runs from early handwritten lectures by Dirichlet, Riemann, and Clebsch, through almost 100 volumes by Hilbert, to volumes of Minkowski, Hasse, and Siegel on number theory, Noether on algebra, and Max Born on quantum mechanics. But the largest and most impressive of its centerpieces is the *Seminar-Protokolle* of Felix Klein: a detailed handwritten registry, spanning over 8,000 pages in 29 volumes, of forty years of seminar lectures by him, his colleagues and students, and distinguished visitors. These *Protocols*, previously unpublished, are now available digitally, as part of a project sponsored by the Clay Mathematics Institute. They constitute one of the richest records of mathematical activity in modern times.

To understand the obsession with "race" and "talent" we should think about Felix Klein's 1909 seminar in Göttingen on "Mathematics and psychology" where German-Jewish mathematicians such as Felix Bernstein actively took part and where anthropological conditions were also discussed.
(Left publication in Notices AMS 2007]

# “Jewish Mathematics” at Göttingen in the Era of Felix Klein

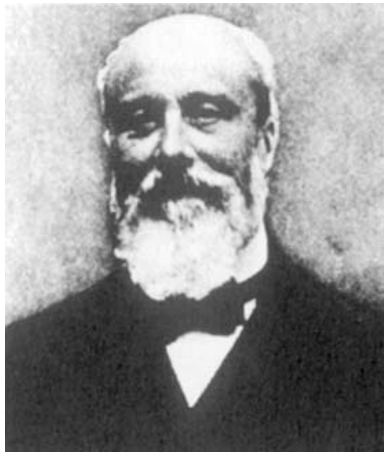
*By David E. Rowe**

David Rowe in ISIS 1986 among other things on Klein’s policy of mathematical appointments in Göttingen around 1900

**The bio-logical metaphor - German mathematics regenerated by new blood (Bluterneuerung) - makes it clear that for Klein, unlike Jaensch and Bieberbach, this inter-mixture of Teutonic and Semitic peoples was a sign of health, not disease, in German society. (Rowe 441)**

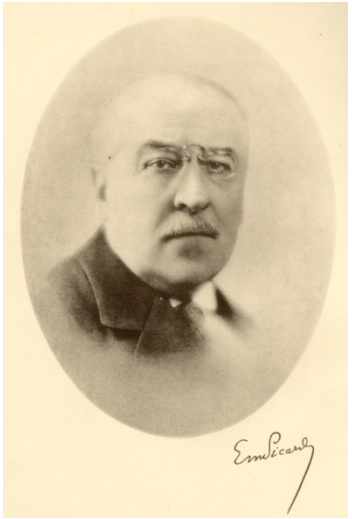
**Émile Picard** in " L'histoire des sciences et les prétentions de la science allemande" 1916:

"It is a strange aberration that the German race claims to be the only one in the world to contribute to the scientific development of mankind. It is a collective dementia which pushes the German people like a chosen people charged by its God to direct the world."



**Pierre Maurice Marie Duhem (1861-1916)**

**Emile Picard (1856-1941)**



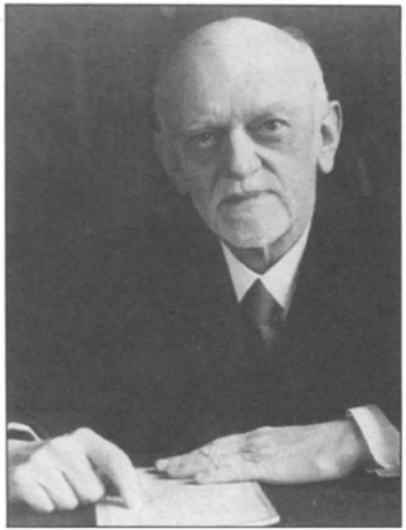
The French physicist, mathematician and philosopher of science **Duhem** wrote 1915 in "Quelques Reflexions sur la Science allemande":

"The German spirit (l'esprit allemand) is basically geometrical. The German does not have the esprit de finesse. … The geometrical spirit gives shape to a building which has been constructed before by the (French) inventive spirit (esprit de finesse)."

# "Mathematics Knows No Races": A Political Speech that David Hilbert Planned for the ICM in Bologna in 1928

REINHARD SIEGMUND-SCHULTZE

[Online at *The Mathematical Intelligencer*, forthcoming in 2016]



David Hilbert

"Let us consider that we as mathematicians stand on the highest pinnacle of the cultivation of the exact sciences. We have no other choice than to assume this highest place, because all limits, especially national ones, are contrary to the nature of mathematics. It is a complete misunderstanding of our science to construct differences according to peoples and races, and the reasons for which this has been done are very shabby ones. …

Mathematics knows no races ... For mathematics, the whole cultural world is a single country.'"

**Ludwig Bieberbach (1886- 1982)** – student of both Klein and Hilbert – was a renowned function-theorist and geometer. His *Habilitation* (1911/12) on groups of Euclidean motions was a first important step towards the solution of Hilbert's eighteenth problem. The concrete reasons and circumstances of Bieberbach's conversion to National Socialism, which he considered with scepticism before 1933, to say the least, are not yet fully known. In 1934, as managing editor of he *Jahresbericht der Deutschen Mathematiker- Vereinigung*, Bieberbach published an "open letter" against the Danish mathematician Harald Bohr, who had criticized Bieberbach's racist theories in mathematics (called *Deutsche Mathematik*). Because Bieberbach published this open letter without the consent of his co- editors he was criticized at a meeting of the DMV in Bad Pyrmont and had to resign his position. He lived a much longer life than many victims of the regime he once supported. But he did not live long enough to see the proof of his famous conjecture (1916) concerning coefficients of schlicht functions established by Louis de Branges in 1984.

**Types of leading mathematicians (mostly Germany) according to Bieberbach**

**Partly based on psychological theories of Rudolf Jaensch (1929)**

| J-Type | | | S-Type |
|---|---|---|---|
| $J_3$ ("Nordic") | $J_2$ | $J_1$ | ("ostisch – Eastern") |
| Weierstraß | Gauß | Klein | Landau |
| | Kepler | | Gordan |
| Hilbert | | | Adolf Hurwitz |
| Dedekind | Schwarz | | |
| Brouwer | | | |
| | Riemann | | |
| Thinker of will, aims at dominance over reality with which he is in a fight. Traces logical connections | Type approaching reality with fixed and ideal values and loves truth for its beauty. | Type of intuitive thinking Insists on the relation to reality | "Strahltypus" beams his autistic thinking into reality, Wants to find his thoughts in reality only as confirmation. |

Source: H. Lindner (1980) and others

## Persönlichkeitsstruktur und mathematisches Schaffen.

Von Ludwig Bieberbach in Berlin.

Vor einigen Monaten haben Differenzen mit der Studentenschaft dem Lehrbetrieb des Herrn Landau ein Ende bereitet. Hier interessieren uns weniger die naheliegenden Anlässe als die tieferen Hintergründe dieses Ereignisses. Man hat darin nämlich ein Musterbeispiel dafür zu sehen, daß Vertreter allzu verschiedener menschlicher Rassen nicht als Lehrer und Schüler zusammenpassen. Im Geistigen prägt sich bekanntlich die Rasse in der Struktur der Persönlichkeit, im Stil ihrer Lebensäußerungen aus. Der Instinkt der Göttinger Studenten fühlte in Landau einen Typus undeutscher Art, die Dinge anzupacken. Machen wir uns das an einem einzigen Beispiel klar. In seiner neu erschienenen Differential- und Integralrechnung will Landau „in exakter und lückenloser Weise die Methode" „verbreiten, die" er bei seinem „Unterricht . . . für die zweckmäßigste" hält. Sehen wir zum Beispiel Kap. 16: Die trigonometrischen Funktionen. Sinus und Cosinus werden in diesem Buch durch ihre Potenzreihen definiert.

Def. 59.

$$\sin x = \sum_{m=0}^{\infty} \frac{(-1)^m}{(2m+1)!} x^{2m+1}.$$

sin sprich Sinus.

Satz 262. Es gibt genau ein $\pi > 0$ mit $\cos \frac{\pi}{2} = 0$, $\cos x > 0$ für $0 \leq x < \frac{\pi}{2}$.

Mit anderen Worten: $\cos y = 0$ hat eine positive Lösung, sogar eine kleinste.

Definition 61. Die „Weltkonstante" von Satz 262 werde dauernd mit $\pi$ bezeichnet.

Wie groß $\pi$ sei, was $\pi$ mit der gleichbezeichneten schulbekannten Zahl zu tun habe, was die Landauschen sinus und cosinus mit den bekannten Funktionen gleichen Namens zu tun haben, davon erfährt der Leser nichts. Zwar hören wir im Vorwort,

Ludwig Bieberbach

(1886-1982)

Bieberbach's attack on Edmund Landau (1877-1938) who's lectures had been boycotted by Nazi students in Göttingen

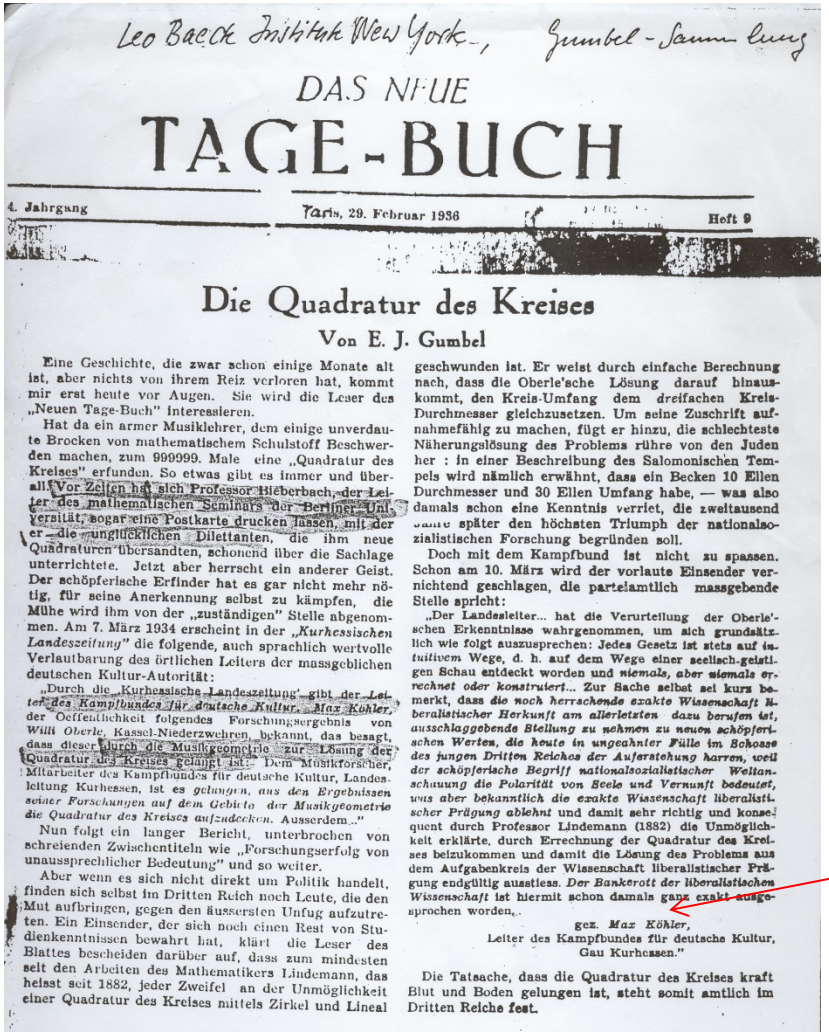
**Quote from Bieberbach: “Personality Structure and Mathematical Creativity” (1934) – previous slide**

“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. …

Which value π has, and what π has to do with the number known from school, what Landau’s *sine* and *cosine* have to  with the well-known function of the same name, all this is not explained by Landau ”

Probably the best description of this mathematical style can be found in Landau's obituary by Konrad Knopp (1882-1957), the first student of Landau's. In this obituary in the *Jahresbericht of the DMV*, which could only appear in 1951 after the fall of the Nazi regime, one reads:

"His 'Introduction into the elementary and analytical theory of algebraic numbers' (1918) reveals the new style of the older Landau, who has now matured to the final way of thought and creation. It is this way of presentation, which as 'Landau style' has become exemplary for many, that is rejected as exaggerated by some. Avoiding any superfluous, even any not strictly necessary word, it instantaneously presents definition 1, definition 2, theorem 1, proof, theorem 2 […] and leaves it to the reader to understand for themselves the general ideas behind the argument. […] This 'Landau style' is on the one hand very impersonal and objective. It lets the facts speak for themselves; the inner experience has to recede. On the other hand, however, the Landau style is so closely connected to the person of its originator that it cannot be 'imitated,' as much as it has served as an example for English mathematical literature and will certainly still have future influence everywhere."



Leo Baeck Institute New York, Gumbel-Sammlung

DAS NEUE

# TAGE-BUCH

4. Jahrgang — Paris, 29. Februar 1936 — Heft 9

## Die Quadratur des Kreises

Von E. J. Gumbel

Eine Geschichte, die zwar schon einige Monate alt ist, aber nichts von ihrem Reiz verloren hat, kommt mir erst heute vor Augen. Sie wird die Leser des „Neuen Tage-Buch" interessieren.

Hat da ein armer Musiklehrer, dem einige unverdaute Brocken von mathematischem Schulstoff Beschwerden machen, zum 999999. Male eine „Quadratur des Kreises" erfunden. So etwas gibt es immer und überall. Vor Zeiten hat sich Professor Hieberbach, der Leiter des mathematischen Seminars der Berliner Universität, sogar eine Postkarte drucken lassen, mit der er die unglücklichen Dilettanten, die ihm neue Quadraturen übersandten, schonend über die Sachlage unterrichtete. Jetzt aber herrscht ein anderer Geist. Der schöpferische Erfinder hat es gar nicht mehr nötig, für seine Anerkennung selbst zu kämpfen, die Mühe wird ihm von der „zuständigen" Stelle abgenommen. Am 7. März 1934 erscheint in der *„Kurhessischen Landeszeitung"* die folgende, auch sprachlich wertvolle Verlautbarung des örtlichen Leiters der massgeblichen deutschen Kultur-Autorität:

„Durch die Kurhessische Landeszeitung' gibt der *Leiter des Kampfbundes für deutsche Kultur, Max Köhler,* der Oeffentlichkeit folgendes Forschungsergebnis von *Willi Oberle*, Kassel-Niederzwehren, bekannt, das besagt, dass dieser durch die Musikgeometrie zur Lösung der Quadratur des Kreises gelangt ist. Dem Musikforscher, Mitarbeiter des Kampfbundes für deutsche Kultur, Landesleitung Kurhessen, ist es *gelungen, aus den Ergebnissen seiner Forschungen auf dem Gebiete der Musikgeometrie die Quadratur des Kreises aufzudecken.* Ausserdem..."

Nun folgt ein langer Bericht, unterbrochen von schreienden Zwischentiteln wie „Forschungserfolg von unaussprechlicher Bedeutung" und so weiter.

Aber wenn es sich nicht direkt um Politik handelt, finden sich selbst im Dritten Reich noch Leute, die den Mut aufbringen, gegen den äussersten Unfug aufzutreten. Ein Einsender, der sich noch einen Rest von Studienkenntnissen bewahrt hat, klärt die Leser des Blattes bescheiden darüber auf, dass zum mindesten seit den Arbeiten des Mathematikers Lindemann, das heisst seit 1882, jeder Zweifel an der Unmöglichkeit einer Quadratur des Kreises mittels Zirkel und Lineal geschwunden ist. Er weist durch einfache Berechnung nach, dass die Oberle'sche Lösung darauf hinauskommt, den Kreis-Umfang dem *dreifachen* Kreis-Durchmesser gleichzusetzen. Um seine Zuschrift aufnahmefähig zu machen, fügt er hinzu, die schlechteste Näherungslösung des Problems rühre von den Juden her : in einer Beschreibung des Salomonischen Tempels wird nämlich erwähnt, dass ein Becken 10 Ellen Durchmesser und 30 Ellen Umfang habe, — was also damals schon eine Kenntnis verriet, die zweitausend Jahre später den höchsten Triumph der nationalsozialistischen Forschung begründen soll.

Doch mit dem Kampfbund ist nicht zu spassen. Schon am 10. März wird der vorlaute Einsender vernichtend geschlagen, die parteiamtlich massgebende Stelle spricht:

„Der Landesleiter... hat die Verurteilung der Oberle'schen Erkenntnisse wahrgenommen, um sich grundsätzlich wie folgt auszusprechen: Jedes Gesetz ist stets auf *intuitivem* Wege, d. h. auf dem Wege einer seelisch-geistigen Schau entdeckt worden und *niemals, aber niemals errechnet oder konstruiert*... Zur Sache selbst sei kurz bemerkt, dass *die noch herrschende exakte Wissenschaft liberalistischer Herkunft am allerletzten dazu berufen ist, ausschlaggebende Stellung zu nehmen zu neuen schöpferischen Werten, die heute in ungeahnter Fülle im Schosse des jungen Dritten Reiches der Auferstehung harren, weil der schöpferische Begriff nationalsozialistischer Weltanschauung die Polarität von Seele und Vernunft bedeutet, was aber bekanntlich die exakte Wissenschaft liberalistischer Prägung ablehnt* und damit sehr richtig und konsequent durch Professor Lindemann (1882) die Unmöglichkeit erklärte, durch Errechnung der Quadratur des Kreises beizukommen und damit die Lösung des Problems aus dem Aufgabenkreis der Wissenschaft liberalistischer Prägung endgültig ausstiess. *Der Bankerott der liberalistischen Wissenschaft* ist hiermit schon damals ganz exakt ausgesprochen worden,.

gez. *Max Köhler*,
Leiter des Kampfbundes für deutsche Kultur,
Gau Kurhessen."

Die Tatsache, dass die Quadratur des Kreises kraft Blut und Boden gelungen ist, steht somit amtlich im Dritten Reiche fest.

"The creative notion of National-Socialist world view is based on the polarity of soul and reason, which is denied by exact science of liberalistic origin. Professor Lindemann (1882) has therefore consequentially expelled the problem of the squaring of the circle from the realm of tasks of liberal science. The bankruptcy of the latter has thus been clearly formulated already back then."

Max Köhler, leader of the alliance for German Culture

Bieberbach was concerned that his own racist theories could be misunderstood and misused for purposes that were too utilitarian. Therefore he remarked in the same talk, which contained the attacks at Landau, 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 mathematics is an emanation of our racial qualities too and anything which reveals our national character in a forceful manner requires no additional justification.”

# Terror and Exile

Persecution and Expulsion
of Mathematicians from Berlin
between 1933 and 1945

An Exhibition
on the Occasion of the
International Congress of Mathematicians 1998

Deutsche Mathematiker–Vereinigung

# Mathematicians Fleeing from Nazi Germany

## Individual Fates and Global Impact

Reinhard Siegmund-Schultze

## Letters to the Editor

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, nor to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

### The *J*-type and the *S*-type among Mathematicians

MATHEMATICIANS in England and America have been recently intrigued by reports of a lecture delivered by Prof. L. Bieberbach, of the University of Berlin, to the Verein zur Förderung des mathematisch-naturwissenschaftlichen Unterrichts. They have, however, found difficulty in judging the lecture fairly from secondhand reports. It is now possible to form a more reasoned estimate, Prof. Bieberbach having published a considerable extract, under the title "Persönlichkeitsstruktur und mathematisches Schaffen", in the issue of *Forschungen und Fortschritte* of June 20.

Godfrey Harold Hardy (1877-1947)

But perhaps I have quoted enough; and I feel disposed to add one comment only. It is not reasonable to criticise too closely the utterances, even of men of science, in times of intense political or national excitement. There are many of us, many Englishmen and many Germans, who said things during the War which we scarcely meant and are sorry to remember now. Anxiety for one's own position, dread of falling behind the rising torrent of folly, determination at all costs not to be outdone, may be natural if not particularly heroic excuses. Prof. Bieberbach's reputation excludes such explanations of his utterances; and I find myself driven to the more uncharitable conclusion that he really believes them true.

G. H. HARDY.

New College, Oxford.
July 20.

Philipp Lenard (1862 -1947)

# Deutsche Physik

in vier Bänden

Von

**Philipp Lenard**

in Heidelberg

Allen, die in wohlgegründeter Naturerkenntnis ihre geistige Ruhe suchen, zur Freude geschrieben.

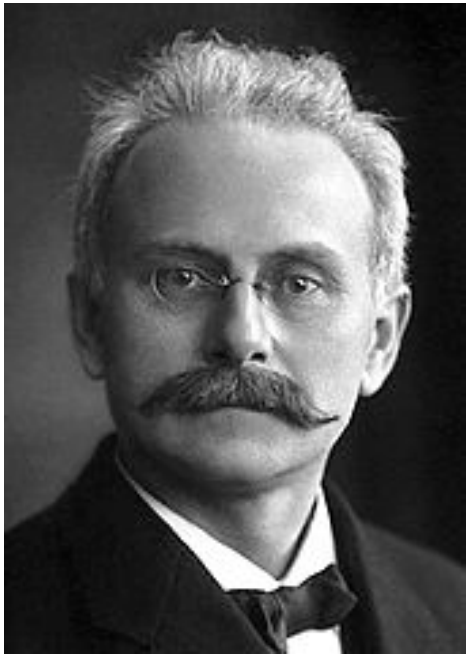
Erster Band:

## Einleitung und Mechanik

Mit 113 Abbildungen

Vierte, vermehrte Auflage.

J. F. Lehmanns Verlag / München-Berlin 1944



Johannes Stark (1874-1957)

## Neugebauer’s appearance on the International Congress for Mathematicians in Oslo 1936

On July 14, 1936, there appeared in ”Arbeiderbladet” a report on the congress entitled

> **”700 famous mathematicians: lightning interviews on the expanding universe, what cuneiform tablets from Ur can tell us and many other things. America the leading country in the area of mathematics – thanks to Nazism”**

Not surprisingly one of the lightning-interviewees was Otto Neugebauer.

One excerpt from the interview:

> ” Why is it that the Babylonians were mathematically so talented?

Neugebauer’s answer is the following:

> **“Probably due to the special bland of different peoples down there**. The Babylonians built on the Sumerian culture, which the English have investigated so thoroughly with the excavations at Ur, of which you presumably have heard.”

**It is difficult *not* to read this as indirect commentary on Bieberbach!**

”Neugebauer is a short blond German, who has become homeless as many others in Germany, but has been received with open arms in Copenhagen, where he works together with famous scientists such as the brothers Bohr. Now he talks Danish like a national.”

Neugebauer during the interview with ”Arbeiderbladet”

# Deutsche Mathematik

Im Auftrage der

Deutschen Forschungsgemeinschaft

herausgegeben von

Theodor Vahlen

Erster Jahrgang 1936

Kommissionsverlag von S. Hirzel in Leipzig

Theodor Vahlen (1869-1945): mathematician and Nazi functionary in the ministry for universities

**Oswald Teichmüller (1913-1943)** was one of the most brilliant young German mathematicians during the period of the “Third Reich”. He is the founder of the so called “Teichmüller-theory”, disclosing deep connections between Riemann surfaces and quasiconformal mappings. His work, influential as it was at least since a publication of L.Ahlfors’ in 1953, did not get full recognition until very recently. This is partly due to the fact that **many papers of Teichmüller's were published in the Nazi-journal “Deutsche Mathematik”;** it is partly a result of the vague and intuitive formulation of some of Teichmüller’s theorems and conjectures.

T.s letter dated Nov.3, 1933, which he wrote in “explanation” of the anti-Semitic boycott of Edmund Landau’s lectures to the great Göttingen number theorist:

> “I do not want to raise difficulties because you are a Jew, it is simply in order to protect the students of the second semester from being instructed in calculus by a racially totally alien teacher."

Deutsche Mathematik

IM AUFTRAGE DER

DEUTSCHEN FORSCHUNGSGEMEINSCHAFT

HERAUSGEGEBEN VON

THEODOR VAHLEN

SECHSTER JAHRGANG 1941

VERLAG VON S. HIRZEL IN LEIPZIG

Deutsche Mathematik 6 (1941)

ARBEIT

# Mathematik und Rasse.

Von Max Draeger in Chemnitz.

Wir gehen von der wohl unbestreitbaren These aus: Die Kultur als Lebensäußerung des Menschen ist eine Funktion seiner Rasse. Wenn wir daher annehmen, daß

(*) $$\text{Mathematik} = f\,(\text{Kultur})$$

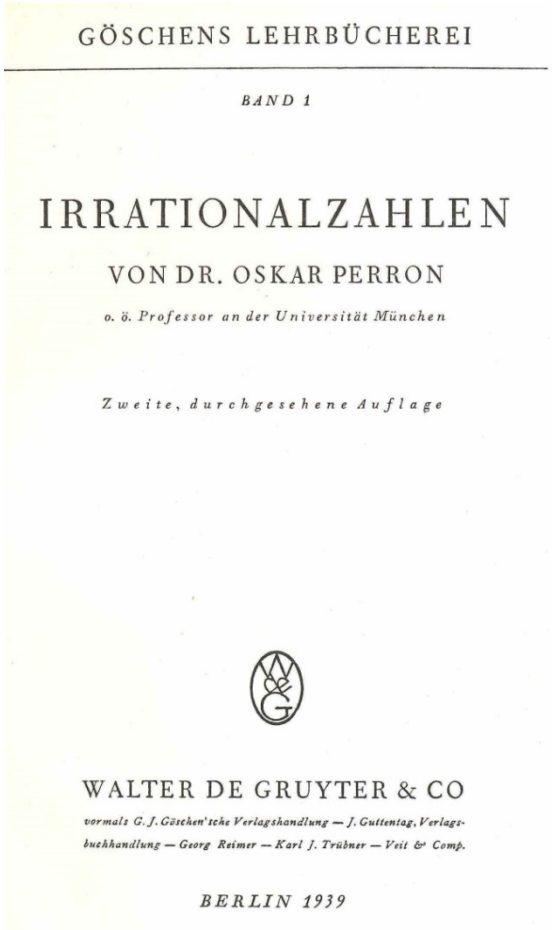
ist, so folgt, da

$$\text{Kultur} = \varphi\,(\text{Rasse})$$

ist, daß

(**) $$\text{Mathematik} = F\,(\text{Rasse})$$

[3]) Persönlichkeitsstruktur und mathematisches Schaffen, Unterrichtsbl. Math. Naturwiss. 40 (1934). Stilarten des mathematischen Schaffens, S.-B. preuß. Akad. Wiss., Physik.-math. Kl. 20 (1934). Die völkische Verwurzelung der Wissenschaft, S.-B. Heidelberg. Akad. Wiss., Math.-nat. Kl., 1940.


GÖSCHENS LEHRBÜCHEREI

BAND 1

IRRATIONALZAHLEN

VON DR. OSKAR PERRON

o. ö. Professor an der Universität München

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BERLIN 1939

It was indicative of Bieberbach's waning influence that in 1939 Perron, mathematics professor in Munich, could publish within Germany an ironic allusion to Bieberbach's 'Deutsche Mathematik'. He did so in the second edition (1939) of his book *Irrationalzahlen* 'Irrational numbers' (1920), alluding to Bieberbach's review (1924) of the first edition of 1920. Back then, before his sympathies for the Nazis had developed, B. had criticized Perron for basing the definition of real numbers on Dedekind's 'cuts' while B. preferred the Cantor–Méray theory of real numbers. Georg Cantor, the German founder of set theory, was generally considered to be Jewish, while Charles Robert Méray, was obviously French and thus also 'un-German'.

Now, in 1939, Perron alluded to Bieberbach's review and 'defended' his own preference for the undoubtedly 'German' Dedekind, who happened to be the true spiritual mentor to the 'Jewish' algebraist Emmy Noether, with the following words:

"A warning from such competent side must not be ignored without serious reasons, the more so since its importance has recently much increased due to the well-known research on the *J*- and *S*-type of mathematicians.

[However …]

[Viggo Brun in Norsk Matematisk Tidsskrift 1939]:

*O. Perron: Irrationalzahlen.* 2. Aufl. 199 Seiten. 1939. Verlag Walter de Gruyter & Co., Berlin. Geb. RM. 9,80. Göschens Lehrbücherei. Bd. 1.

Første utgave av denne boken kom i 1920. I forordet til annen utgave sier forfatteren, at han bare har innført mindre forandringer. Femte kapitel er dog utvidet med *Estermanns* bevis for *Kroneckers* approksimasjonssats og med en paragraf om «likefordeling». Også i annen utgave bygger *Perron* på det Dedekindske snitt. *Bieberbach* hadde i sin omtale av første utgave bebreidet ham at han ikke heller hadde bygget på *Cantors* og *Mérays* fremstilling. Perron angir tre grunner for at han fremdeles velger Dedekind. Den siste grunn er vistnok ikke minst myntet på Bieberbach. Den lyder: «Drittens glaube ich, dass es einem Deutschen, der die Wahl zwischen einem deutschen Erzeugnis und einem an sich ebenso schönen und wertvollen Erzeugnis fremden Ursprungs hat, immer erlaubt ist, der Stimme des Herzens zu folgen und das Deutsche vorzuziehen, weil es deutsch ist.»

"I believe a German who has the choice between a German product and an equally beautiful and valuable product of foreign origin should be allowed to follow his heart and to prefer the German one because it is German." (Perron 1939, vi)

**Post War apologia in general:**

Many mathematicians who had opposed Bieberbach's "German mathematics" at least internally, interpreted this refusal retrospectively as "resistance against the Nazi regime" although Bieberbach's theories were less and less supported by the regime itself, when it pragmatically began to rely on the mathematics during the war and when the same "resisting" mathematicians were often actively involved in war research.

**Bieberbach's own reactions after the war were contradictory:**

In one of his first letters after having been released from detention B. wrote to Konrad Knopp on 13 June 1946:

> "I deny that my theories were a contribution to National Socialism. After all, the ironic refusal which they found both in Germany and abroad cannot be considered as support for NS."

[So much for 'logical thinking', to which also mathematicians, like ordinary human beings, are able when personal issues and interests are at stake!]

Later, a written declaration at the University of Basel in February 1949, after having had opportunity in Switzerland for scientific work for the first time again, he said:

> "I have deplored those theories for a long time. They were a play with the fire and served masking criminal and demagogic aims."

**Instrumentalization of *Deutsche Mathematik* at a later political turn (fall of the Iron Curtain):**

A leading East German mathematician, in a 1992 article entitled "The Situation of Mathematics and Mathematicians in the Former GDR," wrote the following about the *Communications of the Mathematical Society of the GDR:*

> "They contain many highly valuable review articles . . . which are not known outside the GDR, though they deserve to be. But there are also politically saturated articles, which are sometimes even more embarrassing than what one finds in [the journal] *Deutsche Mathematik:* resolutions of the SED party congresses, Honecker quotes, and similar canonizedblather."

It is not surprising that a mathematician prefers the professional articles to the political ones. But when he compares the journal *Deutsche Mathematik,* edited by the Nazi Bieberbach, positively to the *Communications,* one should take a look at the political articles the former ran. Among them was Draeger's "Mathematics and Race" and other related concoctions, next to which all resolutions of SED party congresses seem rather harmless. (Note that the mathematician in question was interested in Teichmüller!)