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**With comments by W. Abikoff, L. Ahlfors,  
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**Perspectives on Teichmüller and the  
Jahresbericht Addendum to Schappacher,  
Scholz, et al.**

## TEKSTER fra

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**Abstract.** As an addendum to an article on the 'life and work' of the German mathematician Oswald Teichmüller (1913-1943), published in the Jber. Deutsch. Math.-Verein. 94 (1992), I delineate three different attitudes towards a man, who was mathematically brilliant but as a Nazi did much harm to other people: (I) Simply ignore both the man and his work! (II) Restrict the reference to Teichmüller's mathematical work! Or (III) choose the holistic approach and write on Teichmüller's life and work as an inseparable whole. I show that the article neglects various methodological requirements especially by not informing on the broader mathematical and historical context and that in general whitewash and belittlement of the German Nazi past is an integral part of recent publications by the Deutsche Mathematiker-Vereinigung. Comments by various mathematicians and historians of science are incorporated.

**Perspectives on Teichmüller and the Jahresbericht  
Addendum to Schappacher, Scholz, et al.**

*B. Boöf-Bavnbek, Roskilde*

*With comments by*

*W. Abikoff, L. Ahlfors, J. Cerf, P.J. Davis, W. Fuchs, F.P. Gardiner,  
J. Jost, J.-P. Kahane, R. Lohan, L. Lorch, J. Radkau, and T. Söderqvist.*

The *Jahresbericht der Deutschen Mathematiker-Vereinigung (JB)* in vol. 94 (1992) published an article on the 'life and work' of the German mathematician Oswald Teichmüller (1913-1943), who some mathematicians and physicists remember for his original contributions especially to the theory of Riemann surfaces. Others, some of them refugees from Nazi Germany, on the other hand remember Teichmüller for the resolve with which he, member of the Nazi party since 1931 and in 1933 deputy leader of the science students' council at Göttingen University, initiated and led the campaign to expel from academic life Richard Courant, Edmund Landau, Emmy Noether, Otto Neugebauer, and others.

The article contains a short biography by E. Scholz; comments on Teichmüller's mathematical publications by various authors, half of the comments by F. Herrlich on the problem of the moduli of Riemann surfaces ('Teichmüller theory'); two letters by Teichmüller, one of Nov. 3, 1933 to Landau; the other of Dec. 12, 1938 to a former classmate from Göttingen; a list of Teichmüller's publications; and a bibliography.

When I first read the article I was appalled for several reasons and wrote a rather harsh, maybe too harsh, draft reply which I circulated among mathematicians and historians. I received very different replies, some of them dissenting, most of them adding new dimensions to my objections. The reactions I got form an integral part of this paper.

One would expect from an article in the *JB* that it should at least live up to professional standards of editorial practice, of mathematics, and, in the case of the article on Teichmüller, also of history. It does not, as I argue below. Thus, my criticism is not only mathematical but in particular ethical and political. I feel that the *JB* authors' portrayal of Teichmüller is irresponsible.

I begin by discussing the professional standards of the *JB* and delineate three different attitudes towards Teichmüller. In Sections 2-4 I comment on each of these attitudes: their legitimacy, methodological requirements, and relevance in casu Teichmüller. In Section 5 I finally suggest an agenda for a normalization of attitudes towards the past.

For permission to quote from personal communications I thank W. Abikoff, L. Ahlfors, J. Cerf, P.J. Davis, W. Fuchs, F.P. Gardiner, J. Jost, J.-P. Kahane, R. Lohan, L. Lorch, J. Radkau, and T. Söderqvist.

## 1. Professional Standards

The *JB* article gives the impression that it was done as a rush-job. That happens in mathematics as in other fields, but the editors of a journal should ensure that only material which is sufficiently well investigated be published. The scholarly community must trust that the editors of a scientific journal do not print false, unchecked, or misleading articles as the one on Teichmüller's life and work.

I recognize that the *JB* article contains many valuable and remarkably well checked details. Compared to other *JB* obituaries<sup>1</sup> it is distinguished by at least treating a leading German mathematician's Nazi involvement as problematic. This paper is therefore not so much a criticism of the authors of the article as of the *JB* and its editorial policy which does not ensure the professional standards required and expected from learned journals.

Three different editorial approaches are defensible in case of Teichmüller, who was mathematically brilliant but did so much harm to other people:

- (I) Simply ignore both the man and his work, even in spite of deeply shared mathematical interests! That was André Weil's option in his autobiography (cf. [Weil 1991]).
- (II) Restrict the reference to Teichmüller's mathematical work [Ahlfors 1953/54]! But shouldn't one do it like Ahlfors did: pay due regard to other contemporary contributions and thereby avoid the *JB* authors' biased mathematical 'Heroisierung' of Teichmüller?
- (III) Or one might choose the holistic approach and write on Teichmüller's life and work as an inseparable whole. But then one must live up to what the historian of science Thomas Söderqvist (Roskilde) describes as professional standards of modern history writing "with its emphasis on the personal and cultural context of intellectual achievements. The life and work of a thinker cannot be treated as independent entities; nor can the life of the thinker be treated without a thorough understanding of the social, cultural, and political context in which his life and ideas were embedded." [Söderqvist 1992]

Each of the approaches has its own legitimacy, but also its own methodical rules which must be observed. Unfortunately, the *JB* article breaks them all.

## 2. Passing Over in Silence?

I do not prefer the first approach, but find it conscionable either from an ethical, personal, or narrow mathematical point of view.<sup>2</sup>

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<sup>1</sup>See e.g. Ludwig Bieberbach zum Gedächtnis, *JB* 88/4 (1986); Oskar Perron, *JB* 90/4 (1988); Helmut Grunsky *JB* 91/4 (1989); Karl Strubecker zum Gedenken *JB* 94/3 (1992); Otto Volk 1892-1989 *JB* 94/3 (1992).

<sup>2</sup>Some of my correspondents doubted it worthwhile to criticise at such length an article about Teichmüller. As Fred Gardiner (New York) writes: "I don't think it comes as a surprise to ordinary people that geniuses can be immoral and that they are just as susceptible to faulty judgment and human weakness as any of the rest of us." [Gardiner 1993]

First the *ethical* reasons to pass Teichmüller over in silence. Since he joined the Nazi party (NSDAP) and the Storm Troopers (SA) in 1931 and until his death in October 1943 as a Wehrmacht volunteer in Russia, Teichmüller never dissociated himself from his actions as a Nazi and the ideology of brutality and racism, which led to the mental and physical destruction of people he knew personally and of millions of others in Germany and German occupied territory. Enough reason to let his name sink into oblivion although no court has ever found Teichmüller guilty of collective or personal crime.<sup>3</sup>

With regard to the *personal* aspects, clearly no jury can reduce or remove the pain or antipathy with which Teichmüller's contemporaries remember his personality. As William Abikoff (Storrs, Connecticut) recounts:

Teichmüller was a horrible person. He carried hatred with him into the Mathematics Institute of Göttingen. I tried to talk to Neugebauer about him in 1988, and I watched as the pain consumed that old man. [Abikoff, 1992]

Ralf Lohan (Hangelar near Bonn), 10 years older than Teichmüller and for several years at the same Berlin department, wrote to me:

Sie behandeln da ein grundsätzlich sehr schweres Thema: Beurteilung eines Menschen nach Leistung *und* Charakter. Erhard Schmidt hat einmal in seiner Rektoratsrede gesagt, das entscheidende sei der Charakter.

Wie Sie wissen erlebte ich Teichmüller in Berlin. Mir war er so widerlich, daß ich niemals mit ihm gesprochen habe und ihm gerne das Betreten der Seminar-Räume verboten hätte. Aber dazu hatte ich nicht die Macht. [Lohan 1993]

One should know and acknowledge that some of Teichmüller's contemporaries personally have imperative reasons for having his name forgotten.

Teichmüller's *mathematical* importance must be judged from three different angles:

- (1) the service he has done to our field;
- (2) his share in the misdeeds against the scientific progress of mathematics as initiator and leader. Generally speaking, mathematics did not flourish in the Third Reich. The *Mathematical Reviews*, founded in 1940 in the U.S.A., twisted the name of the previously world famous and outstanding German journal *Fortschritte der Mathematik* to *Rückschritte der Mathematik*. However, not all 'Rückschritte' of mathematics in Nazi Germany were harmful

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<sup>3</sup>From Nov. 20, 1945 to Oct 1, 1946 the Nuremberg Tribunal discussed the question of branding as criminal various organizations of Nazi Germany, such as the SA, but ended after months of controversy with the refusal to declare the SA collectively guilty of *planning, unleashing, and waging aggressive wars* - the only internationally agreed criteria for conviction. For the analysis of the general criminal, inhuman nature of the SA see *The Trial of German Major War Criminals*, Proc. Int. Military Tribunal, London 1950, especially Part 3, p. 98; Part 21, pp. 106, 345; Part 22, pp. 1, 212, 219f, 264, 273, 276f, 356f. Teichmüller's individual case was never tried.

to the field itself. It seems that some of the most promising theoretical directions flourished in their foreign asylums. Other sprouting mathematical ideas and practices fell victim to Nazi disruption and seem to be irretrievably lost.

(3) his contributions to the 'Rückschritte' as a normal Nazi supporter.

Some of the greatest challenges and achievements of mathematics in the 20th century are connected with pre-Nazi Göttingen. Roughly speaking, pre-Nazi Göttingen represented three seminal concepts of mathematics. The *first* was the struggle for logical foundations of mathematics, for understanding the role of formalism and symbolism in sciences, language, conception, thinking, and technology. In Göttingen that research was closely connected with the name of David Hilbert and labelled as 'formalism'. There is no evidence of Teichmüller's direct participation in this discourse, but he played a role in the violent disruption of an emerging international and interdisciplinary discourse<sup>4</sup>, in my view the greatest Nazi induced tragedy in science history.

The *second* concept was that of deep underlying interrelations between pure mathematical research and other fields, especially physics. Richard Courant and Hermann Weyl were two leading exponents of that concept. Teichmüller's fight against the 'Courant-Clique' was victorious in Göttingen. This was a tremendous scientific loss for Germany. However, Weyl, Courant, and Neugebauer were able to build new carriers and extremely successful new schools elsewhere.

The *third* concept was the idea of restructuring, i.e. a completely new way of thinking in mathematics. The idea is usually attributed to the French School from Bourbaki to Grothendieck and became decisive for all of mathematics in the second half of our century. Two very different flag bearers were Edmund Landau and Emmy Noether. In their hands all was redefined. Famous great theorems suddenly became lemmata or were otherwise 'perturbated' and 'adapted'. Familiar definitions disappeared or were replaced by radically new ones.

Teichmüller probably understood how this extreme structuralism may trouble the learning of the classics.<sup>5</sup> In November 1933 most of the mathematicians, who were unwanted by the Nazis, had already left Göttingen; Edmund Landau stayed, possibly feeling too old to emigrate. On November 2, 1933 he tried, with the consent of the government, to resume his teaching after the forced break in the spring semester. On the same day, Teichmüller personally led a paramilitary action of Nazi students to block Landau and force him to resign. Teichmüller succeeded and wrote in, to quote the *JB* authors, a 'bizarre' letter to Landau:

Es handelt sich für mich nicht darum, Ihnen als Juden Schwierigkeiten zu machen, sondern lediglich darum, die deutschen Studenten des zweiten Semesters unter möglicher Schonung aller übrigen davor zu bewahren, gerade in der Differential- und Inte-

<sup>4</sup>See [Carnap et al. 1931] and e.g. [Booß-Bavnbek, Pate 1992].

<sup>5</sup>See e.g. the strange, but fascinating analysis class book [Landau 1934] with its famous and deliberate 'liberation' of the standard transcendental numbers and functions like  $\pi$  and  $\sin$  of the geometric origin and meaning. The book was published in Holland after the pogrom like boycott against Landau's classes in Göttingen.

gralrechnung von einem ihnen ganz fremdrassigen Lehrer unterrichtet zu werden. (p. 29)

But Teichmüller could also see the seminal importance of the Landau/Noether concept and wanted to benefit personally from it. In the same letter he wrote:

Aus dieser meiner Einstellung folgt auch, daß wenig dagegen einzuwenden wäre, wenn Sie höhere Vorlesungen, die auf vorhandener Geisteseinstellung aufbauend für Anwendung oder Erkenntnis wichtige mathematische Tatsachen erarbeiten, nach wie vor im besten Einvernehmen mit den Studenten an unserer Landesuniversität halten wollen. (p. 30)

Wolfgang Fuchs (Cornell) recalls another “example of Teichmüller’s utter insensitivity and self-centredness: In the Summer of 1934, after Professor Emmy Noether had been dismissed due to Teichmüller’s henchmen, he approached her and suggested that she should give a private seminar to him and a few of his fellow students. And she, being a saint and utterly selfless, gave this seminar.” [Fuchs 1993]. Quod licet Jovi non licet bovi.

### 3. Do It Like Ahlfors!

Another defensible attitude towards Teichmüller is to ignore his person and concentrate on his mathematical achievements. Since I work in the field of global analysis, my criticism ‘from within mathematics’ deals only with the *JB* article’s treatment of the problem of moduli of Riemann surfaces (*Teichmüller theory*).

The *JB* authors know Teichmüller’s deep historical roots, dating back to Bernhard Riemann’s *Theorie der Abelschen Funktionen* (1857): “Seit Riemanns berühmter Bemerkung, daß die kompakten Riemannschen Flächen vom Geschlecht  $g$  stetig von  $3g - 3$  komplexen Parametern abhängen, haben sich viele Mathematiker um Präzisierung und Lösung dieses Problems bemüht” (p. 22). However, in striking contrast to e.g. Y. Iwayoshi’s and M. Taniguchi’s *Introduction to Teichmüller spaces* ([Iwayoshi, Taniguchi 1991; see especially pp. vii-viii and 14-71, quoted from the English translation 1992]), the *JB* authors do not trace the extensive pre-Teichmüller investigations and the considerable progress within the theory of Riemann surfaces and differential geometry spurred by the moduli problem.<sup>6</sup> The *JB* authors do not mention the work of Felix Klein and Henri Poincaré where the Teichmüller space  $\mathcal{T}_g$  appeared implicitly already in the 1880s; nor the work of Robert Fricke from the beginning of the century and of Werner Fenchel and Jacob Nielsen preceding Teichmüller in the 1930s in constructing  $\mathcal{T}_g$  ( $g \geq 2$ ) as a real  $(6g - 6)$ -dimensional manifold; nor the uniformization theory of Riemann surfaces perfected by Henri Poincaré and Paul Koebe around 1907. Thus the *JB* authors expose themselves to the critique that they present a Teichmüller hagiography and claim Teichmüller’s ideas to be unique - at the expense of a balanced view.

<sup>6</sup>For a modern presentation of these aspects, see [Tromba 1992]; for a non-technical introduction to the concept of the Teichmüller space  $\mathcal{T}_g$  and to some of its ramifications in modern geometry and quantum field theory, see [Nash 1991; Chapter V and Chapter IX].

The *JB* authors admit the limitations of their main mathematical section on Teichmüller theory and that Frank Herrlich, a specialist in algebraic geometry, had to write it with little notice. The result is that the relationship of Teichmüller's achievements to the work of many other mathematicians of that time is omitted, unless indispensable for algebraic geometry.

It is especially unfortunate that the *JB* article is silent about the essential contributions by Herbert Grötzsch (born 1902).<sup>7</sup> In the late 1920's and early 1930's he was a leading exponent of the geometric approach to complex analysis, which turned out to be of particular relevance for the development of mathematics during the rest of this century.

Central to Grötzsch's work is the local-global aspect when he e.g. relates the characterization of the global behaviour of a mapping, taking the vertices of a square to vertices of a rectangle that is not a square, to locally defined dilatation coefficients. Gaier [1990; pp. 383 ff] gives an illustrative example.

Fred Gardiner (New York) develops the point:

I know that Teichmüller's mathematical insights and contributions to deformation theory were extraordinary. Now his name is the title for a large field developed by many other people as well and it is a field which keeps branching out into new areas, most recently in Thurston's applications to low dimensional topology and rational dynamics and Sullivan's theory of convergence of renormalization for one-dimensional unimodal mappings in a given topological class.

But any exposition or serious application will always come back to the so-called *Grötzsch argument*, an argument which enables you to control the distortion of global shapes of geometric objects by knowing bounds for the local dilatation. This idea is fundamental to the theory and it keeps getting repeated and his name is mentioned over and over again. [Gardiner 1993]

In the biographical part of the *JB* article there is exactly one line and one footnote mentioning Grötzsch; the mathematical part of the article attributes only the analytical definition of quasiconformality to Grötzsch. In various other connections he is not mentioned at all, not even in the list of 78 secondary references. This is in remarkable distinction to the seminal survey article by Ahlfors [Ahlfors 1953/54] in which he introduced the terms Teichmüller spaces and Teichmüller theory, but did not suppress the decisive and seminal contributions by Grötzsch to the field of extremal quasiconformal mappings, i.e. to the problem of minimizing the maximal dilatation in a given class of mappings and to the investigation of conformal classes of Riemann surfaces which after all is the very heart of Teichmüller theory (see [Grötzsch 1928], [Grötzsch 1930], [Grötzsch 1932]). Today Lars Ahlfors even says: "It is all my fault for not quoting Grötzsch in my 1935 paper in the *Acta*. At that time I was well aware of Grötzsch's idea and I had even looked at some of his papers, but did not read them because I thought they were poorly written. What terrible youthful arrogance!" [Ahlfors 1985].<sup>8</sup>

<sup>7</sup>The hagiographic overestimation of Teichmüller remains even when the *JB* in a later issue mentioned Grötzsch more adequately (R. Kühnau, *Einige neuere Entwicklungen bei quasikonformen Abbildungen*, *JB* 94 (1992), 141-169).

<sup>8</sup>By the way, Grötzsch is also interesting as a personal counterexample to the majority of oppor-



Another deplorable omission is that the *JB* authors also fail to mention the important contributions by Menahem Max Schiffer to the field [Schiffer 1938].<sup>9</sup> These preceded Teichmüller's work a little and it is evident from one of Teichmüller's papers (see [Ahlfors, Gehring 1982; p. 264]) that he knew Schiffer's work, but apparently only realized its relations with the complex coefficients problem (now deBrange's Theorem), and not its importance for what is now called 'Teichmüller Theory'.<sup>10</sup> One example: To use Schiffer's interior variation is one of the most explicit methods of deforming the complex structure, as accounted for e.g. by [Nag 1988] and [Imayoshi, Taniguchi 1991]. We can nowadays see that Schiffer's approach provides a key to the principal problem of the moduli of Riemann surfaces, namely to find good ways of parametrizing the complex structures on the surface. Admittedly, the interrelation between Schiffer's and Teichmüller's work was not clear until some 30 years later when Gardiner [Gardiner 1975] showed that Schiffer's interior variation by attaching a cell to a Riemann surface is the same as quasiconformal variation. This is only one example. As explained by e.g. Gardiner, Schiffer's ideas actually went considerably further. Mentioning Schiffer in the *JB* article would have placed Teichmüller's work in a historical context and helped the reader to find out whether Teichmüller's ideas were actually as unique as often claimed, or paralleled by various other approaches, each with its own merits.

Not all my correspondents supported my draft reply with respect to Grötzsch and Schiffer, but expressed mathematically dissenting views which are of an intrinsic interest:

Jürgen Jost (Bochum) writes:

Ihre Einwände gegen den Teichmüllerartikel ... kann ich ... nicht vollständig teilen. Auch im Vergleich mit Äußerungen anderer Mathematiker über Teichmüller erkenne ich in diesem Artikel das Bemühen, ein einigermaßen unvoreingenommenes Bild von Werk und Persönlichkeit Teichmüller's zu zeichnen...

Zu Ihren Fragen über die Beiträge von Grötzsch und Schiffer möchte ich wie folgt antworten: Grötzsch hat das Problem der Bestimmung extremaler quasikonformer Abbildungen, welches er in Spezialfällen behandelt und gelöst hat, wohl nur als isoliertes Problem im Rahmen der Funktionentheorie gesehen. Es ist das mathematische Verdienst Teichmüller's, den Zusammenhang dieses Problems mit dem Problem der Moduln Riemannscher Flächen gesehen und es damit auf eine qualitativ ganz neue Stufe gehoben zu haben. Es ist auch so, daß das, was heute als Teichmüllertheorie bezeichnet

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tunistic or brutal Nazi mathematicians striving for academic positions in Germany in those years. In 1935 he was dismissed by the Nazis in Gießen and after 1945 restored in Halle where he still lives:

<sup>9</sup>Schiffer (born 1911 in Berlin, now retired in Stanford) was at at The Hebrew University, Jerusalem, and in the 1950s co-editor of the young Israeli (and Rockefeller Foundation sponsored) *Journal d'Analyse Mathématique* where Lars Ahlfors published his mathematical discovery of Teichmüller, see [Ahlfors 1953/54]. When, so few years after the holocaust, Schiffer did not stop the publication, one must keep in mind that it was the Western Zeitgeist of the early fifties to put a stop to the past.

<sup>10</sup>In a letter to Lipman Bers on the *JB* issue, Lee Lorch (Toronto) recalls some remarks made to him by Mary Cartwright: "If I recall them correctly, she said that she had refereed Schiffer's c. 1938 for the London Math Soc and felt rather pleased with herself that she had recognized its importance." [Lorch 1992]

wird, nicht unbedingt das Konzept der extremalen quasikonformen Abbildung zu seiner Begründung braucht. So ist es nicht ausgeschlossen, daß ohne die Idee Teichmüller's der Beitrag von Grötzsch völlig in Vergessenheit geraten wäre... Die Gedanken von Schiffer, die sicherlich nicht ohne Originalität und Bedeutung sind, haben dagegen in der Entwicklung der Teichmüllertheorie, soweit mir bekannt, keine wesentliche Rolle gespielt. Dies ist wohl bedauerlich, denn wenn sie früher aufgegriffen worden wären, hätten sie vielleicht die Entwicklung wesentlich befruchten können. In dieser Hinsicht ist es vielleicht von Interesse zu bemerken, daß in den Dreißiger Jahren auch in der Theorie der Minimalflächen in den Untersuchungen von Douglas und Courant und seinen Schülern das Problem der Moduln Riemannscher Flächen von großer Bedeutung war. Jedoch waren in diesem Kreise anscheinend die Gedanken Teichmüllers nicht bekannt, und so ist hier die Entwicklung über 40 Jahre lang praktisch stehen geblieben. Zumindest Courant war übrigens mit den Arbeiten von Schiffer vertraut, und dies scheint zu zeigen, daß der Ansatz von Schiffer alleine wohl nicht genug Kraft hatte, um die Theorie voranzutreiben. [Jost 1992]

Similarly Wolfgang Fuchs (Cornell):

I completely share your feelings about the inadequacy of the 6th section of the article, on Teichmüller Theory. The authors also share our feelings and they explicitly apologise right on the second page... This is very regrettable, but it seems to have been the best that could be managed at the time. The omission of sufficient references to the work of Grötzsch is indeed a severe blemish, particularly in view of the fact that Teichmüller himself made it very clear how much the work of Grötzsch inspired his ideas.

On the other hand I feel that you are not quite fair to the achievement of Teichmüller. T-space is rightfully named after him and its metrisation by the T-metric is a major discovery entirely due to Teichmüller, even though it had a precursor in Schiffer's Theory of inner variation. [Fuchs 1993]

Irrespective of the different positions regarding the importance of Grötzsch, Schiffer et al., it was certainly the responsibility of the *JB* to let their readers be informed of the broader historical context.

#### 4. On Teichmüller's Personality

The third defensible attitude towards a person like Teichmüller is to treat his life and his work as a whole. Possibly this is what the *JB* authors aimed at, but their attempt is not successful. Indeed, it is a difficult alternative. The *JB* authors claim "eine Ausarbeitung vorzulegen, die wesentlichen Aspekten von Teichmüllers Leben und Werk sorgfältig nachgeht" (p. 2), but frankly admit one limitation:

Dieser Bericht kann auf die Charakterisierung der gespannten und widersprüchlichen Persönlichkeit nicht weiter eingehen; er wird sich ganz auf eine Darstellung der belegbaren Ereignisse des Lebens und der wissenschaftlichen Entwicklung Oswald Teichmüllers beschränken. (p. 3)

The goal of such a random extract of Teichmüller's life, of such 'mindless focus on the chronology of events' ([Söderqvist 1993]) remains unclear. There is not much to learn for the reader, and I wonder what the *JB* authors learnt themselves: The result of their investigation of Teichmüller's personality are (in alpha-

betical order) the attributes 'aufgeweckt; begabt; bizarr; exzentrisch; gespannte und widersprüchliche Persönlichkeit; hartnäckig und aggressiv (in Verbandsfragen gegen andere Nazigrößen wie Hasse und Bieberbach); impulsiv; intellektuell; konnte auf andere Mathematiker zugehen; lakonisch; originell; politisch unsensibel; selbständig; weltfremd'. There are no other attributes to Teichmüller's personality in the *JB* article. I would call that 'Positivheroisierung' - *de mortuis nihil nisi bene*.

Maybe this 'Positivheroisierung' is a consequence of the *JB* authors' choice and use of sources. But maybe also it is a consequence of their explicit ambition to avoid Teichmüller's political 'Negativheroisierung':

Um keiner Negativheroisierung Teichmüllers und seiner studentischen Mitstreiter das Wort zu reden, ist zu bemerken, daß der nun folgende NS-Aktionismus unter der Hülle der Fachschaft in den Jahren 1933/34 nur insoweit seine fatale Wirkung entfalten konnte, als er mit dem institutionellen Eingriff des Nazi-Staates parallel lief. (p. 4)

Here we also see *how* the *JB* authors avoid the 'Negativheroisierung' of Teichmüller, namely by losing sight of historical dimensions and treating the 'Nazi-Staat' as if it were a historical subject of its own. Exactly this concept of the 'Staat' is the very nucleus of my dissent with them, the point where our views of the role and responsibility of science and scientists are completely irreconcilable. The 'Nazi-Staat' was, like any other state, made of people: in the case of Germany mostly of the members of the NSDAP and the SA. There was no other 'Staat' than these people and their activities, and the inevitable consequence of the *JB* authors' concept of state is for instance the playing down of Teichmüller's personal responsibility for his Nazi actions against Courant, Landau, Noether, and many others.

Another example of how the *JB* authors do not fully bring to light the terrifying context of Teichmüller's activities, are their comments on Teichmüller's second reprinted letter from December 7, 1938 when he worked in Berlin. From there he wrote to a fellow student in Göttingen:

Ihr habt ja Stöhr eine Weile da gehabt. Daß der dort nicht Hilfsassistent geworden ist, freut mich: zwar liegt kein Grund zum Haß gegen Stöhr vor, aber der Verlauf der Angelegenheit dürfte beweisen, daß in Bezug auf Euer Institut doch einiger Optimismus am Platze ist, daß Göttingen sich nicht zum Mülleimer Berlins degradieren läßt... Nun ist Stöhr, dessen mathematische Begabung feststeht, in Göttingen nicht Hilfsassistent geworden, obwohl er von Berlin abgelehnt wurde, voraussichtlich sogar deswegen bzw. aus denselben Gründen. (p. 31)

The *JB* authors explain in which sense Teichmüller meant that Göttingen did not degrade itself to being the 'Mülleimer', garbage can, of Berlin: "Dies ist von einer politischen, nicht mathematischen Beurteilungsebene gemeint". That is all about the political context of a letter written one month after the 'Reichskristallnacht'.

Another 'belegbares Ereignis', which the *JB* authors call attention to, is that Teichmüller's actions did not bring him major personal gains.<sup>11</sup> But Teichmüller

<sup>11</sup> Actually, there were gains. But it is left to the reader to figure out for himself what they were worth; and who knows today what Teichmüller's special student grant of monthly 200 Reichs Marks

shared his 'selflessness' with a number of others according to Göring: "Denn hier, glaube ich, hat niemand, der angesteckt hat - also bei den Synagogen ist es selbstverständlich, aber auch bei Privathäusern wohl - an den eigenen Nutzen gedacht..." [Heim, Aly 1993, quoted after the preprint in *Die Tageszeitung*, Nov. 7, 1992, p. 13] Reading the *JB* article again and again I wonder what message the *JB* and its authors wanted to convey.

Had the *JB* authors taken the historical context into account, they would have found that there is nothing special in the fact that Teichmüller's behaviour was not especially awarded in his scientific or military career immediately before and during the war. Göring's talk of December 6, 1938, *Der Jude kann nicht mehr in Deutschland wohnen* marked the transition from the pogrom - the speciality of Teichmüller's henchmen - to what Göring called the 'organische Lösung der Judenfrage', see e.g. [Hilberg 1961], [Pätzold 1983], [Deák 1989, 1992], and [Heim, Aly 1993]. Coercive measures were made considerably more extensive, penetrating, threatening, and systematic and so there was no longer any need for the Teichmüller type of 'Volkswillen'.<sup>12</sup>

I must also protest when the *JB* authors characterize the unlawful, criminal and brutal occupation of Norway only as 'beschwerliche Umstände' for Teichmüller (p. 12).<sup>13</sup>

To conclude: in the final outcome the *JB* authors separate Teichmüller's 'life' from his 'work' and remove the historical context of both, which makes Teichmüller's political life appear less appalling and his mathematical work more unique. Philip Davis (Providence) comments: "The separation of art, 'pure' science, technology from morals (or vice versa) has always been an attractive but potentially poisonous intellectual possibility." [Davis 1992].<sup>14</sup>

Therefore I find it necessary to challenge the *JB* article on Teichmüller, even when Wolfgang Fuchs (Cornell) warns me that "to pour scorn on an effort that may be

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was worth? My guess is that it was substantially higher than the average income of a worker. And the reader must guess himself that 'Abkommandierung zum OKW' means exemption from compulsory military front service.

<sup>12</sup> "Whether Teichmüller was privy to the then highly secret and perhaps not even explicitly formulated plans for the annihilation of the Jews, seems highly doubtful. Let us leave him the credit of being a first rate bastard on his own." [Fuchs 1993]

<sup>13</sup> The *JB* authors do not even get the political and military circumstances of Teichmüller's death in Russia in 1943 correct, when they differentiate between Hitler's occupation plans and those of a 'realistischeren Teils der militärischen Führung' (p. 13). As modern research indicates, the 'alternative' occupation plans were hardly more 'realistic' than Hitler's (accounted for e.g. in [Eichholz 1985; pp. 422-430] and the references given there).

<sup>14</sup> See also Herbert Mehrtens' analysis of 'purity without responsibility' as a typical trait of most Nazi mathematicians' self-concept and the dominant trait of German mathematicians' and physicists' way of 'coming to terms with the past' (Vergangenheitsbewältigung) after the fall of the Third Reich, [Mehrtens 1990]. A related (Peircean) view was presented in [Booß, Franke, Otte 1972], namely the need of each of us, also of the scientist in the specialized sense, to become theoreticians of our extra-scientific practice also when young and probably producing our best mathematical ideas. It seems inappropriate to acquit Teichmüller of responsibility for his comportment at the age of twenty especially in the absence of significant revision in his remaining ten years.

maladroit, but is well intentioned is a waste of ammunition.” He may be right, but to me the article is neither intellectually, nor morally acceptable.

### 5. Need for Normalization

The *JB* authors point out: “Teichmüller trennte ... anders als Bieberbach die fachlichen und die politischen Ebenen deutlich gegeneinander ab.” (p. 9) To various mathematicians that is a ‘redeeming feature’, combined with the “charitable explanation that he was a politically naive victim of the disease that was rampant in his country”.<sup>15</sup>

A different view was offered by Thomas Mann in his talk *Deutschland und die Deutschen* in the Library of Congress, Washington, June 1945. There he warned against the scientists’ ‘Weltfremdheit’ and added:

Wo der Hochmut des Intellektuellen sich mit seelischer Altertümllichkeit und Gebundenheit gattet, da ist der Teufel... Das Bedrohliche ist die Mischung von robuster Zeitgemäßheit, leistungsfähiger Fortgeschrittenheit und Vergangenheitstraum, der hochtechnisierte Romantizismus... [Mann 1947; pp. 14 and 33]

Alone, Teichmüller would have offered no threat to humanity. But he was one of many, including mathematicians, and that led to the disaster of the Second World War and the Holocaust.

The unmistakable conclusion is that the *JB*, “das offizielle Veröffentlichungsorgan der Deutschen Mathematiker-Vereinigung (DMV)” as the editorial states, was not able to contribute to the analysis of the German past. Unfortunately, that is no exceptional faux pas when recent publications by the Deutsche Mathematiker-Vereinigung are examined. As Jürgen Jost notices:

Ich teile grundsätzlich Ihre Auffassung, daß die Ereignisse an den mathematischen Instituten in Deutschland während des Dritten Reiches in der DMV im allgemeinen nur sehr unzulänglich und häufig sehr einseitig aufgearbeitet werden. Beispielsweise habe ich mich über das Heft 4 des 88. Jahrgangs des DMV-Jahresberichts sehr geärgert, in welchem in annähernd ähnlichem Umfang Artikel über Hermann Weyl und Ludwig Bieberbach nebeneinander gestellt wurden. Während Weyl Deutschland bekanntlich 1933 verlassen hat, war Bieberbach wohl der schlimmste Nazi unter den deutschen Mathematikern. Über diese Tatsache wurde jedoch in dem Artikel über Bieberbach in der Einleitung mit einigen lapidaren und das Wirken Bieberbachs noch verharmlosenden Sätzen hinweggegangen. Von einem Protest hat mich seinerzeit nur die Tatsache abgehalten, daß der Verfasser dieses Artikels, H. Grunsky, bei Drucklegung des Artikels schon verstorben war. [Jost 1992]

<sup>15</sup>[Ahlfors, Gehring 1982, p. vi]. Some mathematicians go further in discovering ‘redeeming features’: K. Strebel (Zürich) e.g. in his review of [Ahlfors, Gehring 1982] in *Mathematical Reviews*, Jan. 1984, p.14 does not mention the Nazi connection of Teichmüller, not even that 11 of the 20 Teichmüller papers explicitly mentioned in his review appeared in the telltale journal *Deutsche Mathematik*. But he did find it appropriate to remark that Teichmüller’s place of birth, Nordhausen, and nearby Göttingen were “now separated by the Iron Curtain”. Is that meant to suggest that Teichmüller after all backed the right horse?

Other obituaries provide further evidence of the lack of seriousness, professionalism, and decency on the side of the *JB* and DMV when looking back at the Nazi past. Without objection, the *JB* editor let pass a scandalous obituary for the Nazi Karl Strubecker. The author, Karl Leichtweiß (Stuttgart), does not mention Strubecker's enthusiasm for the Nazis and the 'Wiederaufstieg des Reiches'<sup>16</sup> and calls the liberation of Strasbourg in November 1944 an 'occupation':

Nicht zuletzt war es der Umsicht seiner jungen Frau zu verdanken, daß beide der Besetzung Straßburgs durch die alliierten Truppen am 23. 11. 1944 gerade noch rechtzeitig entkommen ... konnten. [*JB* 94 (1992), p. 108].

Although Jean Cerf (Paris) [1992] kindly writes "Il est remarquable, et bien préférable, que des Allemands aient eux-mêmes réagi",<sup>17</sup> it is a sad fact that no reactions from German *mathematicians*, no excuses by the DMV leaders, no personal consequences in the editorial board of the *JB* are known.

The (more informal) DMV-Mitteilungen passed an article by R. Kühnau (Halle) in which the leading journal of nazified mathematics in Germany, *Deutsche Mathematik*, is described as no more than 'embarrassing'.<sup>18</sup>

With that in mind, what otherwise might have been considered as minor inconsistencies gets a different weight as in the case of the Teichmüller article. An uninformed view may be quite understandable individually after so many years and with authors born after 1945. However, it can not be accepted in a professional journal.

What then would be a 'normal' attitude towards the Nazi past? The historian Joachim Radkau (Bielefeld) wrote me:

Ich meine, da muß man unterscheiden, welche Art von Normalisierung man meint. Ein 'normales' historisches Phänomen - so kann ich nur inständig hoffen - wird der Nazismus niemals werden, wenn nicht Völkermord in Zukunft ein normales Vorkommnis wird. Eine andere Frage ist m. A. die, ob sich die heutigen Deutschen, insbesondere die

<sup>16</sup>K. Strubecker, *Deutsche Math.* 7 (1942-44), p. 260.

<sup>17</sup>Cerf refers to the following sarcastic comment in the German science magazine *Forum Wissenschaft*: "Einen denkwürdigen Nachruf des Stuttgarter Professors Karl Leichtweiß für den kürzlich auf dem Weg zu seinem Rotary-Club verstorbenen Mathematiker Karl Strubecker publizierte dieses Jahr das offizielle Mitteilungsblatt der Deutschen Mathematiker-Vereinigung. Besonders lobend erwähnt wird in Strubeckers Lebenslauf z.B. seine Mitwirkung an der 'Neugründung' der 'Reichsuniversität Straßburg' im Jahr 1941, wo er in selbstlosem Einsatz 'in einem leeren Wohnhaus ein mathematisches Institut mit einer großen Bibliothek aufbaute'. Man könnte über diese nationalsozialistische Kulturleistung glatt vergessen, daß Straßburg eine der ältesten und größten Universitäten Europas war, an der z.B. Pasteur und Goethe studiert und gelehrt haben. Kein Wunder, daß Strubecker die 'Straßburger Zeit' als schönste in seinem Leben begriff, die zudem auch noch so glücklich beendet wurde und keine negativen Auswirkungen auf seine spätere Karriere hatte, wie Leichtweiß zu berichten weiß..." [Koelschitzky 1992]

<sup>18</sup>Kühnau compares it with the former *Mitt. d. Math. Ges. d. DDR*, in which he occasionally finds "politisch durchtränkte Artikel, die manchmal noch peinlicher sind, als was man in der *Deutschen Mathematik* lesen kann." (*Mitteilungen der Deutschen Mathematiker-Vereinigung*, Heft 2, April 1992, p. 59). Kühnau's belittlement of *Deutsche Mathematik* is quoted without any dissociation in the editorial part of the same issue of *DMV-Mitteilungen*, p. 50.

jüngere Generation, als normales Volk unter anderen vorkommen sollten. Da würde ich ... eher zu einem Ja tendieren oder zumindest sagen, sie sollten versuchen ein normales zu werden. Ich habe schon den Eindruck, daß sich manche ... nicht genügend klar machen, daß es für das innere Verhältnis zur Nazi-Zeit ein großer Unterschied ist, ob man in den 30er und 40er oder in den 70er Jahren geboren ist. Das ist psychologisch ganz natürlich. Als ich 1984 in Perugia ein italienisch-deutsches Historikersymposium zum Thema 'Faschismus' veranstaltete und manche jungen deutschen Historiker ein tiefes Schuldbewußtsein bekundeten, sagte mir hinterher Amendola, der italienische Leiter (Resistenza-Forscher und langjähriger Kommunist), sowas sollten wir lieber lassen und uns als ganz normale Nation vorkommen - das wirke besser auf ihn. Manchmal denke ich, es gibt auch so ein *negatives* deutsches Auerwähltheitsbewußtsein, das Ausländern manchmal auf die Nerven fällt... [Radkau 1993]

A precondition of normality is, according to Radkau, "daß man nicht irgendwie bemänteln sollte, wenn einer eine wirklich schlimme und infame Gestalt war, auch wenn er als Mathematiker - was ich nicht beurteilen kann - gelegentlich brillante Ideen gehabt haben mag".

'Coming to terms with the past' is also a general cultural problem. Historian of medicine Anne Harrington (Harvard) observes:

As historians, it seems we do not yet know how to write about Nazi medicine and racial hygiene policies without ultimately abandoning the cultivated relativism of our discipline and taking a moral stand. And perhaps we should thank God for that - because only when we can combine scholarship with uncompromising moral principles do we stand a chance of truly 'coming to terms' with this blot on our century that has refused to settle down into the history books and let us in peace. [Harrington 1989; p. 505]

Or to quote Abikoff's letter once again:

I think that the important thing is that young Germans have to face the evil in their history (by the way, Americans have to see the same in the treatment of the indigenous population by the 'civilizers') before they can enjoy the fruits of the great German tradition of culture and grace. I don't think I would write the correction as you did. I would write of historical evils that may make possible the expulsions (by the government) and killings (by the neo-Nazis) that are now occurring. We have to express concern that even the worst accusations may be true and, as mathematicians, we have to condemn them — certainly we cannot be party to a whitewash. [Abikoff 1992]

The Deutsche Mathematiker-Vereinigung and the Jahresbericht should refrain from contributing to the uneasiness felt by mathematicians in Germany and abroad<sup>19</sup> and giving rise to suspicion that its journal is the organ of a group of amateurs or cynics.

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<sup>19</sup>Jean-Pierre Kahane (Paris) writes in alarm: "Les vieux démons ne sont pas morts." [Kahane 1992]

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