

Making Primæ: An Innovative Type for Learning to Read and Write

Titus Nemeth & Martin Tiefenthaler

Abstract. This paper is as much a history of Austrian handwriting models as an account of the making of Primæ, an innovative new type designed for learning to read and write. It situates the narrative of this contemporary applied design project against an historical overview of writing instruction in Austria, identifying key factors in the evolution of a national handwriting model. It demonstrates the pronounced formal continuities that span the last 100 years of teaching writing in primary school, and lays out rationale, approach, and outcomes of the last handwriting instruction reform—effected between 1984 and 1995—that was sanctioned by the Ministry of Education. It casts a critical light on the implementation of the resulting national handwriting model ‘Österreichische Schulschrift 1995’ and highlights its strategic shortcomings.

The paper then presents the making of Primæ, summarising conceptual approach, resulting design principles, and technical implementation. In this account, recurring arguments of academic discourse about methodological differences are cross referenced with the formal solutions proposed in Primæ. The paper demonstrates how the relationship of disconnected writing and connected writing was achieved and how it facilitates the incremental learning of writing styles. It emphasises the importance of design and technical skills for the making of a handwriting model used in education and shows solutions to the redundant problems found in inadequately made fonts. It argues for a comprehensive characterset for the sake of linguistic inclusion in the classroom, a systematically neglected aspect in national handwriting fonts. In conclusion, the paper argues for increased sensitivity to form and craftsmanship in handwriting education, as the acute attention children give to examples merits nothing less than our very best design efforts.

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Y. Haralambous (Ed.), *Grapholinguistics in the 21st Century 2024. Proceedings*
Grapholinguistics and Its Applications (ISSN: 2681-8566, e-ISSN: 2534-5192), Vol. 12.
Fluxus Editions, Brest, 2026, pp. 713–756. <https://doi.org/10.36824/2024-graf-neme>
ISBN: 978-2-487055-12-4, e-ISBN: 978-2-487055-13-1

Beginnings of Handwriting Instruction in Austria

When in the late sixteenth century formal regulations began to be articulated, the sparse evidence suggests that a standardised handwriting instruction did not exist yet. For example, the school regulation of Tyrol from 1586 refers to so-called ‘Namenbüchlein’—spelling or Abc primers—and to the sample alphabets that they contained.¹ According to Alois Legrün, these booklets appear to have been manufactured by the respective schoolmasters and were likely to reflect their writing styles. This practice continued for some 200 years, as illustrated by the regulations of Kremsmünster of 1732, which formally prescribed the teacher’s hand as the only permissible model to be taught.² The first extant spelling primers that were printed in Austria date from the same time, indicating the gradual move towards greater uniformity in children’s instruction.³ They found a prescriptive expression in the first national school regulation that was initiated by Empress Maria Theresia (1717–1780) and came into force on 6 December 1774.

The Austrian school regulation was conceived by the Prussian Johann Ignaz von Felbiger (1724–1788), who could build on his prior experience conceiving school regulations for Catholics in Silesia.⁴ The *Allgemeine Schulordnung für die deutschen Normal-, Haupt- und Trivialschulen* stipulated that all children aged six to twelve had to be taught and its provisions extended to the training of teachers and the contents of textbooks.⁵ In 1775, the *Methodenbuch für Lehrer der deutschen Schulen in den kaiserlich-königlichen Erbländern* offered guidance for teachers in more than 500 pages that extended, amongst other subjects, to the merits of teaching in a group, the qualities teachers ought to have, and subject-specific considerations.⁶ In conjunction with the *Methodenbuch*, Felbiger also published the reading primer *Abc- oder Namenbüchlein*. On its first spread a chart shows the alphabet in four styles of type—Fraktur, Kurrent, roman, and italic—that children were expected to master—an illustration of the considerable de-

1. Alois Legrün, *Auf dem Wege zur naturgemäßen Schrift* (Vienna, 1924), 4.

2. Ludwig Boyer, *Elementarschulen und Elementarunterricht in Österreich: illustrierte Chronik der Schul- und Methodengeschichte von den ältesten Quellen bis zum Ende des 19. Jahrhunderts* (Graz, 2012), 73.

3. Ludwig Boyer names the primer by Johann Balthasar Antesperg of 1739 as an early example. Boyer, *Elementarschulen und Elementarunterricht in Österreich*, 73.

4. Prussia was an early pioneer of public schooling.

5. *Allgemeine Schulordnung, für die deutschen Normal-Haupt- und Trivialschulen in sämtlichen Kaiserl. Königl. Erbländern d.d. Wien, den 6ten December 1774* (Vienna, 1774).

6. Johann Ignaz von Felbiger, *Methodenbuch für Lehrer der deutschen Schulen in den kaiserlich-königlichen Erbländern* (Vienna, 1776).

mands that the biscriptualism in the German-speaking world placed on handwriting education.⁷

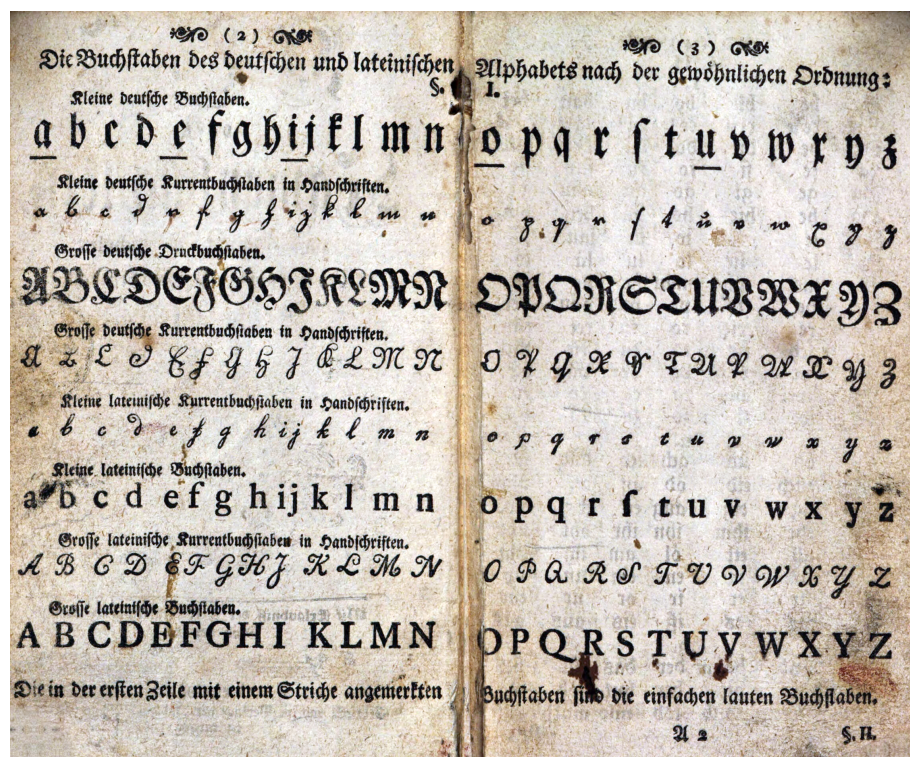


FIG. 1. Alphabet chart showing the four basic letterform styles children in the German-speaking world were expected to learn for basic literacy. From Johann Ignaz von Felbiger, *ABC oder Namenbüchlein* (Linz: Johann Michael Feichtinger sel. Wittwe, 1786) pp. 2–3. Courtesy of the Austrian National Library, <http://data.onb.ac.at/rec/AC08741604>

A writing manual, the *Anleitung zum Schönschreiben nach Regeln und Mustern, Oder Vorschriften: Zum Gebrauche der deutschen Schulen in den kaiserl. königl. Staaten*, was published in parallel and was intended to complement the *Methodenbuch* for handwriting instruction. The examples were written by the scribe of the *Normalschule zu St Stefan*—the Viennese school that

7. In the early modern period the use of blackletter letterforms subsided in most of Europe, as roman letterforms became the dominant style. However, in the German-speaking world the two variants were used in parallel, denoting German and foreign language—and specifically Latin text—respectively.

served as a standard for all schools throughout the empire—and were reproduced with copperplate etchings.

According to the author, it contained ‘all that is essential for Germans to know and learn of the most common styles of writing’,⁸ including models of the three writing styles Kurrent (German cursive), Kanzlei (German chancery), and Fraktur (blackletter), as well as a version of the so-called Latin running hand. As in most German writing manuals, the Germanic writing styles held pride of place and Latin appeared secondary, both in prominence of presentation and accomplishment. Despite this apparent order of priorities, stylistically all samples reflected the then current ideal of the English roundhand with its marked contrast between thick and thin strokes and the tendency towards decorative swashes.⁹ This adoption of features that originated in Latin writing styles was to remain characteristic for the further evolution of Germanic handwriting until the twentieth century and featured prominently in the ensuing disputes over the appropriate writing styles for the German speaking world.

Handwriting Instruction in the Nineteenth Century

Felbiger’s writing manual and his *Abc- oder Namenbüchlein* remained in use into the middle of the nineteenth century.¹⁰ Only after the revolutionary movements of 1848 and the emergence of a liberal bourgeoisie, the education system became an area of reform and modernisation. In 1868 the Church nominally lost its influential role in public education,¹¹ and with the Reichsvolksschulgesetz of 1869 the first modern school regulation of Austria was enacted.¹² It provided the legal basis for a thorough

8. ‘Die Anleitung zum Schönschreiben [...] enthält alles wesentliche, was für Deutsche von den gebräuchlichsten Schriftarten zu wissen und zu lernen nothwendig ist.’ *Anleitung zum Schönschreiben nach Regeln und Mustern, Oder Vorschriften: Zum Gebrauche der deutschen Schulen in den kais. königl. Staaten* (Wien, 1775), 2 [my translation].

9. George Bickham’s influential *The Universal Penman* had been published in 1733.

10. The literature provides various dates. Karl Dostal claims the writing manual remained the official model until 1832 without providing a source, whereas Legrün suggests that a decree of 2 February 1866 established the freedom of method and didactic material in primary schools. Legrün noted, however, that he was not able to consult the actual decree, because it had already been thrown away. Karl A. Dostal, *Methodik des Schreibunterrichts: 1.–8. Schulstufe* (Vienna, 1972), 27. Legrün, *Auf dem Wege zur naturgemäßen Schrift*, 12.

11. Reinhard Buchberger and Nina Linke, ‘Von den Tafelkratzern des Mittelalters bis zu den Tintenpatzern des fin de siècle’, in *Tafelkratzer, Tintenpatzer: Schulgeschichten aus Wien*, ed. by Reinhard Buchberger and others (Vienna, 2015), 61.

12. ‘Imperial primary school act’ [my translation].



FIG. 2. Illustration of the first official Austrian model used for handwriting instruction, demonstrating the technical exigencies that were required. From *Anleitung zum Schönschreiben nach Regeln und Mustern, Oder Vorschriften* (Vienna: Verlag der deutschen Schulanstalt, 1775) plate 2. Courtesy of the Austrian National Library, <http://data.onb.ac.at/rec/AC09658801>

reconsideration of the role of education in the country and remained in force for nearly 100 years.¹³ Once the state monopoly on the production of didactic material was lifted, private enterprise increasingly began to compete in the emerging market. New primers and teaching materials—which still had to be approved by the school authority—proliferated and diversified the available options.¹⁴

The emerging calligraphic handbooks for writing instruction offered various takes on the established hands Kurrent, Fraktur, and Latin.¹⁵ Whereas they were of varying quality and some espoused specific concepts, stylistically they tended to be heavily influenced by the English roundhand. Ironically, this also applied to the Germanic styles, contra-

13. Boyer, *Elementarschulen und Elementarunterricht in Österreich*, 286.

14. Buchberger and Linke, 'Von den Tafelkratzern des Mittelalters bis zu den Tintenpatzern des fin de siècle', 63.

15. The Kanzlei style, still in use in the early nineteenth century, gradually disappeared from use. According to Georg Land, its demise was fastened by its incompatibility with pointed steel pens, which came to dominate penmanship in the nineteenth century. Georg Lang, *Die Technik der Feder: Der Weg der Schreiblehrkunst, sachlich begründet und methodisch erläutert. Ein Vortrag mit ergänzenden Abhandlungen zur Federtechnik, Schriftästhetik und Schreibmethodik*, Reprint of first edition from 1905 (Berlin, Boston, 2019), 65 <https://doi.org/10.1515/9783486732672> [accessed 20 January 2025].

dicting their different origins and their apparent priority in handwriting instruction. Some issues that featured prominently in discussions about the deterioration of children's writing arose from the introduction of traits borrowed from Latin styles. For example, traditionally Kurrent letterforms had various inclinations, a feature that was considered characteristic for the style.¹⁶ But as the nineteenth century advanced, the angles of letterforms were gradually normalised, matching the consistent inclination of English roundhand, a development that Legrün and other scholars opposed. According to them, it forced the hand into an unnatural position that was difficult to acquire, and which contradicted the style's internal logic. In his sketch of the historical evolution of handwriting, Legrün even speaks of the 'corruption of our handwriting' that happened when, in the first decades of the nineteenth century, writing masters in Germany adopted the pointed metal pen.¹⁷

Other criticisms of the overly mannered and rigid ideals of nineteenth-century fashion in penmanship related to the excessively strong inclination, the extreme proportions of letterforms with a small x-height and exuberant extenders, the technical difficulty of execution, as well as the general tendency to exaggerated ornamentation.¹⁸ Scholars invested in handwriting instruction lamented that beautification overruled more pragmatic concerns for teaching, legibility, and ergonomics. In reaction to the dominant style, alternative proposals such as upright cursive writing emerged. This wide-spread discontent with handwriting instruction was underpinned by a fierce dispute about the respective merits of Ger-

16. The Kurrent hand used two distinct writing techniques for various letterforms: key minuscules such as e, m, n, u were written only with movements of the fingers, whereas letters with extenders and capitals were shaped with a gesture that involved hand and wrist, leading to various writing angles. Dostal, *Methodik des Schreibunterrichts*, 27, and Legrün, *Auf dem Wege zur naturgemäßen Schrift*, 6–7.

17. My translation of 'die Verfälschung unferer Schreibschrift', Legrün, *Auf dem Wege zur naturgemäßen Schrift*, 11. Legrün identifies the calligrapher Johann Heinrigs from Krefeld (1781–1861) as the likely originator of the practice when, in 1813, he sought to 'redesign' handwriting after the model of the English roundhand 'by showing writing [...] in such a way as may be engraved in a copperplate, but cannot be performed with the pens commonly used in schools'. My translation of 'indem er [...] die Schrift so darstellte, wie sie wohl in die Kupferplatte eingraviert werden konnte, wie sie aber mit den in den Schulen verwendeten Schreibfedern unausführbar ist', Legrün, *Auf dem Wege zur naturgemäßen Schrift*, 13, and Theodor Loew, *Gebrechen unseres Schulschreibsystems und ihre Herkunft mit Vorschlägen zur Abhilfe* (München, 1913).

18. Whilst elements of the critique appear reasonable from a contemporary perspective, the manner in which it was advanced, often was not. Frequently authors who favoured more conservative Germanic writing styles evoked notions of national identity, suggested innate 'natural' advantages, and dismissed the characteristics of English roundhand as weak, soft, and effeminate. See for example Legrün, *Auf dem Wege zur naturgemäßen Schrift*, 13, and Theodor Loew, *Gebrechen unseres Schulschreibsystems und ihre Herkunft mit Vorschlägen zur Abhilfe* (München, 1913).

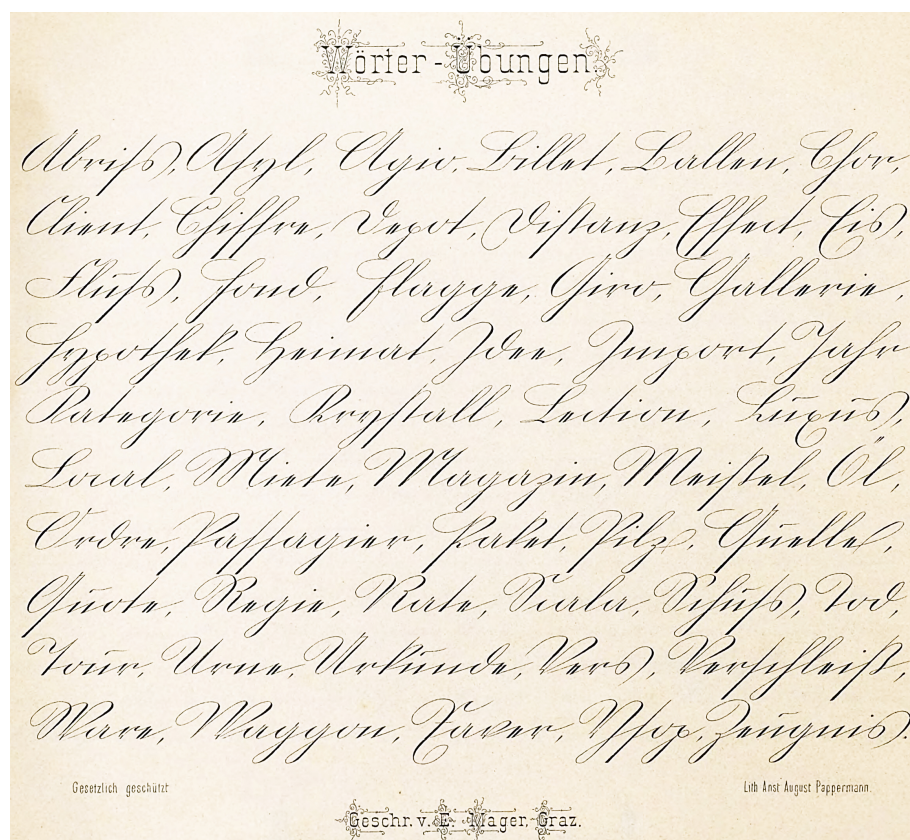


FIG. 3. An example of the overly mannered, technically challenging, and poorly readable Kurrent style that was fashionable in nineteenth century Austria. From Emil Mager, *Moderne und neueste Current-Schrift für das kaufmännische Schnellschreiben* (Vienna: Perles, 1892) plate 11. Courtesy of the Austrian National Library, <http://data.onb.ac.at/rec/AC10091818>

manic and Latin writing styles that engaged the German speaking world at the time. The so-called 'Schriftstreit' (script controversy) principally played out through publications and extended from the 1880s until a decree by the German National Socialist regime brought it to an abrupt end in 1941. A discussion of the Schriftstreit goes beyond the scope of the present paper, but the controversy provided the background for the reform proposals for handwriting instruction of the early twentieth century.¹⁹

19. For studies of the subject see Silvia Hartmann, *Fraktur Oder Antiqua: Der Schriftstreit von 1881 Bis 1941*, 2nd edn (1999); Horst Heiderhoff, *Antiqua oder Fraktur?: zur*

One of the reform proposals of the 1910s was developed by the graphic artist Ludwig Sütterlin (1865–1917). He taught from 1904 at the school of arts and crafts (Unterrichtsanstalt des königlichen Kunstgewerbemuseums) in Berlin, where he developed a keen interest in type.²⁰ In 1910 Sütterlin presented a draft of a new model for handwriting instruction to the Prussian Ministry of Education and Culture (Kultusministerium),²¹ and was subsequently commissioned to develop it into a course for kindergarten and primary school teachers.²² The resulting curriculum was introduced as a field trial in two schools in Berlin and by 1914 Sütterlin was ready to publish his corresponding teaching manual, but postponed its release because of the start of the war. The book was eventually published in 1917, just months ahead of Sütterlin's premature death.

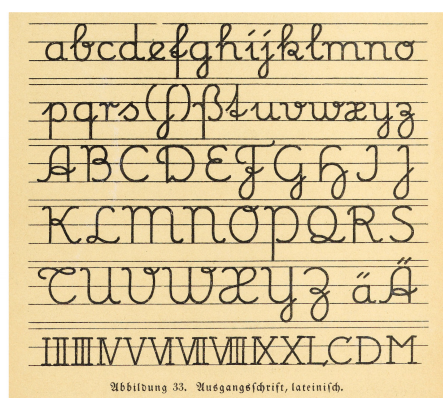
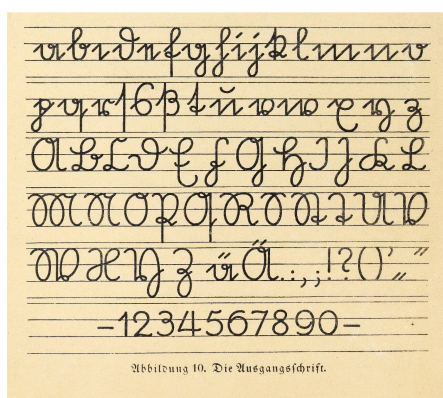


FIG. 4. The writing models of Friedrich Sütterlin strongly influenced the work of Alois Legrün. From Friedrich Sütterlin, *Neuer Leitfaden für den Schreibunterricht* (Berlin: Verlag Albrecht Dürer Haus, 1922) plates 10 and 33. Courtesy of the German National Library, <https://d-nb.info/1124005439>

Problemgeschichte eines Streits (Frankfurt am Main, 1971); August Kirschmann, *Antiqua oder Fraktur? (Lateinische oder deutsche Schrift.) Kritische Studie*, Monographien des Buchgewerbes, 1, 2nd rev. ed. (Leipzig, 1912).

20. Reinhold Zilch, 'Sütterlin, Ludwig', *Neue Deutsche Biographie* (2013), 688–89 <https://www.deutsche-biographie.de/sfz129700.html#dbcontent> [accessed 21 January 2025].

21. Zilch, 'Sütterlin, Ludwig', 688–89.

22. Ludwig Sütterlin, *Neuer Leitfaden für den Schreibunterricht* (Berlin, 1917), 1. Sütterlin described the courses which started in October 1911—three in total, each running for 24 months—as workshops with twenty-four participants in which all questions of instruction and letterforms were thoroughly discussed.

Sütterlin's two writing models for Kurrent and Latin styles were a radical departure from established norms. They jettisoned all inclination and any degree of stroke contrast, reduced the proportions of ascenders, x-height, and descenders to a manageable 1:1:1 ratio, and rendered the letterforms as wide, open shapes. Sütterlin's introduction of a flat, circular nib producing monolinear strokes was central to creating formal qualities that children could reproduce easily. They give the impression of a slow, diligent, and controlled writing movement, which corresponds well to the first steps of writing acquisition.

Sütterlin's model became highly successful and was widely adopted throughout Germany. His name and work became synonymous with his form of the Kurrent style—casually termed 'Sütterlinschrift', which in some states was taught until the 1950s. By contrast, his Latin model received considerably less interest and attention, reflecting the preeminent role Germanic writing styles still held in large parts of the German speaking world.²³ In Austria, Sütterlin's work resonated as well, and his influence was to last even longer, albeit only indirectly.

The Wiener Richtformen of 1924

Alois Legrün (1889–1970) was a teacher at the Pedagogical Institute of the city of Vienna (Pädagogisches Institut der Stadt Wien), a key institution of the school reforms that were implemented under the leadership of the social democrat Otto Glöckel (1874–1935).²⁴ In 1924 Legrün published a new model for writing instruction, which came to be known as the 'Wiener Richtformen'.

According to Legrün's account, he had developed the letterforms with his students at the Pedagogical Institute.²⁵ Subsequently, a commission composed of Viennese teachers and scholars of writing approved the design and in 1924 it was presented to all teachers for critique.²⁶ Legrün underlined that he had been known as an opponent of prescriptive writing models and that he intended his design to serve only as an aid to

23. Tellingly, having dedicated 84 pages to general considerations and the instruction of Kurrent, even Sütterlin remarked about his Latin model that 'there isn't much to say about it' [my translation]. Sütterlin, *Neuer Leitfaden für den Schreibunterricht*, 85.

24. Glöckel was first Minister for Education from 1918 to 1920 and then, after the collapse of the federal government, president of Vienna's state body for education, the Stadtschulrat. Alfred Pfoer, 'Die österreichische Schulreform', in *Tafelkratzer, Tintenpatzer: Schulgeschichten aus Wien*, ed. by Reinhard Buchberger and others (Vienna, 2015), 203.

25. Legrün, *Auf dem Wege zur naturgemäßen Schrift*, 23.

26. According to Dostal, Vienna's Stadtschulrat recommended the 'Wiener Richtformen' for handwriting instruction in 1924. Dostal, *Methodik des Schreibunterrichts*, 31.

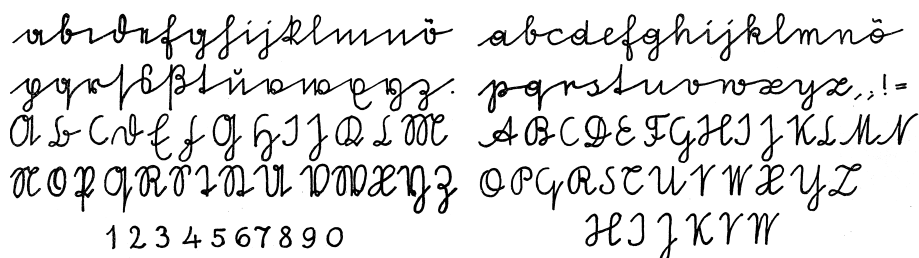


FIG. 5. Samples of the 'Wiener Richtformen' teaching alphabet, from Alois Legrün, *Auf dem Wege zur naturgemäßen Schrift*, (Vienna: Verlag für Jugend und Volk, 1924) 24–25

teachers: He had argued against their use as recently as 1922, in a publication that showed the strong influence of the German writing reformer Fritz Kuhlmann (1857–1941).²⁷ He described his proposal to have resulted from the following guiding principles: (1) neutrality of inclination, where the upright form of the model is not intended to be compulsory; (2) a minimum of ambiguity in letterforms; (3) shapes that allow for continuous single-stroke writing, both internally and in connection to surrounding letters; and (4) the representation of pared-down, archetypal letterforms.

Legrün was keenly aware of Sütterlin's work—he referenced it extensively in earlier publications—but did not mention it in the notes that accompanied his proposed design even though a comparison of the two models reveals noticeable formal similarities.²⁸

The 'Wiener Richtformen' were characterised by the same vertical proportions as found in Sütterlin's design and the use of a pen that produced monolinear strokes. In the Kurrent style, small structural differences are only found in a handful of capitals (H, K, L, M, N), all other letterforms follow the same pattern with small differences of execution. Also in the Latin style, most minuscules share qualities with Sütterlin's model, yet here Legrün introduced novel features. Following his principle of continuous single-stroke letter architectures, the letterforms for a, d, g, o, p, and q contained an internal loop, allowing them to be written and connected to adjacent letters without lifting the pen. This construction derived from the Kurrent style, and Legrün, who considered shorthand to be the future of writing, may have thought it advantageous for speed. A concern for writing pace also appears to be reflected in inter-

27. Alois Legrün, *Naturgemäßer Schreibunterricht. Grundlagen und Wege*, Lehrerbücherei 12 (Vienna, 1922). Legrün, *Auf dem Wege zur naturgemäßen Schrift*, 23.

28. Dostal notes that 'Sütterlin's influence extends into the present, in Austria primarily through the work of Alois Legrün, Vienna' [my translation], but does not elaborate how this influence manifested itself. Dostal, *Methodik des Schreibunterrichts*, 30.

letter joining strokes. Whereas Sütterlin showed his letterforms without connections, in Legrün's sample all minuscules are joined up. The distance between letters is remarkably wide, evoking a style of handwriting that was popular in the United States during this time. The 'Palmer method' had been invented by Austin Norman Palmer (1860–1927) in the 1880s and 90s, and he promoted it with great success in the first decades of the twentieth century.²⁹ Its widely spaced word images may have been known by Legrün, and Palmer's ideas of muscular movement and rigorous exercise as the foundations of penmanship reflected topical notions of the time that can also be found in the writings of contemporaries in Austria and Germany.

The capitals of the 'Wiener Richtformen' diverged further from Sütterlin's model, replacing some of its Kurrent shapes with roman letterforms. As in the minuscules, in the capitals Legrün's concern for single-stroke constructions is apparent: with the exception of F and K, all capitals can be written in one uninterrupted movement. Regarding the mixture of Kurrent and roman styles, Legrün noted that the letterforms of b, f, j, l, C, J, I, L, and X were kept identical for both styles as this was in line with current practice, but that he (following Sütterlin) also introduced the same shape for t.

Legrün's 'Wiener Richtformen' were adopted in a slightly modified form across Austria in 1926 and remained in use until 1941, when the National Socialist ban on blackletter styles came into force and spelled the end for Kurrentschrift.

For the remainder of the Third Reich, a Latin cursive type—the 'Deutsche Normalschrift'—became the new, short-lived standard.³⁰ After the war, on 22 September 1945, the Austrian authorities reverted to a 'Richtalphabet 1945' and decreed that only the Latin hand was to be taught in schools.³¹ The following year, a decree prescribed again Legrün's model, now called 'Österreichische Schulschrift', as the stan-

29. Palmer's method was published in 1894 and promoted vigorously by its inventor. Austin Norman Palmer, *Palmer's Guide to Business Writing* (Cedar Rapids, Ia, 1894). See also Tamara Plakins Thornton, *Handwriting in America: A Cultural History* (1996). For a thorough perspective on the teaching of writing in the United Kingdom in the early twentieth century see Sue Walker, 'Letterforms for Handwriting and Reading: Print Script and Sanserifs in Early Twentieth-Century England', *Typography Papers*, 7 (2007), 81–114. For a cursory overview of handwriting instruction in the Latin script in the twentieth century see Rosemary Sassoon, *Handwriting of the Twentieth Century* (Bristol, Chicago, 2007).

30. Dostal, *Methodik des Schreibunterrichts*, 32–33.

31. *Verordnungsblatt für den Dienstbereich des Bundesministeriums für Unterricht* (Vienna, 1946), 69. According to Dostal, this 'Richtalphabet' was Legrün's model.

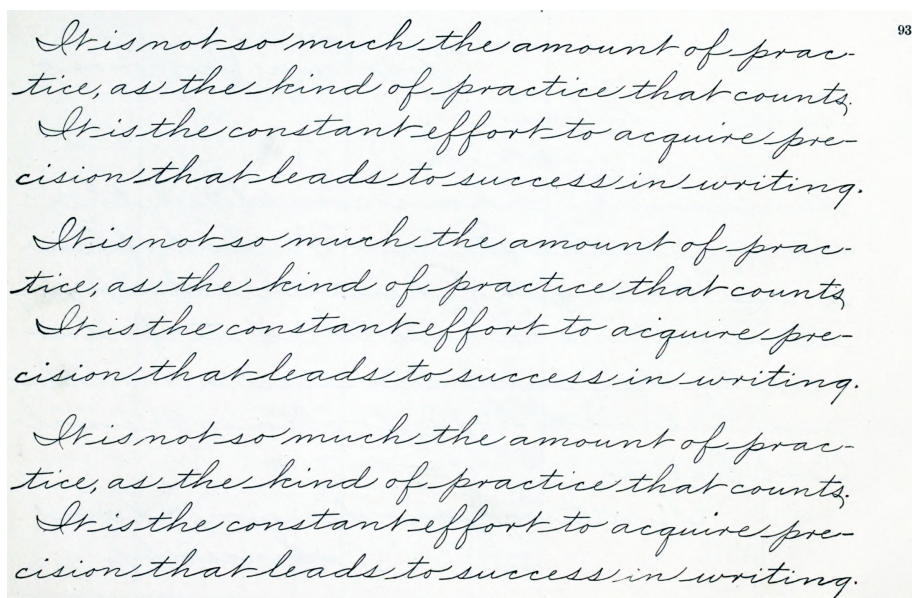


FIG. 6. A page of Palmer's handwriting manual, showing the extended joining strokes between letters. From Austin Palmer, *The Palmer method of business writing*, (New York: A.N. Palmer Company, 1915) 93. Courtesy of University of California Libraries, <https://archive.org/details/palmermethodofbu00palmrich/>

dard for handwriting instruction.³² Under this new label a couple of minor changes were introduced—the descender of the f lost its loop and the x was no longer written in one continuous movement—but overall Legrún's model was maintained.

The following decades saw few consequential changes in Austria's approach to handwriting instruction. In 1951 the Ministry, then run by Austria's conservative party, reintroduced the teaching of Kurrent into the curriculum. In 1964 the Ministry initiated a reform of the Latin model, but the proposal was rejected during the review process.³³ The following year, a slightly modified version with alterations of two letters

32. A sample of the model was published as an attachment to the Ministry's regulations, referencing the bill 32.964-IV/12, dated 3 October 1946 *Verordnungsblatt für den Dienstbereich des Bundesministeriums für Unterricht* (Vienna, 1946).

33. Dostal, *Methodik des Schreibunterrichts*, 34–35. Hadmar Lichtenwallner und Brigitta Scheiber suggest that the rejection of the reform proposal was caused by a lack of public consultation and that a perceived 'top-down' imposition of the reform fuelled the opposition amongst teachers. Hadmar Lichtenwallner and Brigitta Scheiber, 'Die Österreichische Schulschrift', in *Kommentar zum Lehrplan der Volksschule*, ed. by Dieter Antoni, 2nd rev. ed. (Vienna, 1996), 666.

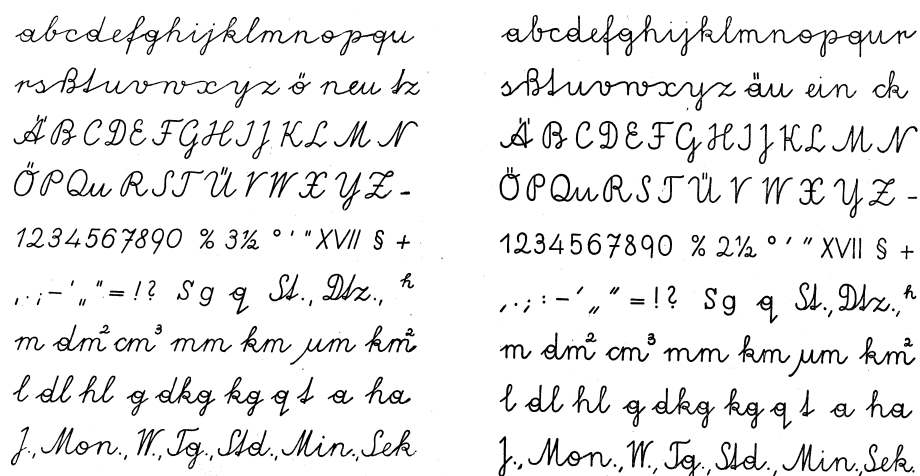


FIG. 7. Official sample of the post-war handwriting model that was principally based on Legrün's 1924 design. *Die Österreichische Schulschrift 1946*, (Vienna: Österreichischer Bundesverlag, 1946)

was introduced. The r was given the unusual form that originated in the historical French Ronde hand, a style that was rediscovered and promoted by Friederich Soenneken (1848–1919), whilst the x, previously following the shape of the Ronde, was now rendered in the more conventional crossed configuration. Overall, however, forty years after Legrün introduced his model for the first time, it was still largely unchanged.

Despite its undeniable success, some of its characteristics no longer reflected the state of the art of handwriting instruction and calls for a reform emerged. In 1972, Karl Dostal argued that a new model ought to be inclined and listed nine points of desirable improvements that he illustrated with a draft proposal. Amongst others, he suggested that the construction of individual letterforms should be streamlined, avoiding superimposed strokes and suppressing the loops in a, d, g, and q—a peculiarity introduced by Legrün—and that the arches of n, m, u etc. should be more pointed to become conducive to higher writing pace, in effect calling for a design akin to the italic hand. Dostal concluded that,

he new letterforms contain many traits that are also found in refined adult handwriting and contemporary graphic design, for why should primary school pupils learn and automatise a script that they won't later be able to write quickly?³⁴

34. 'Die neuen Formen enthalten viele Merkmale, die man auch in gepflegten Erwachsenenhandschriften und in der modernen Graphik antrifft, denn weshalb

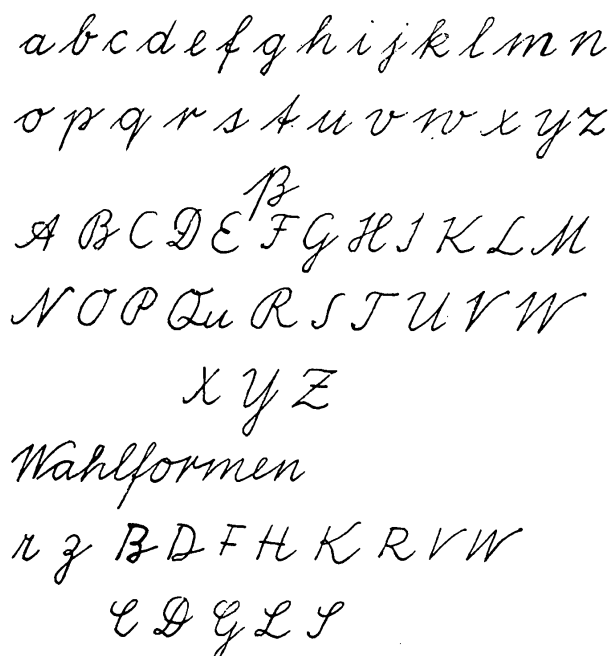


FIG. 8. Karl Dostal's draft proposal for a reformed handwriting model, from *Methodik des Schreibunterrichts: 1.–8. Schulstufe*, (Vienna: Jugend und Volk, 1972) 37

The Schulschrift of 1995

Despite the reform calls from the 1970s, only in 1984 the Ministry, then again under social democratic leadership, tasked a working group—Ludwig Boyer, Reinhold Felzmann, Hadmar Lichtenwallner, and Oskar Seber—to develop a proposal.³⁵ Its stated goals were to develop a handwriting model that was (1) specific to Austria; (2) easily learned through simplified letterforms; (3) faster to write through the removal of redun-

sollen die Volksschüler eine Schrift lernen und automatisieren, die sie später doch nicht schnell schreiben können?' Dostal, *Methodik des Schreibunterrichts*, 38–39 [my translation].

35. Ludwig Boyer, *Kommentar zur Ausgangsschrift*, ed. by Wilhelm Wolf, aps, 12, 2nd rev. ed. (Vienna, 1988), 76. Further to the four members of the initial draft, the final announcement of the new model listed fourteen (!) additional contributors, namely Dieter Antoni, Thomas Benke, Franz Gerstenbrand, Margarete Habringer, Margit Hochleitner, Beatrix Irschik, Rosemarie Müller, Richard Olechowski, Andrea Santner, Brigitta Scheiber, Nikolaus Severinski, Wilhelm Urban, Barbara Weiland, and Wilhelm Wolf. *Die Österreichische Schulschrift 1995: gut lesbar, leicht erlernbar, besser vermittelbar* (Vienna, 1994).

dant elements; (4) highly legible, offering clear and unambiguous letterforms; (5) conducive to further development into a personal hand; (6) reflecting recent scientific findings (where they did not contradict other concerns); (7) aesthetically pleasing; (8) in line with international trends such as the convergence of manuscript letterforms with printing type.³⁶ The following year, a draft that sought to fulfil these criteria was ready and put to a first, limited trial in select schools.³⁷

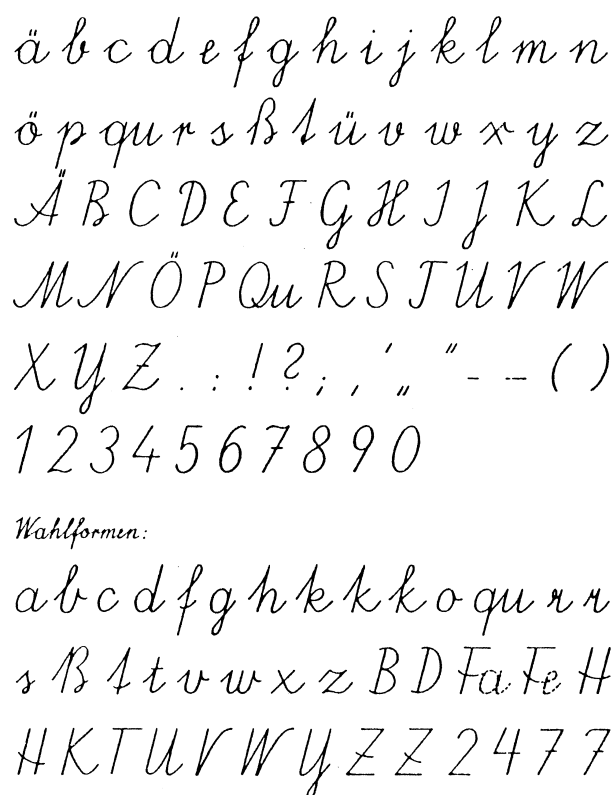


FIG. 9. Draft dated 1985 of the handwriting reform initiated in 1984, from Ludwig Boyer, *Kommentar zur Ausgangsschrift*, 2nd. ed., aps (Vienna: Bundesministerium für Unterricht, Kunst und Sport, 1988) 77

36. Boyer, *Kommentar zur Ausgangsschrift*, 79–80.

37. According to Boyer, the 1985 draft was revised in 1987 but the literature does not document any changes and no original documentation of the process has been found. Boyer, *Kommentar zur Ausgangsschrift*, 77.

After two years, the test was extended to more than 3000 classes across Austria and run from the school term 1987/88.³⁸ The trials were accompanied by teacher questionnaires in 1988—which reportedly were positive—and a quantitative evaluation in 1991 in which writing samples of 154 participating classes were compared with specimens from a control group of 300 classes. The goal of the evaluation was to compare the new proposal to the previous model using scientific methods, yet the only quantifiable criterion—correct orthography—did not yield any statistically relevant differences. All other evaluations were qualitative appraisals, wrapped in a quantitative selection of samples.³⁹ Whilst illustrating the difficulty of using objective measures in the assessment of handwriting instruction methods, it also shows that the subject was taken remarkably seriously by the authorities. In summary, although far from scientific proof, the findings of the various assessments and the feedback received from participating teachers suggested that the new draft was an improvement over the previous model.

Although these results were available by 1991, only in autumn 1994 the Ministry published the new model as ‘Österreichische Schulschrift 1995’. Despite the ten-year (!) gestation, the final version differed only slightly from the 1985 draft: a handful of letterforms were substituted by alternates which had already been conceived for the earlier version: f and t lost their loop in favour of a two stroke construction; o was now written without internal loop; and B, D, F, and H were rendered as less ornate letterforms. Perhaps, considering that the model consisted only of a handwritten alphabet, rather than a full typeface, the excessively long development may be attributable to political factors.⁴⁰

Henceforth the precursor model was called ‘Schulschrift 1969’, officially because it was the last time a change had been made, ignoring (and perhaps conveniently disguising) that its design largely dated to 1924. But also the 1995 version was not entirely new. A comparison with the 1969 model demonstrates two key changes: in the minuscules, the internal loop in a, d, g, o, and q—a glaring anachronism not found in any other Latin writing model—was removed, and in the capitals, where most changes happened, more letterforms akin to printing type were proposed. In summary, the Schulschrift 1995 achieved some of its stated goals: the reduction of redundant loops and ornamental flourishes lent the new model a more modern appearance and the simplifications of ar-

38. Lichtenwallner and Scheiber, ‘Die Österreichische Schulschrift’, 668.

39. For details of the methods see Lichtenwallner and Scheiber, ‘Die Österreichische Schulschrift’, 668–670.

40. The official handwritten alphabet chart, which constituted the main visual of the published model, contains a small note identifying Hadmar Lichtenwallner (1944–2023) as its writer. No other claims of credit or attribution to Lichtenwallner have been found.

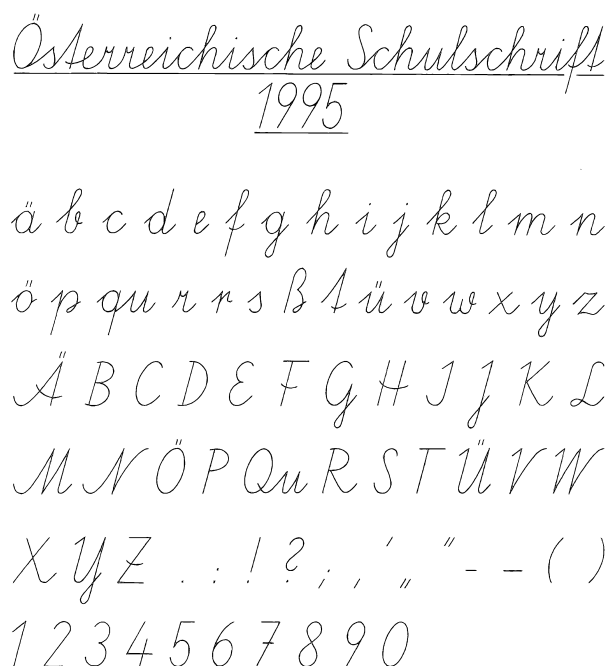


FIG. 10. Official published sample of the handwriting model unveiled in 1994, from *Die Österreichische Schulschrift 1995: gut lesbar, leicht erlernbar, besser vermittelbar*, (Vienna: Bundesministerium für Unterricht und Kunst, 1994) 7

chitecture contributed to letterforms that were easier to learn and faster to write. Importantly, a comprehensive commentary to the new model was published as a section of the *Kommentar zum Lehrplan der Volksschule*.⁴¹ It explained considerations that led to the new design and elaborated on optional decisions that were left to the teachers, adding important nuance to the widely distributed alphabet chart. For example, it suggested further simplifications where appropriate, such as the use of a roman capital E shape instead of the default cursive form if children struggled with the shape; it encouraged teachers to suppress in-strokes at the beginning of words, offered alternative constructions for letterforms, and gave recommendations for plausible connections between capitals and minuscules, as well as cases in which interruptions were recommended. In short, it provided a manual for teaching writing with the new model.

To what extent the qualifying commentary was absorbed by Austrian primary school teachers in the 1990s is not known, but current practice suggests that its detailed considerations are not generally appreciated.

41. Dieter Antoni, ed., *Kommentar Zum Lehrplan Der Volksschule* (Vienna, 1996).

Furthermore, perhaps owing to the idea that a distinctly 'Austrian' identity should be maintained, anachronistic details and idiosyncratic letterforms were carried over into the new model. Despite its move towards letterforms of the italic hand, the Ronde style r—curiously introduced in 1965—and the Kurrent form of t with a full-length ascender—hailing from Sütterlin's 1914 model—were retained. Irrespective of questionable choices for individual letterforms, the Schulschrift 1995 was hamstrung by other factors.

Conceptually, despite the considerable effort that went into the new model, it ignored the question which letterforms children learned first. In Austria reading and writing instruction typically begins with block capitals and print minuscules, but the 1995 reform offered no guidance or model for these very first letterforms that children encounter. The curriculum left it open to teachers whether to use only roman capitals (Blockschrift), mixed-case roman type (Gemischtantiqua), or the new running writing model (Schulschrift).⁴² The bulk of literacy acquisition that happens in the first grade was thus excluded from consideration in the 1995 reform, limiting its remit to running writing. Issues surrounding the ideal order in which various writing styles should be taught, including the potential difficulties that children encounter when progressing from one form to the other—an area of considerable professional debate and interest—were wholly eschewed.

Moreover, political indecisiveness, perhaps triggered by concern to cause a backlash as during the abortive 1964 reform, meant that the Ministry left it open to teachers which model to use in class. From 1995 either version could be taught, with the result that two classes of the same school could be learning different models. The curriculum emphasised that the Schulschrift 1995—as had already been the case for all its precursors since 1924—was only intended as a guideline, rather than a prescriptive norm. To avoid any form of 'dogmatism', teachers were left to decide which letterforms they considered most suitable for their writing instruction, potentially also mixing elements of both versions in their teaching.⁴³

Yet the most critical failure of strategic vision was the decision not to develop the model as a digital font for distribution. On one hand, Lichtenwallner and Scheiber presented a rationale for this inaction, arguing that it intended to avoid formal prescription and celebrate the irregular quality of handwriting.⁴⁴ On the other hand, they reasoned that

42. Ludwig Boyer, '6 Schreiben (1. und 2. Schulstufe)', in *Kommentar zum Lehrplan der Volksschule*, ed. by Dieter Antoni (Vienna, 1996), 314.

43. Lichtenwallner and Scheiber, 'Die Österreichische Schulschrift', 670–671. Although well intended, it is questionable whether primary school teachers consider it helpful to have the responsibility for such fine-grained choices of letterforms.

44. Lichtenwallner and Scheiber, 'Die Österreichische Schulschrift', 665.

a digital cursive type would have resulted in many bent lines and other compromises of shape, betraying the actual reasons for the decision: an inability to implement a digital font in the quality and complexity that was required.⁴⁵ Although the federal publishing house (Österreichischer Bundesverlag, öbv) went on to commission a digitisation of the *Schulschrift 1995*,⁴⁶ it appears to have been a strictly proprietary endeavour which remained exclusive to the company.⁴⁷ Moreover, the fonts lacked the detail, options, and subtlety that were called for in the commentary to the new model.⁴⁸

As a result, the making of handwriting primers, in the 1990s already predominantly reliant on digital workflows, lacked the means to faithfully reproduce the *Schulschrift 1995*. As the handwriting of samples was no longer a viable practice, publishing houses used digital fonts to approximate the model provided in the curriculum. But for want of an officially approved digitisation, publishers had to source suitable type for their books elsewhere. Owing to the limited choices on the market and lacking clear incentives to invest in a qualitative reproduction of the official model—the emphasis of the guidelines that a vague resemblance was good enough could be interpreted that way—free fonts began to fill the gap. The concern that a typeface could not convincingly reproduce the handwritten model—advanced by the team behind *Schulschrift 1995* to argue against the making of a font—thus materialised because the field was left vacant. Mediocre to downright substandard digital typefaces by hobbyists, distributed via freeware sharing sites without quality control, found their way into Austrian reading and writing primers. With the rise of online platforms for the exchange of teaching materials these fonts proliferated and began to be used by teachers designing their own materials with predictably poor results. The apparent lack of vision and care for the technical conditions in which didactic materials are made thus contributed to a marked deterioration of the circumstances for literacy acquisition in Austria.

Against this background, in 2018 Yuki Sakurai, then head of the Wiener Bildungsserver, an association of the city of Vienna that aims

45. 'Aus diesem Grund, wie auch wegen der eingangs erwähnten besonderen Qualität einer Handschrift, war es auch keine Zielvorstellung, eine die digitale Verarbeitung optimal ermöglichende Verbundschrift zu entwerfen; dies hätte an vielen Stellen geknickte Linien und andere den Intentionen zuwiderlaufende Formmerkmale erfordert.' Lichtenwallner and Scheiber, 'Die Österreichische Schulschrift', 665.

46. According to Lichtenwallner and Scheiber the type contained a wide and a narrow version. Lichtenwallner and Scheiber, 'Die Österreichische Schulschrift', 665.

47. Note that whilst still a publicly funded company in the 1990s, in 2002 the publisher was privatised.

48. An early use example of the font is found in Franz Jarolim, *Schreiblebrgang Österreichische Schulschrift 1995* (Vienna, 1996). The type appears to be in continued use by the publisher, the largest commercial provider of didactic material.

Buchstabenformen
primitiv ist nicht kindgerecht

Mimi weinte, die Buchstaben taten so in den Augen weh

*Buchstabenformen
primitiv ist nicht kindgerecht*

Mimi weinte, die Buchstaben taten so in den Augen weh

FIG. 11. Samples composed in the widely used free fonts 'Fibel Vienna' (above), made by a certain Peter Wiegel, and 'Schulschrift95' whose originator could not be identified. The large sizes demonstrate poor workmanship in curves and inadequate proportions, the smaller sizes show the negative effect of sub-par spacing on word formation.

to facilitate media competence amongst children,⁴⁹ approached Martin Tiefenthaler in his capacity as a founding member of the typographic association of Austria, with the suggestion to develop a new typeface for learning to read and write.

The Making of Primæ

Interested by the project, Tiefenthaler, an experienced typographer and teacher at Vienna's 'die Graphische',⁵⁰ sought a professional type designer with a demonstrated interest in handwriting instruction. Around

49. 'Home | Wiener Bildungsserver' <https://bildungsserver.wien/start/home-wiener-bildungsserver> [accessed 12 February 2025].

50. Die Graphische was founded in 1888 and is the oldest vocational school for graphic arts in Austria.

the same time Nemeth's three-year-old son developed an early fascination with writing, prompting him to explore didactic fonts and make an improved digitisation of the Schulschrift 1995 for personal use. In conversation, we recognised that our shared interest and respective competences aligned well, and decided to collaborate on the making of a new typeface for learning to read and write.⁵¹

Although initial conversations stretched back as far as 2018, the global Covid pandemic meant design work could only begin in earnest once a formal agreement with the Bildungsserver was reached, in April 2021.⁵² In the interim Tiefenthaler had researched the state of handwriting instruction in Austria, the German speaking world, and beyond. He had reviewed academic literature,⁵³ current handwriting primers,⁵⁴ contributions from typographic designers,⁵⁵ and conducted informal interviews with primary school teachers. Moreover, he had invited a group of distinguished typographic scholars and designers to form a review panel

51. A long friendship and previous professional cooperation helped in making this decision.

52. By that time the organisation's leadership had changed, it was now headed by Donat Klingesberger.

53. See for example Karin H. James and Laura Engelhardt, 'The Effects of Handwriting Experience on Functional Brain Development in Pre-Literate Children', *Trends in Neuroscience and Education*, 1/1 (2012), 32–42; Marieke Longcamp, Marie-Thérèse Zerbato-Poudou and Jean-Luc Velay, 'The Influence of Writing Practice on Letter Recognition in Preschool Children: A Comparison between Handwriting and Typing', *Acta Psychologica*, 119/1 (2005), 67–79; Danielle S. McNamara, ed., *Reading Comprehension Strategies: Theories, Interventions, and Technologies* (New York, 2007); Christian Marquardt and others, 'Learning Handwriting at School—A Teachers' Survey on Actual Problems and Future Options', *Trends in Neuroscience and Education*, Writing in the digital age, 5/3 (2016), 82–89; Pam A. Mueller and Daniel M. Oppenheimer, 'The Pen Is Mightier than the Keyboard: Advantages of Longhand over Laptop Note Taking', *Psychological Science*, 25/6 (2014), 1159–68; Audrey L. H. van der Meer and F. R. (Ruud) van der Weel, 'Only Three Fingers Write, but the Whole Brain Works†: A High-Density EEG Study Showing Advantages of Drawing Over Typing for Learning', *Frontiers in Psychology*, 8 (2017).

54. See in particular Renate Tost and Frank Ortmann, *Schreibenlernen mit der Hand bildet Formsinn und Verstand: Gestalterische Grundlagen der Schulausgangsschrift* (2021); Rosemary Sassoon and Gunnlaugur S. E. Briem, *Better Handwriting*, Teach Yourself (London, 1993).

55. Important influences were the contributions by the Swiss type designer Hans Eduard Meier, the British and American schools of italic handwriting of the twentieth century, and the Dutch writing scholar Gerrit Noordzij. Hans Eduard Meier, *Anleitung Zu Einer Zeitgemässen Schulschrift Für Alle, Die Schreiben Lernen: Ein Buch Für Die Lehrenden Und Übungsbefte Für Die Lernenden* (Glarus, 2003); Alfred Fairbank, *A Handwriting Manual*, rev. and enlarged (London, 1975); Gerrit Noordzij, *Kind und Schrift* (München, 1985); Gerrit Noordzij, *The Stroke: Theory of Writing*, trans. by Peter Enneson (London, 2005).

that we were able to consult during the design process.⁵⁶ By 2021 much of this preliminary work was done and we settled down to establish how we were to approach our task. In conversation we reviewed precursors, weighed strengths and shortcomings, and considered how best to respond to the primary challenges that were reported by teachers. Through this process, we distilled key findings that informed our five primary design principles: we wanted to achieve (1) a structural formal relationship between unconnected and joined letterforms; (2) an ergonomic architecture of letters *and* their connections in running writing; (3) even spacing achieved through formal freedom over technological constraints; (4) a model that demonstrates the freedom to interrupt running writing and to write letters in different ways; (5) a model that demonstrates the same care for letterforms of different languages for the inclusion of children of all backgrounds. The following account is drawn from our own research and design process rather than the secondary literature.

1. Disconnected—Connected

The *Schulschrift 1995*, as well as many other methods teaching running writing, ignores which letterforms children learn in their first steps of literacy acquisition. It treats disconnected and joined writing styles as unrelated sets of letterforms and relies on children learning a second formal palette. In Austria, owing to the lack of a model of first letterforms and the subsequent adoption of crude printing fonts for writing instruction, the gap between the first and the second writing style tends to be particularly wide. Many didactic publishing houses even feel compelled to have ‘transitionary’ course books in their range, as the jump from so-called ‘printed’ letterforms to running writing is perceived to be excessively demanding for children.

This lack of consideration of a central element of instruction is surprising, as the literature on methodology had engaged with the subject for a long time. In 1995 Boyer suggested that there was no consensus on which style to learn first,⁵⁷ but cited Heinrich Grünewald thus:

Es ist grundsätzlich von Nachteil, wenn Schüler nacheinander zwei Schriftalphabete schreiben müssen, die in ihrer Form und Struktur voneinander abweichen. Denn das individuelle Bewegungsverhalten verfestigt sich

56. The advisory board was formed by Ann Bessemanns, Matthew Carter, Florian Hardwig, Sami Kortemäki, Just van Rossum, and Alice Savoie.

57. Boyer, ‘6 Schreiben (1. und 2. Schulstufe)’, 314–315. Boyer suggested that an initial handwriting model that converges with the forms of printing type could alleviate the issue.



FIG. 12. Samples composed in 'Fibel Vienna' and 'Schulschrift95' show the absence of formal cohesion between first and second writing styles that exacerbate the difficulty children experience when learning running writing.

beim Schreiben verhältnismäßig früh und wird selbst dann beibehalten, wenn die äußere Form der Schrift ein anderes Gesicht bekommt.⁵⁸

Historically, this question has already occupied teachers and reformers of handwriting education for more than a hundred years. It found an early expression at the beginning of the twentieth century with the so-called 'print-script' movement in the United Kingdom. It promoted the use of a single set of simplified, skeletal letterforms for reading and writing instruction, arguing convincingly that it helped children to master initial literacy acquisition. Much like in the German speaking world, this reform movement was born from the struggle to teach children the calligraphic English roundhand, and in response it jettisoned any form of running writing altogether.⁵⁹ Fairbank, a leading proponent of the italic hand, however, criticised this approach as excessive, noting that

58. It is fundamentally disadvantageous if pupils successively have to write two writing styles which differ in form and structure. For the individual motor movement consolidates relatively early in handwriting and is retained even if the superficial form of the script changes. [my translation] Heinrich Grünewald, *Schreibenlernen: Faktoren—Analysen—methodische Verfahren*, Kamps pädagogische Taschenbücher (Bochum, 1981), 52.

59. Walker, 'Letterforms for Handwriting and Reading: Print Script and Sanserifs in Early Twentieth-Century England', 90–98.

Print-script is held by teachers of infants, who are doubtless appreciative of its simple character, to be of assistance in teaching both reading and writing, since one alphabet serves the two purposes. It has two shortcomings: there is nothing about it that gives a hint of development into a running hand and it has circular instead of elliptical movements.⁶⁰

The D'Nealian method, developed by the teacher Donald N. Thurber (1927–2020) in response to the 'print script' approach, also sought to resolve the issue of two writing styles. It proposed two strongly related sets of letterforms with an identical inclination, arguing that it removed the need to learn everything again when progressing to a running hand:

Learning is accomplished on a continuum without a break in the developmental process. Ninety percent of what the child learns in forming print letters will carry over into later cursive writing. With the addition of connecting strokes, manuscript print becomes cursive when the child is ready.⁶¹

In France, by contrast, the current model exclusively teaches connected letterforms, avoiding the issue by discarding upright minuscule letterforms entirely.⁶²

In our approach, the unconnected style is characterised by all the qualities that the 'print-script' proponents and its later successors demand for ease of learning—unadorned simplicity, monolinear strokes, skeletal forms—reflecting the letters children already encounter prior to

60. Fairbank, *A Handwriting Manual*, 26.

61. Quoted from Sassoon, *Handwriting of the Twentieth Century*, 189. The conceptual similarity between Primæ's unconnected and cursive styles and the D'Nealian method has only been brought to our attention after its publication.

62. In contrast to the Austrian authorities, in France the Ministry already recognised the need for a digitisation of its writing models in 2013: 'De nouveaux supports sont apparus et se développent encore qui introduisent le stylet numérique et renouvellent le besoin des enseignants et de leurs élèves de disposer de polices de caractères cursives de qualité, reconnues par le ministère de l'éducation nationale et mises à disposition de la communauté éducative pour l'apprentissage de l'écriture et l'édition des documents pédagogiques. En effet, les tableaux numériques interactifs (TNI) équipent progressivement les salles de cours et les tablettes ou ardoises tactiles pénètrent dans les classes elles aussi depuis deux ou trois ans en réintroduisant le stylet numérique à côté du clavier virtuel.' 'New media have appeared and are still being developed which introduce the digital pen and renew the need for teachers and their pupils to have access to quality cursive fonts, recognised by the French Ministry of Education and made available to the educational community for learning to write and for publishing educational documents. Interactive digital whiteboards are gradually being installed in classrooms, and touch-sensitive tablets and boards have also been making their way into classrooms over the last two or three years, reintroducing the digital pen alongside the virtual keyboard.' [my translation] Ministère de l'éducation nationale, *Modèles d'écriture scolaire* (Paris, 2013) <https://eduscol.education.fr/204/polices-de-caracteres-cursives-pour-l-enseignement-de-l-ecriture> [accessed 16 February 2025].

school.⁶³ At the same time its letterforms anticipate the architecture required for faster (running) writing, favoured by advocates of the italic hand. Thus, as already demanded by Dostal in 1972, in our design arched characters like h, m, n etc. have a structure that facilitates a single continuous movement, rather than an interrupted construction from two strokes. Because the unconnected style is used first to teach *writing*, we chose to design letterforms that can actually be written. Like the n-group, also the e, the most frequent character of German, has a ‘written’ architecture that sets it apart from commonly used printing type which, owing to its rigidly constructed aspect, is more suggestive of drawing.⁶⁴



FIG. 13. Samples composed in ‘Primæ’ demonstrate how—in contrast to the samples in figure 12—the formal consistency between first and second writing styles facilitates the transition from unconnected to running writing.

To facilitate the transition from first to second writing style, the most idiosyncratic and anachronistic shapes of the Schulschrift 1995 also re-

63. In Germany the lively discourse about the appropriate initial writing style, paired with a strong federal tradition, led to the adoption of various models in different states. One stream of thought propagates that only unconnected letterforms similar to printing type—the so-called *Grundschrift*—should be taught. Our approach shares many of its arguments, which are summarised in Horst Bartnitzky, Ulrike Hecker and Christina Mahrhofer-Bernt, eds., *Grundschrift: Damit Kinder Besser Schreiben Lernen*, Beiträge Zur Reform Der Grundschule, 132 (Frankfurt am Main, 2011).

64. It is not a coincidence that proponents of print-script talked about ‘drawing the printed letter’, a practice that is hardly conducive to teaching writing.

quired attention. The Ronde form of r and the Kurrent form of t are entirely alien to children who are growing up today. They encounter these letterforms for the first and only time when they begin to learn running writing, introducing a wholly unnecessary hurdle at an advanced stage of the learning process. With the corresponding letterforms from the humanistic minuscule—the ‘printed’ form—we can avoid this difficulty for current learners. The same principle applies to the triangular letterforms for v and w, which are now better distinguished from u and related shapes.



anachronistic

appropriate

appropriate

FIG. 14. Juxtaposition of samples composed in ‘Schul 95 normal’ by a certain Hans-Dieter Lahe (above) and ‘Primæ’ (below) illustrates the effect brought by substituting the anachronistic shapes of r and t. The third line shows the optional interruptions after r and t in ‘Primæ’.

Furthermore, even in the unconnected style we introduced a minute slant to the right. It not only indicates the writing direction but is also suggestive of the inevitable imperfections of the human hand, avoiding the impression of technical exactitude and rigidity that may unduly intimidate young learners. Finally, the modest inclination hints at the effect of a higher pace, preparing for the next phase of learning: running writing.

2. Ergonomic Letterforms *and* Connections

Whereas the commentary on the Schulschrift 1995 in theory contained certain freedoms of letterform construction and joining principles, these provisions were largely lost in practice. The principal information about the model distributed to teachers was a single handwritten alphabet sheet and the letterforms themselves provided little clarity and guidance on construction and ductus.



FIG. 15. Comparison of a word set in 'Schul 95 normal' (above) and a word set in 'Primæ' (below) illustrates the advantages of italic letterforms of a, d, g over the synthetic shapes of the Schulschrift 1995, which are bereft of handwriting qualities.

Moreover, inept digitisations reproduced the official model with a minimal characterset in which a single letterform represented every letter irrespective of context, providing a grossly misleading example. The letterforms of a, d, g, o, and q were the principal targets for the 1995 reform as the interior loop, introduced by Legrün for a continuous writing movement, was deemed outdated. However, rather than devising a new lettershape with a clear and unambiguous stroke order and directionality, the Schulschrift 1995 only purged the offending loop. The reformed model therefore proposed highly synthetic letterforms, that, paraphrasing Fairbank, have nothing about them that give a hint of running writing. Pupils and teachers are left to guess how these letterforms may or may not be written. [see figure 16 below]

In our approach, the tried and tested architecture of italic letterforms has no such issues: a, b, d, g, p, and q are distinguished by their asymmetrical, pointed counters. Tiny gaps and slight swelling of strokes indicate changes of direction, providing visual hints for the stroke order even in fully joined words. And the letterforms of o are conceived so that they

can only be written in one way, offering clear and unambiguous guidance to the learner.

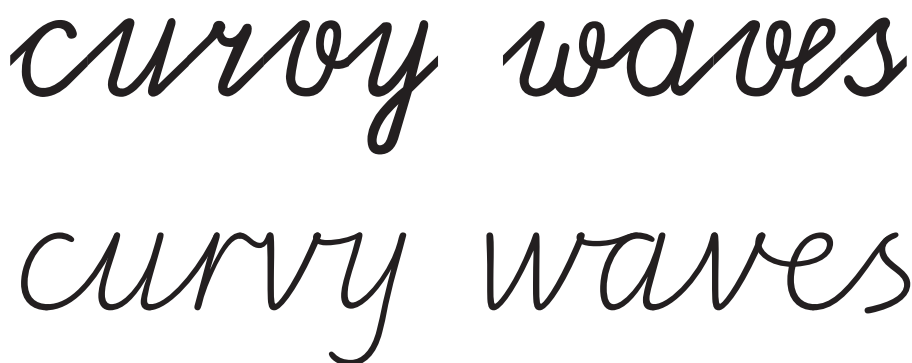


FIG. 16. Comparison of two words set in ‘Schul 95 normal’ (above) and in ‘Primæ’ (below) demonstrate the latter’s benefits: italic letterforms for *r*, *v*, and *w* provide increased clarity, the drawings are of a quality that can serve as a model, and thought-through joining strategies improve ergonomics, remove redundant strokes, reduce ambiguity, and deliver evenly spaced words.

In the *Schulschrift 1995*, the lack of documentation or a sound digital font makes the practice of connecting letters—an element of considerable import in running writing—lamentably underdeveloped. The sample in figure 10 shows that the individual letters of the alphabet cannot possibly suffice to demonstrate how letterforms may be written continuously. In our design we therefore made the joins between letters an area of heightened attention and, where appropriate, left them out entirely.

In primers that claim to follow the *Schulschrift 1995*, there are many cases of capitals joined to following minuscules where such a connection is wholly inappropriate. Whenever a *B*, *D*, *F*, *I*, *N*, *O*, *P*, *T*, *V*, *W*, or *X* is joined to any lowercase letter, an additional and redundant stroke has to be introduced, a practice that we consider unergonomic. Furthermore, for letters such as *F*, *P*, and *T*, the superfluous joining stroke that extends from the base of the stem creates considerable potential for ambiguity and confusion. In our approach a connection between a capital and a minuscule is only provided where the final stroke’s direction and trajectory suggests that it may be continued to join with the next letter.

Enabling fluid and ergonomically sound connections between minuscules is even more important and a key design consideration in the making of *Primæ*. Here, we identified a recurring shortcoming of previous handwriting models and their reproduction as digital fonts.

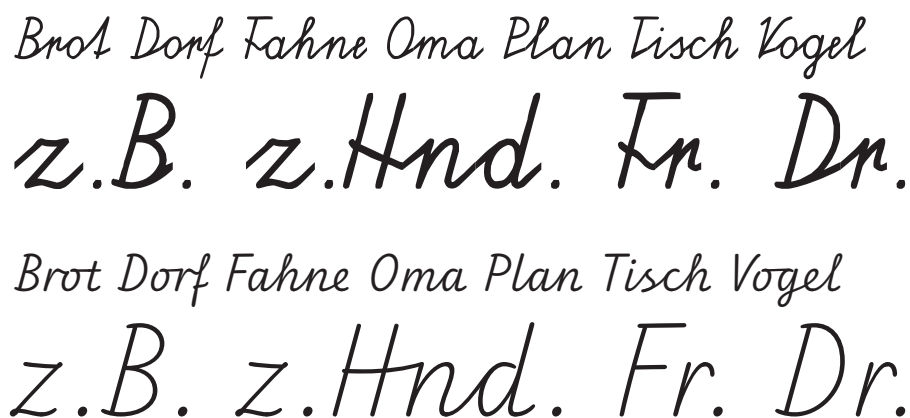


FIG. 17. Sample composed in 'Schulschrift95' (above) shows the negative effect of superfluous connections between capitals and minuscules. The sample set in 'Primæ' (below) highlights the considerable improvements in clarity brought by interruptions.

3. Formal Freedom Over Technological Constraints for Even Spacing

Designing a handwriting font primarily means conceiving of a systematic way to join disparate elements of various shape and alignment in a plausible way. Ideally, it should appear natural, so that the reader—or indeed the learner who copies the example—perceives the connections between letters as self-evident and unobtrusive to reading and writing. The joining system should be invisible.

This is not the case in digitisations of the Schulschrift 1995, where every letterform, regardless of the surrounding letters or whether standing by itself, always sports unsightly connecting lines at the same height. These elements create disfigured letterforms, with considerable potential for distraction and confusion, and it is hard to think of a context in which this could be more inappropriate than in the acquisition of reading and writing. The resulting detours and illogical stroke sequences are imposed on children, apparently ignoring the exceedingly bad example that they set. [see Fig. 17 above]

The influence of inadequate technical ability on the teaching of reading and writing can also be seen in a German model, the 'Vereinfachte Ausgangsschrift'. Here, every joining letterform has to terminate at the

x-height, imposing a modularity that is completely alien to handwriting, but directly reflects the simplification strategies of printing type.⁶⁵

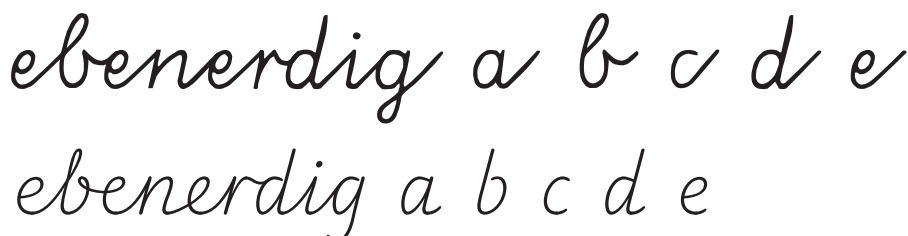


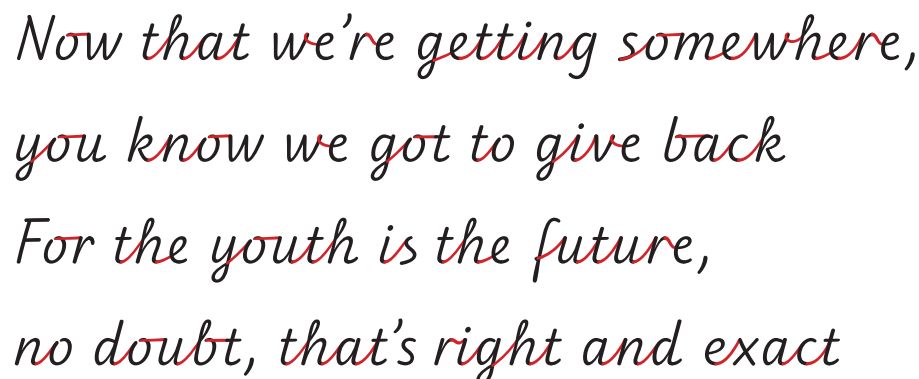
FIG. 18. Sample composed in 'VA unliniert' (above), a font distributed by the German Pelikan Group GmbH, shows—apart from inferior craftsmanship in type design—the nonsensical modularity of the 'Vereinfachte Ausgangsschrift' that imposes mechanical simplification on children's handwriting. The sample in 'Primæ' below illustrates the effect of the opposite approach, wherein technical solutions were designed for fluid writing.

In our design approach, we did not want technical circumstances to prescribe how children learn to write. Instead, we strove to develop technical solutions to facilitate the task. The method that we developed was informed by my experience with the joined Arabic script, one of the most sophisticated writing cultures of humanity. In *Primæ*, connections between letters are conceived to enable ideal—i.e. ergonomic, direct, and fast—connections between any letter sequence. Rather than prescribing how *letterforms* must be shaped to match a modular system, as seen in the digitisations of *Schulschrift 1995* and the *Vereinfachte Ausgangsschrift*, in *Primæ* *flexible joining strokes* adapt to the context. [see Figure 18 above]

With this approach, the model provides connections that reflect proven manuscript practice regardless of letter sequence. That different letterforms call for different connection strategies is an inherent characteristic of running writing: it is not ergonomically possible to join the sequence n-e in the same way as o-e. *Primæ* shows how various combinations are best solved, providing learners with established strategies, rather than leaving them struggling to come up with their own solutions—as advocated by some methods. The effort to learn a tried and tested system, even if it entails variation, is incomparably easier than de-

65. Criticism of the 'Vereinfachte Ausgangsschrift' is widespread, and some commentators suggest that it was introduced to save publishing houses the costs associated with the making of handwritten samples because it allowed for easier typographic reproduction. Ute Andresen, 'Einführung der Grundschrift: Keine pädagogischen Interessen', *Die Tageszeitung: taz*, 6 April 2011 <https://taz.de/Einfuehrung-der-Grundschrift/!5123334/> [accessed 27 February 2025].

vising one from scratch: we do not think that every child that learns to write has to reinvent the wheel all over again.



*Now that we're getting somewhere,
you know we got to give back
For the youth is the future,
no doubt, that's right and exact*

FIG. 19. Illustration of the joining strokes in 'Primæ'. Harnessing current digital font technology, 'Primæ' automatically inserts tailor-made joining strokes between eligible letter pairs.

Moreover, and in stark contrast to extant handwriting instruction fonts, it allowed us to optimise the spacing between every letter combination. Primæ does not need a commentary to point out that one letter sequence requires a different joining strategy or that a particular combination benefits from more generous spacing: it shows it. Writing techniques that are hidden in conventional modular fonts, are thus made explicit and transparent in Primæ. Here, pupils can learn by observation and imitation, avoiding the frustration of opaque letter connections that cannot be written by hand. Owing to this design solution, we could create a model that not only demonstrates comfortable, continuous, evenly spaced, and fluid writing, but that can also be used to show deliberate interruptions.

4. Freedom to Interrupt Running Writing and to Write Letters in Different Ways

In our conversations with teachers, we frequently heard reports about the difficulty some children have connecting all the letters in running writing. Long words, which are frequent in German, may lead to a cramped hand, and to a correspondingly unpleasant experience for the learner. This need not be the case. There is wide-spread recognition that the compulsory joining of all letters is not important, nor should it be required of children. One would probably be hard pressed to find a teacher

today who insists on the seamless connection of each and every letter, and neither curriculum nor common methods require such a feat from children. Notwithstanding this consensus, primers for running writing principally show only fully joined examples, setting a standard that is difficult or sometimes impossible to achieve. Without qualification or commentary such samples may become the root of one of the most frustrating, and thus destructive aspects of handwriting education.

In our approach, we wanted to avoid this remnant of ill-understood discipline in schooling. Because the example provided to learners plays such a central role as the implicit authoritative model, we decided that it had to allow for variation and give room to alternatives. Consequently, *Primæ* is built with the ability to demonstrate interruptions within running writing, as well as the option to select from a range of alternate letterforms in either writing style. Teachers, publishers, and designers may take advantage of this ability to facilitate various didactic approaches, and stylistic preferences. Pupils struggling with a letterform may be shown a different variant to demonstrate that it is perfectly acceptable not to connect all the letters of a word. The fonts provide designed interruptions after the *r*, that benefits in clarity from a break; before *k* and after *t*, letterforms that are written with two strokes; after the descenders of *g*, *j*, and *y*, where the looped connecting stroke may be more cumbersome; and after the umlauts *ä*, *ö* and *ü*, where the diacritic sign may encourage a mid-word interruption. The *x*, a notoriously difficult letterform for continuous writing, does not connect to the right by default. Yet, it may also be displayed without any connections or fully joined if the architecture of surrounding letters suggests continuous strokes. Further to the capitals *B*, *D*, *F*, *I*, *N*, *O*, *P*, *T*, *V*, *W*, *X* that never join a following letter, *E*, *G*, *K*, *L*, *R*, and *Q* are also available as isolated letterforms.

We realise that other break points may appear in individual hands—as for example in the case of any letters with diacriticals. The intention of the range of optional interruptions included in *Primæ* is therefore not a comprehensive inventory of possible breaks—which is not realistically possible—but to provide a tool that may be used to illustrate that the consistent joining of all letters is not compulsory.

In this spirit, *Primæ* also includes numerous variants of letterforms. As in the case of optional interruptions, they may provide alternative solutions to children struggling with the default model. In the unconnected style, there are two forms of *f* and *J*, with and without descending stem; the *k* may be shown in a continuous or a two-stroke architecture; the *q* may feature a spur, distinguishing it from *g*; the *a* can be shown in its two-storey form, akin to printed type; and the *U* may feature an outstroke or not. The cursive style contains, further to the optional interruptions, stylistic variants of the *æ*, as written in some Scandinavian countries, and of the *ß* with or without descender.

*Ella, Gianna, Karl,
León, Quentin, Rosa
crickey, roar, tricky, räksmörgås
müesli, jarringly, texts, sixteen*

FIG. 20. ‘Primæ’ contains optional interruptions in strategic positions to illustrate that the consistent joining of all letters is not compulsory.

5. Linguistic Inclusion and Typographic Utility

Comprehensive language support was an essential aspect of our approach to Primæ’s design. Whereas this is widely considered a standard of professional type making today, unfortunately a review of current digital fonts for handwriting instruction revealed that children’s educational material does not typically receive the same care and attention.

As there are no officially supported fonts in Austria, we were not surprised that the haphazardly digitised fonts of the Ministry’s model do not contain accented characters for other languages. But also in Germany, where commercial providers offer digital fonts of the various styles taught across the states, children’s names in languages like Polish or Turkish are not supported.⁶⁶ In France, one of the most multi-ethnic and multilingual countries in Europe, where official fonts were commissioned by the Ministry of Education in 2013, languages beyond those that share French accents are ignored.⁶⁷ Even the open-source Australian school fonts that were built and published with the help of Google include a minimal character set that supports only English.⁶⁸

66. ‘Schulschriften von Will Software’ <https://www.will-software.com/infos/schlsoft.htm> [accessed 23 February 2025].

67. Ministère de l’éducation nationale, *Modèles d’écriture scolaire*.

68. Mez, ‘MezMerrit/AU-School-Handwriting-Fonts’ (Australia, 2024) <https://github.com/MezMerrit/AU-School-Handwriting-Fonts> [accessed 23 February 2025]. Google’s commissioned ‘Playwrite’ types have contemporary language support but were only published in summer 2024. It is a comprehensive type system that uses parametric design options to approximate the extant handwriting models of dozens

Josefine or Jeff, Ulysses or Ursula
 bequem, kreuz und quer, kleinkariert
above all alternatives
when Lætitia met Solskjar
große Straßenbahn

FIG. 21. Further to its optional interruptions, 'Primæ' contains a number of variant letterforms that can be used to offer pupils proven alternatives or to accommodate specific didactic approaches.

In contrast to such national handwriting models that limit their didactic remit to the dominant national language and its letterforms, from the outset Primæ's design was conceived as a multilingual and inclusive writing model. Diacritics and language-specific letterforms were designed in line with design principles established above. For example, Polish ogonek and Icelandic thorn take advantage of the interruption mechanism described in Section 4, and ə alone—used in Azerbaijani and gender-neutral Italian—is rendered with twenty specialised joining strokes in Primæ Cursive. Currently its characterset supports 215 languages written in the Latin script and its design principles lend it to the further extension of linguistic support.

Moreover, all styles of Primæ feature eight sets of figures (lining, tabular, ranging, tabular ranging, superscript, numerators, denominators, subscript), allow for the dynamic composition of fractions, and contain a broad selection of punctuation signs, commonly used symbols, and a

of countries. Given its scope, it is an approach that entails inevitable formal compromises. The documentation of the project 'Primarium' was also published after our project 'Prima' and is, despite the similarity of names, entirely unrelated. TypeTogether s. r. o., 'Primarium: Handwriting Education in Primary Schools', *Primarium* <https://primarium.com/> [accessed 23 February 2025].

Now also children who speak Dënesytiné Yatié (the language of the Chipewyan in Northwest Canada) can write their names. That also includes Ludmiła and Róża from Poland, Akyıldız and Çağdaş from Turkey, Sigríður and Emília from Iceland, Ëngjell from Albania, Kateřina and Lukáš from the Czech Republic, Åke, Ødhe and Sørina from Northern Europe and of course François, Mátyás, Jokūbas, Siân, Nuñez, too, as well as Lætitia and Gal'la, Llúcia and Llorenç from Catalonia, not to forget Aîza and Əhməd from Azerbaijan.

FIG. 22. 'Primæ' has a large character set, supporting 215 languages written in the Latin script. For the authors, linguistic inclusion in the classroom is a matter of course.

handful of printer's ornaments such as arrows, checkboxes, manicules, and emojis that may be useful for the design of teaching materials.

Publication, Reception and Further Development

In February 2023⁶⁹ Primæ (then still called Prima) was published through a dedicated microsite,⁷⁰ the website of the Wiener Bildungsserver,⁷¹ and via GitHub.⁷² The announcement of a new typeface for learning to read and write by an association of the city of Vienna led to considerable media interest in Austria.⁷³ The reactions concerning approach, design principles, and the actual typeface were consistently

69. Although the first two styles of Primæ—regular and cursive—had been finished by summer 2022, strategic considerations of the client postponed the publication.

70. 'Primæ · Eine Schrift Zum Lesen- Und Schreibenlernen' <https://www.schulschrift.at/> [accessed 23 February 2025].

71. Wiener Bildungsserver, 'Prima' <https://prima.wien/> [accessed 23 February 2025].

72. Wiener Schriften, 'WienerSchriften/Prima', 2025 <https://github.com/WienerSchriften/Prima> [accessed 23 February 2025].

73. Oona Kroisleitner, 'Wiener Kinder bekommen eine neue Schulschrift', *Der Standard*, 23 February 2023, 9; Miriam Krammer, 'Wiener Schulschrift Bekam Elegantes Facelifting', *Die Krone*, 2 March 2023 <https://www.krone.at/2937352> [accessed 23 February 2025]; wien ORF.at/Agenturen red, 'Eigene Schreibschrift für Wien', *wien.ORF.at*, 2023 <https://wien.orf.at/stories/3196108/> [accessed 23 February 2025]; Andreas Tanzer, 'Schnörkelmalen Ist Geschichte', *Die Presse*, 3 July 2023 <https://>

positive,⁷⁴ leading to publications,⁷⁵ presentations,⁷⁶ and television appearances.⁷⁷ Two months later, in the annual competition of the Type Directors Club New York, Primæ was awarded the coveted Certificate of Typographic Excellence, probably making it the first type for learning to read and write to receive a design award.⁷⁸

To extend the reach of the project, in parallel to our design work Tiefenthaler and I repeatedly approached the Austrian federal Ministry of Education. Already in December 2022, before the publication of the project, we submitted a formal application for subsidies from the Ministry's dedicated fund for school-related activities.⁷⁹ By 30 January 2023, we were notified that the minister, Martin Polaschek of the conservative Austrian people's party, saw no possibility to support the project.⁸⁰ By coincidence, one week earlier Polaschek had announced a 'reform' of the Austrian curriculum in a circular letter, whereby the 1969 model was phased out, making the Schulschrift 1995, nearly 30 years after its publication, the only endorsed model.⁸¹ Eventually, at our insistence a meeting with the Ministry's section head responsible for primary edu-

www.diepresse.com/13437843/schnoerkelmalen-ist-geschichte [accessed 23 February 2025].

74. Some reporting emphasised the Viennese origin of the type, giving rise to critique of a perceived exaggerated federalism of Vienna, suggesting that the new model for handwriting instruction would only be applicable in the state. This, however, was never suggested by any party to the project, saying more about the political reality of Austria, than the commission of Primæ.

75. Lars Harmsen and Julia Kahl, eds., *Yearbook of Type 6 2022/2023: Movie Edition*, 1st edn (2022); Helene Hohmann, 'Prima By Titus Nemeth and Martin Tiefenthaler', *Slanted*, 2023 <https://www.slanted.de/prima/> [accessed 23 February 2025].

76. Titus Nemeth and Martin Tiefenthaler, 'Prima Schreiben Lernen' (presented at the tga lecture series, Vienna, 2023).

77. 'TYPO 2.0: Neue Schrift Für Schulkinder', *Café Puls* (Vienna, 2023); 'Wie geht denn das: Schreibschrift', *Studio 2* (2023) <https://tvthek.orf.at/profile/Studio-2/13890037/Studio-2/14192717>.

78. The One Club For Creativity, *TDC Awards—69th Winners Showcase | The One Club | Wiener Bildungsserver | Prima* <https://www.oneclub.org/tdcawards/showcase/69th/-item/46232> [accessed 23 February 2025]. Primæ was also successful at the 2023 competition of the Tokyo Type Directors Club and was selected to feature in its annual as an 'excellent work'.

79. Förderungen schul- beziehungsweise bildungsrelevanter Vorhaben (Aktivitäten) sowie der Volksguppen und Südtirol, Bundesministerium für Bildung, Wissenschaft und Forschung, 'Beihilfen und Förderungen' <https://www.bmbwf.gv.at/Themen/schule/befoe.html> [accessed 24 February 2025].

80. Geschäftszahl 2022-0.887.631, für den Bundesminister, Franz Friedrich to Titus Nemeth, 'Prima, die österreichische Schulschrift', 30 January 2023, Private collection Titus Nemeth.

81. Gerhild Trummer, 'Österreichische Schulschrift; Information über die Neuerungen ab SJ 23/24', 23 January 2023, Rundschreiben Datenbank <https://rundschreiben.bmbwf.gv.at/rundschreiben/?id=1062> [accessed 24 February 2025].

cation was arranged in June 2023.⁸² During this encounter, it was made clear to us that the media coverage of the project had not been appreciated,⁸³ that it was not possible to alter the Ministry's position on the writing model because of January's circular letter, and that it generally did not perceive the project to be of relevance for its activities or worthy of support.

Regardless of this ministerial disinterest, Primæ was adopted in numerous schools across Austria and continued to garner interest—as shown by the uptake of training sessions for teachers through the Wiener Bildungsserver, presentations,⁸⁴ and publications⁸⁵—and received positive feedback from educators and designers alike. In spring 2024 our proposal to expand the scope of Primæ was selected in a competitive bid for funding from the Vienna business fund (Wirtschaftsagentur Wien). Throughout the remainder of the year, Primæ was developed into an extended type family for didactic material containing twenty styles in five weights that was published in March 2025.

Primæ now contains dedicated variants for various use cases: the light versions are best suited for initial writing instruction in large sizes. Their skeletal design ideally demonstrates letter architecture and stroke order without the distraction of surrounding 'flesh'. Regular and semi-bold weights are tailored towards use in text, their sturdier letterforms being more suitable for display in smaller sizes. Bold weights can be used for headlines and to create visual hierarchies in documents, playing a key role for improved clarity and accessibility in didactic materials. In its standard form Primæ, like other handwriting models, is characterised by long extenders. Whilst appropriate in writing instruction, it lends proportions to letterforms that are ill-suited for longer texts and denser document layout. We therefore designed a dedicated Primæ Text version of the typeface that has shortened extenders, lending it proportions that are more similar to printing type. Primæ Text is therefore particularly

82. Present in the meeting were, next to Nemeth and Tiefenthaler, section head Doris Wagner, Markus Benesch, Marcus Hufnagl, and Gerhild Trummer.

83. By May 2023 Niki Glattauer, a pundit writing a column on education in the widely read newspaper *Heute*, publicly called on the minister to endorse and adopt Primæ. Niki Glattauer, "'Zurück in die Türkei': Wutlehrerin entschuldigt sich', *Heute* (7 May 2023), section Glattauer gibt Noten, 8.

84. Nemeth and Tiefenthaler, 'Prima Schreiben Lernen'; Titus Nemeth and Martin Tiefenthaler, 'Prima: An Innovative Type for Learning to Read and Write' (presented at the Grapholinguistics in the 21st Century, 2024, Venice, 2024) <https://grafematik2024.sciencesconf.org/> [accessed 26 February 2025]; Titus Nemeth and Martin Tiefenthaler, 'Primæ: An Extensive Innovative Type for Learning to Read and Write' (presented at the BRNO BOLD Typo02, Brno, 2025) <https://www.brnobold.cz/udalosti/brno-bold-typo-2> [accessed 26 February 2025].

85. Antje Dohmann, 'Prima soll Kindern das Lesen- und Schreibenlernen erleichtern', *PAGE online*, 2024 https://page-online.de/typografie/schulschrift_prima/ [accessed 23 February 2025].

useful in more compact text composition, as for example in applications that are designed for small screens or for continuous text typography such as reading primers.

Conclusion

Reading and handwriting remain key competencies children acquire early in their education, and despite their frequently forecast demise, they are still integral parts of curricula worldwide. Whilst the role of handwriting has diminished in contemporary adult life, evidence of experimental studies suggests cognitive advantages of writing over typing.⁸⁶ The Stavanger declaration, an outcome of a four-year research project involving almost 200 scholars and scientists of reading, publishing, and literacy from across Europe investigating the impact of digitisation on reading practices, reflects this tension. Its concluding press release unambiguously states concern over an uncritical adoption of digital tools in primary education:

In today's hybrid reading environment, paper and digital technologies each offer different advantages for different purposes. In order to properly manage the digital transformation, we need to gain a better understanding when to use which to best advantage. Therefore, the Stavanger Declaration calls for caution when introducing digital technologies to education and urges for further research on pressing issues regarding screen technologies and cognition. Teachers and other educators must be made aware that rapid and indiscriminate swaps of print, paper, and pencils for digital technologies in primary education are not neutral. Unless accompanied by carefully developed digital learning tools and strategies, they may cause a setback in the development of children's reading comprehension and emerging critical thinking skills.⁸⁷

Conversely, the Stavanger declaration may have targeted the wrong audience: teachers and educators. For with the interruptions of the

86. For a summary of findings see Anne Mangen, 'Modes of Writing in a Digital Age: The Good, the Bad and the Unknown', *First Monday*, 23/10 (2018) <https://journals.uic.edu/ojs/index.php/fm/article/view/9419> [accessed 30 November 2018]. For studies comparing handwritten to typed notes see Mike Allen and others, 'Is the Pencil Mightier than the Keyboard? A Meta-Analysis Comparing the Method of Notetaking Outcomes', *Southern Communication Journal*, 85/3 (2020), 143–54; Luxi Feng and others, 'The Roles of Handwriting and Keyboarding in Writing: A Meta-Analytic Review', *Reading and Writing*, 32/1 (2019), 33–63; Satu-Maarit Frangou and others, 'Can You Put Your Finger on It? The Effects of Writing Modality on Finnish Students' Recollection', *Writing Systems Research*, 10/2 (2018), 82–94.

87. Anne Mangen, Adriaan van der Weel and Miha Kovac, 'The Stavanger Declaration on the Future of Reading: Press Release: The New Importance of Reading', 2019 <https://www.stavangerdeclaration.org/wp-content/uploads/2019/01/StavangerDeclarationPressRelease.pdf> [accessed 25 February 2025].

COVID-19 pandemic and the ensuing lobbying of large technology corporations, political decision makers were quick to follow calls to adopt digital and remote learning systems. As it is considerably easier and faster to purchase equipment and software licences than it is to ‘carefully develop digital learning tools and strategies’, today large parts of educational budgets flow into such easily quantifiable investments.⁸⁸ Yet, as a UNICEF review of the evidence of the effectiveness of digital learning solutions states, ‘expanding access to devices alone, for instance computers, does not yield a clear and positive impact on learning outcomes at basic education level’, but that digital learning solutions may be more promising if they are ‘thoughtfully designed around a carefully identified contextual issue (as opposed to an ‘off-the-shelf’ solution’).⁸⁹ According to the report,

Digital learning solutions that are designed to improve teacher instruction tend to be the most effective in improving learning outcomes, especially when they are designed to supplement—and not to replace—best practices for teaching.⁹⁰

Primæ fully corresponds to these criteria as a conceptually mature and technologically advanced tool for reading and writing instruction that can be used in conventional and digital teaching environments. This hybrid quality bridges established best practices for teaching with emerging approaches and may be used to leverage the advantages of manual handwriting and the interactive qualities of digital text display.

For as long as handwriting is considered a key component of primary education, the concepts and materials that are used in teaching it should be made to the highest possible standards. Children are acute observers and learn through imitation. They tend to follow models as closely as possible, placing enormous responsibility on adults setting examples, as every parent can attest to. Handwriting is not exempt from this dynamic

88. In October 2024 the Austrian Court of Audit criticised that from January 2021 to August 2023 the Ministry of Education had spent 140.88 million Euro on its digitisation campaign without defining any tangible markers for success and no palpable outcomes for students. Amongst its ‘investments’ during this period was the development of the web platform ‘Digitale Schule’ that, owing to a lack of use, was abolished in June 2023. Its cost up to that point had been 12.26 million Euro. *8-Punkte-Plan für eine digitale Schule: Auswirkungen auf digitale Kompetenzen der Schülerinnen und Schüler unklar* (Vienna, 2024) https://www.rechnungshof.gv.at/rh/home/home/2024_29_8_Punkte_Plan_digitale_Schule.pdf [accessed 25 February 2025].

89. UNICEF, ‘Effectiveness of Digital Learning Solutions to Improve Educational Outcomes: A Review of the Evidence’ (2021), 1 <https://www.unicef.org/documents/effectiveness-digital-learning-solutions-improve-educational-outcomes> [accessed 25 February 2025].

90. UNICEF, ‘Effectiveness of Digital Learning Solutions to Improve Educational Outcomes’, 1.

and the disruption of digital devices and learning solutions in formal education does not, as some triumphalist technological rhetoric suggests, relieve us of the need to think about the tools that we employ. Rather, new opportunities amplify the need to evaluate established formats and approaches, so that successful elements are not lost for the sake of novelty, and obsolete features can be safely put aside. There is a strong onus on political decision makers, educational authorities, the designers of didactic materials, and teachers to make sure that the models that are offered to children correspond to the state of the art. For as children respect the example that they are taught with utmost diligence, the least that we can do is to show the same respect to them, providing a writing model that is as thought-through and well-made as we can possibly achieve.

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