

‘More consistent and systematic than any form of writing I know.’ Kurt Schwitters’s *Systemschrift*.

Robin Fuller

Introduction

There were two ideas explored by the New Typographers in relation to improved writing systems. The first accepted the alphabet as the ultimate stage in the development of writing and sought only to improve it by eliminating competing systems and clarifying the relationship of symbols to sounds. The second approach rejected the writing of spoken languages in favour of picture-based writing, informed by the belief that images, unlike the alphabet, could be interpreted without training and could therefore transcend cultural boundaries.

Herbert Bayer, Jan Tschichold and several other modernist typographers demanded that the alphabet be redesigned in order to represent speech more faithfully, yet Kurt Schwitters’s *Systemschrift* was the only such experiment that pursued to the end the modernist typographers’ rally cry of ‘one sound, one sign’. To achieve this, Schwitters rejected the standard characters of the Latin alphabet and designed entirely new symbols informed by phonetic analysis of speech sounds. Further, *Systemschrift* included aspects of non-arbitrary signification through imagery; the characters can be interpreted as depictions of the articulatory positions of the vocal organ. In so doing, Schwitters emulated experiments conducted by nineteenth-century English phoneticians.

Ute Brüning’s essay ‘Die neue plastische Systemchrift’ (1990) provides a detailed account of *Systemschrift*. However, in histories of the alphabetical experiments of the modernist typographers by English-language scholars, *Systemschrift* has rarely, if at all, been subject to detailed analysis. The final version of *Systemschrift* departed completely from the alphabet, and with it the European typographic tradition. It is therefore not unexpected that it would be given marginal treatment by historians of typography. This paper expands on Brüning’s work and demonstrates that an understanding of *Systemschrift* is to be gained by comparison not only with other modernist typographic projects, but also with earlier attempts at universal writing systems.

After culture

What is the authentic mode of design for the age of the machine? This question preoccupied modernist designers in the early 1920s, who saw the designed world

around them as false; filled with objects produced with ‘sham materials and sham techniques,’ as it was later put.¹ Industrial production, it was believed, had unleashed a stylistic chaos, arbitrarily combining motifs from historical periods. Debabelisation was required in order to restore coherency to design and bring it in line with the spirit of the age.

Yet the twentieth century was an age like no other. ‘Our times,’ wrote Schwitters in 1928, ‘are essentially different from earlier periods because of the enormous increase in communications and the improvement of the means of communication and technological methods.’² The culture of the twentieth century was scientific and transnational. The authentic mode of design for the twentieth century would arise from the use of technology in the logical solution of problems. As such, design would betray no national origin and would, as far as possible, exist outside history, operating according to fixed laws revealed by science. The stylistic preferences of the individual would have no bearing on form; design would be objective and universal. The paradoxical view held was that a coherent design culture would be achieved only by allowing technology and logic to replace culture as it was previously understood.

It was not only in design that the nationally peculiar was opposed. The perceived need for an international language to supplement and ultimately replace the world’s languages—which had given the nineteenth century Esperanto as well as the German inventions Volapük and Tutonisch—came to be seen as increasingly urgent in the aftermath of the First World War. The engineer Walter Porstmann, whose book *Sprache und Schrift* (1920) was to have a decisive influence on modernist typography, argued that an international language would be an inevitable consequence of technological advances in transport and communication, and that the path towards this international language would begin with the development of a universal writing system. Rather than accepting language as it existed as a natural fact, language was conceived of as a technology that mankind used in communication. And this tool could be improved, once purged of its historically-accumulated nuances and redesigned according to logical principles.

The New Typography

The ambitions to transcend culture in both design and language coincided in the 1920s modernist design movement known as the New Typography. Although some figures of this movement, such as Tschichold, worked exclusively in typography, many others including Schwitters, Theo van Doesburg, El Lissitzky, László Moholy-Nagy and Karel Teige worked across art and design disciplines. With Moholy-Nagy, several Bauhaus masters, including Bayer, Josef Albers, and Joost Schmidt, were central to the New Typography. Despite the diverse backgrounds of those involved, the New Typographers were in overwhelming agreement on issues of typography, as

evinced by the similarities in their writings on the subject and their frequent collaborations in exhibitions and organisations such as the Schwitters-led *ring neue werbegestalter* (circle of new advertising designers).

In a 1927 article entitled ‘Modern Typography’, the Czech designer Teige described the New Typography as opposing the archaism of William Morris’s private-press movement, the eccentric stylings of Art Nouveau typefaces, and the printing of luxurious books for ‘snobbish’ bibliophiles.³ Yet this is not what was ‘new’ about the New Typography. Each of these tendencies was also criticised by many traditionalist typographers.⁴ From the beginning of the twentieth century certain English, American and German typographers had opposed the ever-increasing varieties of typeface styles.⁵ For such typographers, new styles of letter and new styles of typographic arrangement were superfluous to the function of typography. The function of typography was the transmission of information, and new styles which drew attention to their form inhibited the fulfilment of this function. Typography, in their view, functioned through adherence to established convention.

Where the New Typographers departed from the traditionalists was in the belief that new techniques of typographic arrangement could function without the requirement for cultural training in interpreting a conventional system of communication. Traditionalist typographers had taken the symmetrical and even pages of the book as the paradigm of typography. Yet in the 1920s, as Albers noted, ‘the majority of printed materials are no longer books’.⁶ Advertising, for the New Typographers, became the paradigm; and in advertising, the established conventions of symmetrical typographic layout were deemed redundant. Schwitters proposed that in typographic design of advertisements one should ‘use a regular industrial designer...rather than relying on...received wisdom’.⁷ The New Typographers believed that typography could communicate more directly through the manipulation of innate human faculties of optical and cognitive reception. Teige wrote that ‘modern typography is visual communication, its rules must therefore be based on optical rules’.⁸ ‘Human beings,’ stated Schwitters, ‘perceive things with their senses and not with their intellect,’ therefore typography should aim for ‘impact on the senses by concentrating individual charms into a composition that can be grasped by the eye.’⁹

The universal alphabet

The Fraktur and Schwabacher type styles and the German handwriting style left German typographic and scribal culture unique in twentieth-century Europe. The New Typographers were highly conscious of the fact that designed letters always convey more information than that which they are overtly used to transmit. A page of Fraktur conveys not only textual information but also connotations of German identity. A page set in a Jugendstil typeface carries the impression of the personality of the designer of the typeface, ‘because of their strongly individual character which

is in direct opposition to the spirit of our age'.¹⁰ Styles of typeface smuggled extralinguistic connotations, believed by the New Typographers to be illogical superfluity, to the function of printed language. Letterforms without style were required, and in the serifless and spare forms of the *Grotesk* typefaces, the New Typographers believed they had found such a letter.¹¹ The Grotesks were impersonal and anonymous—the designers of the early Grotesks were largely unknown and uncelebrated. The Grotesk was to replace all other letters, whose complicated forms, alleged Teige, 'have a detrimental effect on eyesight,'¹² and, according to Schmidt, lead to short-sightedness in childhood.¹³

Yet the Grotesks in existence were only the least historical, most *sachlich*, letters then available. New Grotesks were required. 'No single designer can produce the typeface we need,' wrote Tschichold, 'which must be free from all personal characteristics; it will be the work of a group, among whom I think there must be an engineer.'¹⁴ In lieu of such a scientific-typographic committee, the New Typographers individually attempted the design of Grotesk letters free of subjective adulteration. 'The reason for the continuing production of still "another" typeface,' argued Bayer, 'is the consistent policy of type foundries to make more sales through new designs.'¹⁵ Against the commercial production of ever-new styles of typeface, the New Typographers sought to replace, rather than add to, the Babel of typefaces. They believed that the use of basic geometric shapes could produce ultimate and definitive letterforms, purged of historically-accumulated ornament and reduced to the 'essential'. Bayer claimed that historically the design of letters was 'formed freely according to the style and the calligraphy of the type-designer, and it is just this freedom which has been responsible for so many mistakes'.¹⁶ Geometric letters would avoid such personal connotations, because, according to Tschichold, 'such shapes must by necessity transcend individualism and nationalism'.¹⁷

Designers including Albers, Bayer, Schmidt, Tschichold and Schwitters experimented with geometric Grotesks, each arriving at different results. Using a restricted range of geometric shapes to achieve the letters of the alphabet exposed the difficulty in applying anti-conventional functionalist ideas to letters. Letters function precisely through their adherence to historically established forms: function and convention are inexorably intertwined in the alphabet. The part of the letter that is superfluous historical ornament and the part that is the 'essential' form, are not easily distinguished. Rather than 'elemental' geometry allowing the New Typographers to avoid forming letters 'freely', adherence to the geometric systems of their own invention allowed them to reject the historically-established forms of letters. Bayer's lower-case 'x' was composed of circle arcs rather than straight lines. The letters of Albers's *Schablonenschrift* alphabet were composed from three basic geometric shapes—a square, a right-angled triangle and a quarter circle—arranged into pairs of vertical columns, at times rendering the letters barely recognisable outside the context of the

complete alphabet. Geometry provided no solution in purging an individual's design of individual decisions.

Superfluity was found not only in the graphic form of letters, but in the co-existence of upper- and lower-case. Surprisingly, for a movement that so greatly advanced the visual and spatial nature of communication through typography, a central theme of the New Typographers' writings was the argument that the function of writing was the faithful transcription of speech. 'Writing,' stated Schwitters, 'is the image of speech, the image of sound.'¹⁸ 'Why,' asked Bayer, 'do we write and print with two alphabets? A large sign and a small sign are not necessary for one sound.'¹⁹ The slogan derived from Porstmann, 'one sound, one sign', is repeated throughout the New Typographers' writings. Thus the alphabets designed by Bayer and Albers discussed above lacked an upper-case and at Bayer's instigation, from 1925 the Bauhaus officially abandoned capital letters in all printed communications.²⁰

To Tschichold, the German orthographic practice of capitalising every noun made explicit, more than French or English writing, the redundancy of the upper-case.²¹ Idiosyncrasies of German orthography (such as the 'esszet' ligature and the long, short and terminal forms of 's' in the German handwriting style) were stated to be irrational by Schmidt.²² It was claimed that the use of a single lower-case Grotesk alphabet would be both educationally and economically beneficial. 'Our lettering,' argued Moholy-Nagy, 'would lose nothing if written with lower-case initials...it would become easily legible, more easily learnable, and would become significantly more economical.'²³ Bayer alleged that 'persons unaccustomed to typing with one alphabet only have been saving one-third or more of the time otherwise required'.²⁴

Porstmann advocated, with the abolition of the upper-case, a reform in orthography to achieve the principle of 'one sound, one sign'. By 'one sound' the New Typographers and Porstmann meant the units of speech typically represented by alphabetical characters, referred to as segments in phonetics.²⁵ Such sounds are in some instances represented in German orthography with more than one symbol, and in reverse, as Schwitters notes, 'one has the luxury of representing double consonants such as ts and ks with single letters (z and x)'. This, according to Schwitters, is 'an arbitrary arrangement that has nothing to do with logic'.²⁶ Jan Tschichold, in an article published in 1930 entitled 'noch eine neue schrift', presented an alphabet which included such reforms.²⁷ Tschichold's single case alphabet featured predominantly lower-case forms but used the upper-case forms of 'N' and 'K'. Additionally, he included new symbols for segments usually represented with more than one character—including the two 'ch' sounds as in German 'ich' and 'ach', and the first segment in 'Schwitters', which is typically represented with three characters. 'C', 'q' and 'w' were discarded, as the sounds they typically indicate are also indicated by other letters, as were the characters used to express double segments, 'x' and 'z'.

After the alphabet

In *The New Typography* of 1928, Tschichold took it as a given that the Latin alphabet was the appropriate basis for developing one system of writing for all the world's languages. He described not only Fraktur, (which is just a particular styling of the Latin alphabet) as backward nationalism, but also the entirely different writing systems of Chinese and Arabic.²⁸

Yet if the styling of letters and the historically-developed quirks of orthography rendered writing an imperfect vehicle of speech, was speech itself not also conventional, historical, illogical? No matter what geometric refinements and phonetic restrictions were applied to the alphabet, it would remain an historically-formed system of arbitrary signs, used in turn to represent the historical and arbitrary signs of spoken language. Contrary to structuralist linguistics, language was not taken as the site of meaning, but as a technology mankind had developed in negotiating external reality. Meaning resided outside language, and language imperfectly symbolised such meanings. 'It is my own contention,' wrote Bayer in a later essay, 'that we find ourselves today suffering from acute poisoning from too many words, which cruelly invade our mind every second of the day. Too many words become like a screen between us and the visible world.'²⁹

Typography as it currently existed, according to Moholy-Nagy, was but a 'mediating makeshift link' between external meanings and the mind.³⁰ A non-arbitrary mode of communication was required, one that accessed reality directly without translation through a culturally-established code. Pictures, iconic signs, it was believed, could be universally and unambiguously understood without the mediation of language. Several New Typographers theorised iconic systems of 'writing'. Photography, as the most technological and 'objective' means of producing images, was the ideal candidate for this. Tschichold wrote:

Photographs, like letters, are a means of communication. The faster and simpler the means of communication the better. The development of our type from pictures to writing was intended to increase, as much as possible, understanding between people. Today there is much we can "say" more simply with photographs than with words.³¹

The combination of photography and typography was named 'typo-photo' by Moholy-Nagy. Robin Kinross has noted that typo-photo, as the fluid combination of text and image, 'can be regarded as one of [the New Typography's] lasting legacies, now so generally employed as to be unnoticed or called simply "graphic design"'.³² While Kinross is entirely correct, it is also true that the ambitions for typo-photo were initially even greater. Lissitzky in 1926 argued that alphabetical-orthography was inherently nationalistic, but that a hieroglyphic book could transcend language borders.³³ Photography, according to Lissitzky, is 'completely comprehensible to all

people,' suggesting, as Moholy-Nagy also did, that the future of writing may be in photo-hieroglyphics.

Photography is highly effective when used as typographical material. It may appear as illustration beside the words, or in the form of 'phototext' in place of words, as a precise form of representation so objective as to permit of no individual interpretation.³⁴

Porstmann's influence on the views of the New Typographers regarding orthography is well documented. It is interesting to note that Porstmann also expressed similar ideas regarding a photography-based picture language. Porstmann described photography as a picture-writing [*eine Bilderschrift*]; a modern equivalent to the picture-writings of indigenous Mexicans and Americans.³⁵ In the design of logos and the text-and-photography compositions of magazines, Porstmann too saw the seeds of a future picture-writing.

Visible speech before the Bauhaus

The New Typographers were by no means the first to find fault with standard orthography. From at least as early as the seventeenth century several English speakers had attempted the complete redesign of writing, born from frustration with the even greater degree to which English orthography departs from the 'one sound, one sign' principle.³⁶ In fact, the science of Phonetics advanced greatly in the nineteenth century precisely owing to attempts to develop improved writing systems which systematically corresponded symbols to sounds.³⁷

Just as the New Typographers sought to minimise arbitrariness in writing, several nineteenth-century English phoneticians, including Alexander Melville Bell, Isaac Pitman and Henry Sweet, sought a form of writing that more directly represented speech. 'The accepted mode of spelling,' wrote Pitman, 'is so far removed from any apparent attempt to represent the sounds of speech, that this, its original purpose, has almost ceased to be evident.'³⁸ In devising alternatives to standard writing, Pitman, Bell and Sweet invented systems that have been referred to as 'iconic' in a different sense from the picture-writing discussed above. The linguist David Abercrombie defined such 'iconic' systems as having symbols that 'are not arbitrary signs, but in some way resemble what they stand for,' not through direct resemblance, but 'because they allot related shapes to related segments'.³⁹

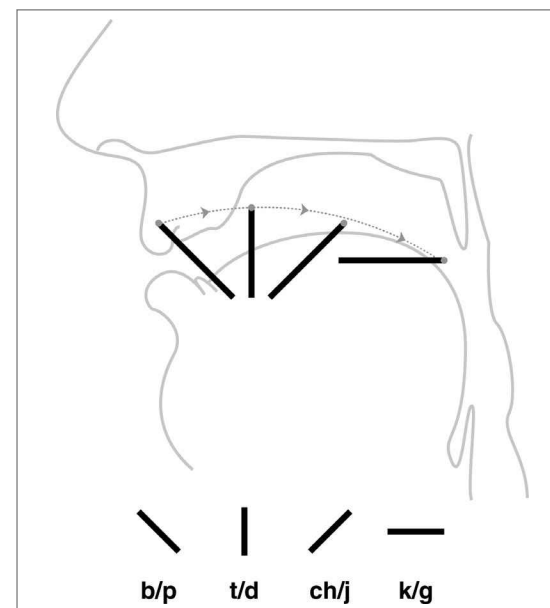
Even in the ideal form of alphabetical writing, wherein each symbol indicates one segment alone, the phonetic value of each symbol must be individually learnt as there are no systematic relations established between symbols and sounds. Systems that are iconic in the analogical sense defined by Abercrombie (henceforth referred to as *iconic-analogical*) ensure that similar symbols are used for segments with similar *features*.⁴⁰ In phonetics, consonant segments can be analysed according to the

following three features: place of articulation, manner of articulation, and voicing. For example an iconic-analogical system would convey a similarity between the symbols for the first sounds in the words ‘Bauhaus’ and ‘Moholy’, as both are alike in place of articulation (the lips) and both are voiced. The symbol for the first sound in the word ‘piano’ would also convey, like the ‘b’ and ‘m’ sounds, that it was articulated with the lips; yet the ‘b’ and ‘p’ sounds would have similarities not shared with ‘m’, as the former both involve the passage of air through the mouth and the latter involves the passage of air through the nasal cavity.

In Pitman’s ‘Stenographic Soundhand’ of 1837, the symbols for consonant sounds produced by a sudden opening of the vocal tract (*plosives*) are all designed as straight lines. Symbols for consonant sounds which involve an audible friction of air passing through the vocal tract (*fricatives*) are all curved lines.⁴¹ Unvoiced consonants have a light stroke, and voiced consonants have a heavy stroke. Thirdly, the place of articulation is indicated by the angle of the stroke. The symbol for the first sound in ‘table’, an unvoiced plosive produced with the tongue placed on the apical ridge, is a vertical straight line; and the symbol for the first sound in ‘day’, which is identical in place and manner of articulation but is voiced, is the same line but heavier in weight. Thus Pitman’s very simple symbols do not only represent individual segments, but are designed so that the graphic features (straightness, angle, weight) indicate phonetic features (manner of articulation, place of articulation, voicing).

Both Pitman’s and Bell’s systems were not only iconic in the analogical sense, but also included a certain amount of iconism in the depictive sense, in that the symbols visually represented aspects of the position of the vocal organ. In Bell’s ‘visible speech,’ for example, symbols for unvoiced sounds feature a circle in depiction of an open glottis; and symbols for voiced sounds feature a straight line in depiction of a contracted glottis.⁴²

The iconic-depictive aspect of Pitman’s system is of particular interest because, as we will see below, it has similarities with Schwitters’s *Systemschrift*. In the design of plosive consonants, those produced with the lips (sounds typically indicated by ‘p’ and ‘b’) slope leftward. Those produced with tongue behind the teeth (sounds typically indicated by ‘t’ and ‘d’) are upright. The affricate sounds ‘j’ and ‘ch’, as in ‘jay’ and ‘change’, which Pitman categorises along with plosives as ‘expolents’, slope rightward. Finally, the ‘k’ and ‘g’ sounds, produced with the back of the tongue raised to the palate, are horizontal.⁴³ The allocation of the angles of these consonant symbols can be read as not entirely arbitrary but selected to indicate the place of articulation. Mapped onto a profile facing left (as in A figure 1), consonants produced at the front of the mouth are appropriately indicated with a line pointing leftward. The line rotates right to be upright for the consonants produced further back, finally rotating once more so that the initial left pointing line is horizontal for the velar ‘k’ and ‘g’ sounds.



A Fig. 1

Systemschrift

The work of the above nineteenth-century phoneticians became the bases of systems of shorthand and systems of phonetic transcription. Yet they were also initially presented as superior to, and a potential replacement for, the Latin alphabet. Moreover, they were often proposed as potential world writing systems, and, furthermore, as pathways to a universal language. Bell wrote that his ‘visible speech’ system would ultimately facilitate ‘the construction and implementation of a universal language’.⁴⁴

Although Porstmann’s *Sprache and Schrift* includes many references to earlier attempts at reforming orthography, for the most part the New Typographers seem neither to have independently investigated earlier attempts at creating ‘logical’ writing systems, nor to have investigated phonetics beyond the isolation of individual segments. Tschichold’s alphabet successfully locates segments, yet stops short of examining sub-segmental features. Bayer continued to write and work on reformed alphabets in the decades following the 1920s, but although writings from these years indicate that he closely followed developments in the field of Legibility Studies, his ‘basic alphabet’ from the 1950s reveals a still unclear understanding of phonetics.⁴⁵

Phonetics, and with it the graphic notation of speech, was a lively and advanced discipline by the 1920s. Experiments in reformed alphabets, akin to those of Pitman and Bell, were also conducted by Germanophone scholars in the nineteenth century. Ernst Brücke, for example, published an iconic-analogical alphabet in 1863.⁴⁶ By the

mid-1920s, not only was the alphabet of the International Phonetic Association (IPA) well established for phonetic transcription in Europe,⁴⁷ but there were also several competing systems used by linguists and educators such as the German-born *Teuthonista*.⁴⁸

Schmidt's 1929 essay, 'schrift?' went into greater phonetic detail than the majority of the New Typography writings.⁴⁹ Schmidt, though not quite in such terms, demanded that a reformed writing system should not only be based on the isolation of individual segments, but on a design of symbols to reflect featural attributes. He noted that in the teaching of foreign languages, symbols are arranged into tables according to featural similarities (most likely referring to the IPA) yet he is critical of doing so whilst sustaining standard alphabetical characters instead of 'radical new signs'.⁵⁰ Such new characters designed according to phonetic classification were, as Schmidt acknowledges, attempted by Schwitters.

Schwitters's experiment with a phonetic 'alphabet' was exceptional. This is perhaps to be expected; both Tschichold and Bayer were undoubtedly leaders in their fields, but each excelled primarily in typography and graphic design only. Schwitters, in contrast, was a restless polymath who under the banner of Merz explored the boundaries and interfaces of the arts, including poetry, typography, architecture, painting and collage. Within the context of his wide-ranging creative activity, Schwitters made numerous experiments with writing and notation systems. Writing on poetry in 1924, Schwitters argued that letters, before sounds, meanings and associations, were the most fundamental and objective element of poetry precisely because unlike their associated sounds they remained unambiguously the same in print (this is, in a sense, an exploration of letters in the opposite direction to *System-schrift*: letters liberated of phonetic values).⁵¹ In a 1925 essay, Schwitters's sketched a simplified language wherein single letters (taken here as both symbols and associated sounds) were attributed with semantic values. In this language (which in many respects recalls the seventeenth-century language experiments of Gottfried Leibniz, Francis Lodwick and John Wilkins⁵²) individual vowels stood for verbs, which could be combined with individual consonants standing for grammatical person.⁵³ Simultaneous to the development of *System-schrift*, Schwitters worked with Tschichold on the typographic rendition of his phonetic poem *Ursonate* — which used spatial distribution of typographic elements and the combination of upper- and lower-case to give indication of emphasis and tempo. In addition to his own linguistic and grammatological experiments we also know that Schwitters was fluent in the system of shorthand known as Gabelsberger.⁵⁴ Although Gabelsberger was neither iconic-depictive nor iconic-analogical in its design, it lacked an upper- and lower-case distinction and involved the allocation of single symbols to single segments.⁵⁵

Schwitters published *System-schrift* in the journal *i10* in 1927 along with an accompanying essay entitled 'Anregungen zur Erlangung einer Systemschrift' (subsequently republished across two issues of *Der Sturm* in 1928). Here he presented six

versions of *System-schrift*, labelled 'a' to 'f' (see A figure 2). Versions 'a' to 'e' were similar to other modernist alphabets in that they were single-case, Grotesk and composed from a limited number of geometric possibilities. Unlike his peers, Schwitters based the majority of his characters on upper-case forms. With version 'b', he added an innovation; vowels were given heavier strokes than consonants so that a graphic difference reflected a phonetic difference.



A
Fig. 2

Version 'c', like Tschichold's design, addressed issues of redundancy and overlap in phonetic function of characters. Schwitters stated that the necessity for several characters for certain segments (such as the first segment in his surname) was one of the greatest logical shortcomings of the alphabet.⁵⁶ Version 'c' also furthered the distinction between vowels and consonants, rendering all consonants with thin strokes and straight lines, and all vowels with thick strokes and curved lines. Here already, Schwitters attempts to add iconic-depiction to his characters, claiming that the broad rounded shapes of the vowels contrasted with the angular narrow consonants, convey their respective phonetic qualities.⁵⁷ In order to achieve this Schwitters introduced the lower-case forms of 'e', 'b', 'd', 'h', 'k', 'n' and 'm'; also the 'T', requiring a curve, took the form of a 'J'. Schwitters defended his combination of upper- and lower-case on the grounds that he chose the 'most characteristic' forms; nevertheless, it is likely that his hand was forced by attempting to maintain the system for distinguishing vowels and consonants. Versions 'd' and 'e' continue along the same path as version 'c', with minor refinements.

With version 'f' Schwitters made a complete break with the Latin alphabet and developed a fully iconic-analogical writing system. An analysis of the consonants in *Systemschrift* 'f' demonstrates that, like the systems of Bell and Pitman, the design is not only iconic-analogical, but also includes iconic-depictive characteristics. The tables shown in A figure 3 are recreated from Schwitters's diagrams in *i10*.⁵⁸ The table on the left shows Schwitters's Grotesk Latin-alphabetical characters, arranged according to phonetic features, and the table on the right shows the equivalent characters in Schwitters's new system. His analysis of consonants is broadly in line with the phonetics of his day but includes some unusual classifications. The top two horizontal bands, labelled *Knacklaute*, are all united by manner of articulation as plosives. The new characters for the *Knacklaute* are graphically united as always having one protruding horizontal stroke at the top or bottom of the vertical stroke. Voiced consonants and their unvoiced counterparts are designed as vertical reflections of each other. These are arranged so that voiced segments appear above their unvoiced counterparts.

The next two rows, labelled *Zischlaute*, are predominantly fricatives, again with voiced segments above and unvoiced below. There are at least two correctly diagnosed voiced and unvoiced pairs, shown as 's'/s' and 'w'/f' in the Grotesk Latin-alphabetical version. The two 's's refer to the voiced and unvoiced fricatives beginning the words 'zoo' and 'sound', and the 'w'/f' are the voiced and unvoiced fricatives beginning the words 'violin' and 'fedora'. 'J' and 'ch' are somewhat ambiguous. Schwitters describes the 'j' as standing for the first sound in German 'jedoch', and the 'ch' below as from 'mich', which would be an incorrect pairing. However if they stood for the post-alveolar affricates beginning 'Jungle' and 'Tschichold', which are not otherwise accounted for, the pairing would be correct.⁵⁹ Elsewhere Schwitters correctly notes that the 'sch' would be paired with its voiced counterpart, the 'j' in

	G		d		b		J		l		l	KNACKLAUTE	
	K		T		P		l		T		f		
			J		S	W			f		t	t	ZISCHLAUTE
	h	ch	ch	sch	S	F	z	z	f	f	f	f	
					N	M					{	[NASENLAUTE
					R	L					f		
											f		SCHWINGLAUTE
											f		

A Fig. 3

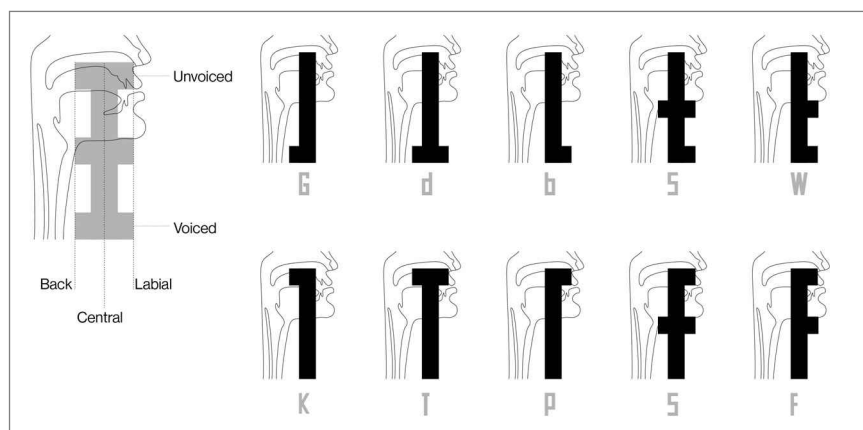
French 'jamais', and also correctly diagnoses the two English 'th' sounds, as in 'them' and 'theme', as a voiced and unvoiced pair. The other 'ch' refers to the fricative in German 'ach', and the 'h' is incorrectly included in the same category as the other fricatives. The new characters for the *Zischlaute* are graphically united as always having two consecutive horizontal strokes (although the 'h' breaks this rule), and again, voiced and unvoiced pairs (whether correctly diagnosed or not) are vertical reflections of one another.

The next row shows *nasals*—consonants produced with the passage of air moving through the nasal cavity. The new symbols for nasals feature horizontal strokes at the top and bottom of the vertical stroke. The final row of new symbols are of what Schwitters calls *Schwinglaute* (all *liquids*) and all feature a central horizontal line, but are less graphically coherent than the other categories.

As regards iconic-depiction, Schwitters's new characters are a mirror image of those of Pitman described above. In the table, the symbols are horizontally arranged according to their place of articulation. All consonants produced with the lips have horizontal lines extending rightward; all central consonants have horizontal bars extending rightward and leftward, indicating centrality; and all consonants produced at the back of the mouth have lines extending leftward. The voiced and unvoiced pairs being vertical reflections of one another, it could be further argued (although Schwitters himself did not make this point), adds an extra degree of iconic-depiction in indicating manner of articulation. All unvoiced consonants, produced only with the mouth and therefore at the higher part of the vocal organ, are top heavy. The voiced counterparts, which use the glottis, the lower part of the vocal organ, are vertically reflected so as to be bottom heavy. With these rules in

mind, as well as the arbitrary rules determining the amount of and position of horizontal lines on the vertical axis, a matrix can be placed on a diagram of the vocal organ to explain most (though there are exceptions) of the consonant characters in *Systemschrift* 'f' (see A figure 4).

Schwitters noted that it was impossible to altogether avoid arbitrariness in the design of a writing system.⁶⁰ Nevertheless, the choice to combine an iconic-analogical approach with aspects of iconic-depiction was an attempt to reduce to a minimum the arbitrary nature of supplying symbols for sounds, and therefore also reduce the amount of training required in interpretation of the symbols. Not only does Schwitters 'allot related shapes to related segments', but with knowledge of the physical world—the human vocal organ—one can attempt to decode the symbols. For Porstmann, Moholy-Nagy, Bayer and Tschichold, each of their projects and proposals were described as stages towards the establishment of an international language. This was also the case for *Systemschrift*. Version 'f' was a hypothetical projection of what a future rational writing system might look like. Schwitters found it lamentable that although we no longer ride in 'horse-drawn carriages' we continue to 'use type that comes from the Middles Ages and antiquity'.⁶¹ Unlike his proposed language of 1925, *Systemschrift* tackled only the graphic expression, and not the semantic organisation, of language. Nevertheless, for Schwitters a writing system such as *Systemschrift* 'f', capable of expressing the phonetic values of all the world's languages, would be a stage towards the complete reorganisation of language. A logical writing system would in turn influence language itself, encouraging the development of a universal logically-structured language, uniting the people of the world under a common tongue.



A Fig. 4

'Consistent and systematic'

Tschichold's essay 'noch eine neue schrift' featured a survey of modernist alphabets including Schwitters's *Systemschrift*. However it made no mention of version 'f'. Instead, in reference to versions 'a' to 'e', as Christopher Burke notes, 'he criticised Kurt Schwitters's *Systemschrift* indirectly for taking capital letters as the basis for a single-case alphabet'.⁶² Subsequently, many authors have repeated Tschichold's oversight, glossing over the full complexity and ingenuity of *Systemschrift* 'f' as an iconic-analogical writing system, describing *Systemschrift* as simply distinguishing vowels and consonants and being single case.⁶³

Bayer stated that 'in designing a new type face we cannot set about inventing entirely new forms...we must stay close to the basic design'.⁶⁴ Tschichold too argued that 'to re-design our letters completely—as in shorthand and lettering for the blind—would be quite impractical and unacceptable'.⁶⁵ The argument that it would be unpragmatic and uneconomical to replace a long established system of writing with something new is in contradiction with Tschichold's view, already noted, that Arabic script and Chinese writing should be replaced with the Latin alphabet. Schwitters's fluency in Gabelberger—a system visually removed from the alphabet—perhaps in part explains his lesser timidity in proposing a radical new system.

In a 1928 essay on advertising, Schwitters maintained that 'a future ideal would be for visual signs to be designed to look as distinct as tones sound', unlike 'our historically evolved script'.⁶⁶ Nevertheless, for the time being, 'if we want to be legible, we can offer nothing different than contemporary variants of [Latin-alphabetical] script'. Despite the fact that Schwitters occasionally used solely lower-case in his typographic works,⁶⁷ he argued that unless orthography were rigorously redesigned it remained 'false to write all German letters in lower case...for the time being, using all lower case makes reading difficult and is an unimportant formality'.⁶⁸ Or is indeed formalism: a graphic choice connotative of, though not born from, a scientific re-evaluation of orthography. Despite the frequent scientific claims in the New Typographers' writings (such as those regarding the alleged short-sightedness produced by Fraktur, and the improvements in education and economy that would result from a single-case orthography) *Systemschrift* alone demonstrated a deep engagement with phonetic science. One need not agree with the ideas on writing expressed by the New Typographers—that it must be shed of historical convention and constructed according to logic, that the purpose of writing is the faithful transcription of speech, and to that end, that each segment of speech must be indicated by one symbol—to recognise that Schwitters uniquely pursued these ideas with fidelity, resulting in a form of writing that was, in his own words, 'more consistent and systematic' than those of his peers.

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Robin Fuller received his BA (Des) in Visual Communications from the Dublin Institute of Technology in 2007 and subsequently worked as a professional graphic designer. He received his MPhil in Textual and Visual Studies from Trinity College Dublin in 2012. He is currently conducting doctoral research on the sans-serif typeface in the twentieth century at the School of Languages, Literature and Cultural Studies, Trinity College Dublin, where he also contributes as lecturer to the MPhil in Textual and Visual Studies. His research is supported by the Irish Research Council.

Notes

1. Pevsner, 1975, p. 20.
2. Schwitters, 1993b, p. 69.
3. Teige, 1999, p. 96.
4. For example, these themes recur throughout the issues of the British traditionalist typography journal *The Fleuron*, from the 1920s.
5. Cf. De Vinne, 1902, p. 359.
6. Albers, 1995, p. 23.
7. Schwitters, 1993a, pp. 66–67.
8. Teige, 1999, p. 100.
9. Schwitters, 1993a, p. 66.
10. Tschichold, 1995, p. 74.
11. The German term, *Grotesk*, typically translated as *sans-serif*, is maintained throughout this essay. *Sans-serif*, despite appearances, is a word which originates in England. It first came into common use in the nineteenth-century England, initially co-existing with several alternatives including, perhaps confusingly, *gothic* as well as *grotesque* (in English grotesque is now generally used to refer to a particular sub-category of sans-serifs). At the same time, in the French language such letters were referred to as

antique and in the German as *Grotesk* (Mosley, 1999, pp. 55–56). In our current typographic culture the presence or absence of serifs is often taken as the fundamental distinction in typeface design, with further sub-classifications falling after this primary division. This was not always the case. In late-nineteenth-century English printing manuals the fundamental distinction rested on whether or not typefaces were deemed suitable for book typography. Types not used for book printing were referred to as ‘jobbing’ types; a classification which encompassed a vast array of styles including the sans-serif/grotesque (cf. Jacobi, 1890, pp. 9–13; Southward, 1884, pp. 21–22). In the context of early-twentieth-century German typography, the most fundamental opposition was between the German Black letter styles and the Roman (known as *Antiqua* to German-speakers, although in English *antique* is used more narrowly for a particular style of Roman). In the context of debates over the relative superiority of Black letter or Roman,

many German type-designers in the early-twentieth century worked towards a synthesis of the two styles (Burke, 1998a). In the writings of the New Typographers, the Grotesk is often taken as falling on the Roman side of the Black letter/Roman opposition, but this is not always the case. Paul Renner, designer of the ‘geometrise Grotesk’ typeface *Futura*, at times described his typeface as having provided a third way in the Roman or Black letter debate (Burke, 1998b, p. 79). As the varying uses of terms such as antique and gothic demonstrate, classifications of typefaces do not simply refer to objective formal characteristics of letterforms, but also reflect the values associated with letterforms in particular historical and cultural contexts. Moreover, as the values associated with letterforms was a subject of rigorous debate in nineteen-twenties Germany, it seems inappropriate to impose the current standard English term, and more appropriate to maintain the term used by the New Typographers: Grotesk.

12. Teige, 1999, p. 100.
13. Schmidt, 1995, p. 31.
14. Tschichold, 1995, p. 74.
15. Bayer, 1967b, p. 26.
16. Bayer, 1999, p. 61.
17. Tschichold, 1995, p. 12.
18. Schwitters, 1979, p. 312.
19. Bayer, 1999, p. 62.
20. Bayer, 1975, p. 147.
21. Tschichold, 1995, p. 79.
22. Schmidt, 1995, p. 30.
23. Moholy-Nagy, 1974, pp. 76–77.
24. Bayer, 1967b, p. 26.
25. The term ‘phoneme’ is intentionally avoided here. A phoneme refers to a functional distinctive unit of speech which manifests as a segment. A segment, more neutrally, refers to a phonetic unit only.
26. Schwitters, 1993b, p. 71.
27. Tschichold, 2007b, pp. 157–159.
28. Tschichold, 1995, p. 75.
29. Bayer, 1984b, p. 354.
30. Moholy-Nagy, 1969, p. 39.
31. Tschichold, 1995, p. 158.
32. Kinross, 1995, p. xxxiii
33. Lissitzky, 1968, p. 361. Lissitzky here expresses the common misconception that Egyptian

hieroglyphs do not stand for phonetic values, but stand only for semantic values.

34. Moholy-Nagy, 1969, p. 40.
35. Porstmann, 1920, p. 58.
36. Abercrombie, 1981, pp. 209–210.
37. Abercrombie 1965, p. 94.
38. Pitman, 1894, p. ix.
39. Abercrombie, 1967, p. 116.
40. Sampson (1985) correctly asserts that such systems are more objectively described as ‘featural’. However as the alphabets discussed here were intentionally designed to oppose the arbitrary nature of the alphabet, the designation ‘iconic-analogical’ is maintained as true to the intentions of the alphabets’ designers.
41. Pitman, 1894, p. 4.
42. Bell, 1867, p. 46.
43. The fricatives—or ‘continuants’ in Pitman’s terminology—are designed according to similar though not quite identical principles. See Pitman, 1894, p. 4.
44. Bell, 1867, p. 21.
45. Bayer 1967a, p. 79. Among the phonetic confusions in Bayer’s ‘basic alfabet’ is the following: in addition to the demand that each segment have one symbol, Bayer, then writing in and on English, includes symbols for certain common suffixes such as ‘ing’, ‘tion’, etc. Within this group of what might be called ‘morphographs’ (as they stand for morphemic units with semantic as well as phonetic values) Bayer includes a symbol for the sound typically indicated with ‘ng’, which is a non-semantic segment.
46. Kohler, 1981, pp. 167.
47. *The Handbook of the International Phonetic Association*, 1999, pp. 194–197.
48. ‘Lautschrift des Teuthonista’, 1924/5, p. 5.
49. Schmidt, 1995.
50. *Ibid.*, p. 31.
51. Schwitters, 2011, pp. 157–158.
52. Cf. Eco, 1995.
53. Schwitters, 1981.
54. Ernst Schwitters, 1990, p. 9.
55. Rosenburg, 1900, p. 2.
56. Schwitters, 1979, p. 313.
57. *Ibid.*
58. *Ibid.* The tables presented here show only the consonants used in German. Other illustrations included with Schwitters’s essay in *i10*

fill out the tables, in an attempt to demonstrate that all consonants of all languages can be accommodated by his system. There are several phonetic anomalies in Schwitters's system that are not detailed here.

59. The first sound in English 'jungle' does not occur in German phonology apart from in loan words such as 'Dschungel'.
60. *Ibid.*, p. 316.
61. *Ibid.*, p. 312.
62. Burke, 2007, p. 154.
63. Cf. Gerstner (1974), p. 19; Baglee (2001), p. 127. The typeface 'Architype Schwitters' by Foundry Types also excludes *Systemschrift* 'f'.
64. Bayer, 1967b, p. 26.
65. Tschichold, 1995, p. 80.
66. Schwitters, 1993b, p. 70.
67. Examples can be seen in Helms (1990) on pages 147, 183, 184 and 188.
68. The original German text reads: 'Ich halte aus diesem Grunde auch für falsch, etwa in der deutschen Sprache alle Buchstaben klein zu schreiben mit der Begründung, daß man auch nicht groß sprechen könnte; denn es erschwert vorläufig noch das Lesen, und es bleibt überdies eine belanglose Äußerlichkeit.'

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