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## A NATURAL HISTORY OF TYPOGRAPHY

by

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**I**n the mid-nineteenth century, Charles Darwin broke with earlier approaches to natural history by asserting that there is no ordered progress governing the evolution of organisms. Instead, individuals with particular genetic traits survive and bear offspring, while their ill-equipped siblings tend to perish. Darwin's theory erased the comforting image of a rational, paternal law regulating the life and death of species; Darwin also upset the humanistic belief that "Man" is a finished biological entity with a tidy origin and a guaranteed future.

Is the history of typography a logical evolution toward perfect forms, or is it a string of responses to random catastrophes in the philosophy and technology of design? This essay charts a shift away from an understanding of printed letters as stable reflections of handwriting or an ideal classical past towards a view of typography as the endless manipulation of abstract relationships. A canon of ideally proportioned letterforms has yielded to a flexible genetic code capable of breeding an infinity of new species.<sup>1</sup>

Printed letters were invented in the fifteenth century by Johannes Gutenberg, who cast individual blocks out of lead, each bearing a raised letter. In Gutenberg's system, thousands of metal characters are stored in gridded wooden cases and assembled by hand into fields of text. The printer inks the raised surfaces of the letters and passes the type and paper through a press. After the job is printed, the metal letters are returned to their cases, ready to be composed into new texts.<sup>2</sup>

Almost unchanged, Gutenberg's system flourished for nearly four centuries. In 1884 the Linotype machine combined into one process the casting of letters out of metal and their composition into lines of text. The operator of the Linotype machine strikes a keyboard, which is connected to a matrix of molds; when the series of molds has fallen into sequence, the machine fills them with molten lead and assembles the lines of type into pages of text. After the job is printed, the lead is melted down into new letters. Subsequent technologies have further dematerialized the making of type, replacing hot metal with a photographic negative and then a digital signal. Today, a desktop computer can store a vast library of typefaces, each capable of being stretched, condensed, or slanted into new configurations.

In the epoch between Gutenberg's invention and the Linotype machine, the philosophy behind the design of printed letters evolved in response to smaller technological and cultural shifts. Whereas Gutenberg based his type on the characters found in handwritten

manuscripts, some of his contemporaries turned back to Roman inscriptions as the classical ancestors of typography.<sup>3</sup> This essay looks at the disappearance of printed letters' sacred origins in handwriting and classical proportions, and examines the reconception of the alphabet as a system of infinitely changeable relationships between elements.

The Darwin of linguistics was Ferdinand de Saussure (1857–1913), who destroyed the ordinary assumption that language exists to represent ideas.<sup>4</sup> While language is commonly understood as a collection of names assigned to pre-existing concepts, Saussure argued that without language, there *are* no concepts. For Saussure, the most troublesome feature of the linguistic sign was its arbitrariness: there is no resemblance between a sound such as “horse” and the concept of “domesticated quadruped.” No natural link binds the material, phonic aspect of the sign (the signifier) to the mental concept (the signified): only a social agreement appears to hold the two sides together.

While Darwin challenged the centrality of “Man” to the natural world, Saussure challenged the centrality of “ideas” to the realm of communication. According to Saussure, both thought and sound are shapeless masses before the acquisition of speech. Without language, the realm of potential human sounds is just a continuum of noises; the plane of concepts is equally unformed, consisting of a vague nebula of emotions and perceptions rather than distinct ideas. Language links these two layers together and cuts them up into discrete, repeatable segments, or *signs*. Thus “ideas” do not precede language, but emerge only when both of these formless slabs are sliced into distinct units.

If the connection between the signifier and signified, the sound and the concept, is arbitrary, what, then, binds the two together? If there is no iconic, natural relationship between the sound “horse” and the concept it invokes, why is the link between them so dependable, so persistent? To explain this link, Saussure introduced the principle of linguistic *value*. The identity of a sign rests not in the sign itself, but solely in its relation to other signs. The sound *horse* is recognizable only in opposition to other sounds used in the language: *horse* is distinct from *morse*, *force*, *burse*, *house*, *hearse*, etc. Likewise the concept “horse” has identity only in opposition to other concepts, such as “cow,” “antelope,” and “pony.” The “meaning” of a sign does not belong to the individual sign, but is generated by the surrounding system. The sign taken by itself is empty.

Saussure's theory of the linguistic sign infused many currents of twentieth century thought, including Claude Levi-Strauss's anthropology, Roland Barthes's social mythology, and Jacques Derrida's philosophy of writing. These writers have looked at human phenomena—from soap bubbles to the unconscious—in terms of systems of opposition, patterns or *structures* of difference that generate meaning.

#### THE CRYSTAL GOBLET

What sort of semiotic system is typography? What are its signifiers, and what are its signifieds? Typography is one aspect of the broader practice of writing, which Saussure described as a sign system separate from speech itself. He saw speech as the original, natural medium of language, while writing is an external system of signs (for example, the alphabet) whose sole purpose is to represent speech. Writing is thus a language depicting another language, a set of signs for representing signs. Typography, then, is removed one step further: it is a medium whose signified is not words themselves, but rather the *alphabet*. The critic Beatrice Warde claimed that a page of type should transparently reveal its verbal text like

the gleaming bowl of a crystal goblet.<sup>5</sup> But is it possible for typography to ever passively contain a pre-existing, “content” or signified? Westerners revere the alphabet as the most rational and transparent of all writing systems, the clearest of vessels for containing the words of speech. Unlike ideograms or hieroglyphs, the alphabet depicts only the material surface of language, rather than its ideas. The alphabet is a mechanical device, a short string of characters capable of converting an infinity of spoken words into script.

This alphabetic goblet is, however, clouded with imperfections. Take for example, the word “horse” and the series of other English words whose sound it can be contrasted against: *morse, force, bourse, house, hose, hearse*, etc. If one were to examine the spoken, verbal sign in isolation from writing, one would find simple phonetic differences. But written English inconsistently employs the alphabet to represent these sounds: a single sound is variously written *-orse, -orce, and -ourse*.

The opacity and inconsistency of writing infuriated Saussure, who felt that the alphabet had violated the innocence of the original, oral word with a monstrous perversion; writing had diverted the natural evolution of speech and had contaminated its crystal purity. The philosopher Jacques Derrida has confronted a contradiction in Saussure’s theory: while Saussure celebrated the fact that verbal signs do not transparently reflect ideas, he could not tolerate the same situation in writing.<sup>6</sup> Saussure was outraged by the alphabet’s refusal to patiently reflect its spoken referent, yet he had discovered that in writing, as in language, the realm of the signifier generates meaning apart from a pre-existing signified. And the same is true for typography’s relationship to the alphabet.

#### STRUCTURALIST TYPOGRAPHY

In what ways has typography responded to its alphabetic signified? While Gutenberg’s fonts naturalistically simulate the variety and aura of handwriting, humanist designers at the turn of the sixteenth century distanced the letter from calligraphy by constructing Roman alphabets with the tools of geometry. The letterform was no longer thought of as a sequence of manual pen strokes, but as a conceptual ideal bound to no particular technology. This Platonic structure became typography’s new signified. A committee established by Louis XIV in 1692 further idealized the alphabet. Embracing the current passion for scientific method, the *Roman du Roi* imposed an orthogonal grid over the organic forms of traditional lettering. Italic forms were generated by shifting the grid; a procedure divorced from calligraphy and prophetic of the mechanical distortions enabled by nineteenth- and twentieth-century technologies. For the King’s committee, the grid was an objective filter through which to glimpse the ideal alphabet, figured as clearly as the image cast on the gridded glass of a camera obscura.

Typographic historians commonly see the fonts of Bodoni and Didot as completing a logical development away from calligraphy; called “modern,” these faces polarized letterforms into extremes of thick and thin and reduced serifs to wafer-thin slabs.<sup>7</sup> There is a difference, however, between the idealism of the “modern” faces and the idealism of the older rational letter designs. Renaissance theorists had hoped to discover absolute proportions legislating the alphabet; the *Roman du Roi* pursued a norm grounded in scientific and governmental legality. Bodoni and Didot signalled an idealization of a different sort: in place of a Platonic model or a bureaucratic standard, these fonts reconceived the alphabet as an arbitrary system of elements whose existence hinges on its material

expression. In Saussure's terms, the *signifier* now took precedence over the *signified*. The fonts of Bodoni and Didot reduced the alphabet to a system of polar oppositions—thick and thin, vertical and horizontal, serif and stem. Typographic form was no longer compelled to refer to an ideal canon of proportions: instead, the alphabet was understood as a collection of linguistic elements open to manipulation. Modern typography replaced *idealism* with *relativism*. The notion of a direct ancestral bond between the typography of the present and a divine classical past was displaced by a model of the alphabet as a code of relationships that could yield an infinity of variations. The alphabet understood as a collection of individual organisms gave way to a genetic code that could spawn offspring of endless diversity. The alphabet had lost its center: operating in its place was a new mode of design which we call *structuralist* typography.

#### SIGNS OF NOVELTY

The break initiated by Didot and Bodoni helped trigger a population explosion in nineteenth-century commercial typography, spawning bizarre new specimens which rejected classical norms in favor of the incessant pursuit of novelty. Technology encouraged the proliferation of new fonts. The introduction of the combined pantograph and router in 1834 revolutionized wood-type manufacture. The pantograph is a tracing device which, when linked to a router for carving letters out of wood or metal, allows different sizes and styles of a font to be generated from a single parent drawing, eliminating the painstaking task of cutting individual punches by hand. This automated approach to type design led the historian Daniel Berkeley Updike to later denounce the pantograph for its tendency to “mechanize the design of types.”

The programmatic shifts in scale enabled by the pantograph encouraged an understanding of the alphabet as a flexible system, susceptible to systematic variations divorced from a calligraphic origin. The swelling population in the nineteenth-century of typographic mutants—compressed, expanded, outline, inline, shadowed, extruded, faceted, floriated, perspectival, bowed—signals a shift in the “signified” of typography. The notion of letterforms as essential, archetypal structures gave way to a recognition of letters as units within a larger system of formal features (weight, stress, cross-bars, serifs, angles, curves, ascenders, descenders, etc.). The relationships *between* letters within a font became more important than the identity of individual characters. The variety of nineteenth-century display faces suggested that the “alphabet” is a flexible system of differences, not a pedigreed line of fixed, self-contained symbols.<sup>8</sup>

The proliferation of typefaces available for use in books and advertising led the American Type Founders Company (ATF) to organize fonts into “type families” in the early twentieth century. Each family consists of variations of a single parent design—book, italic, bold, condensed, etc. This system—still in use today—aimed to encourage printers and their clients to use genetically related characters rather than combining fonts of mixed heritage. The use of type families, claimed the 1923 ATF catalogue, had “added dignity and distinction ... to commercial printing.” It also reflected the structuralist view of a typeface as a set of genetic traits that could be mechanically translated across a series of siblings.

## MODERNISM

Avant-garde designers produced fonts in the early twentieth century which tested the structural limits of the alphabet. Theo van Doesburg's 1919 font and Bart van der Leek's 1941 design for *Het Vlas* are typefaces built out of the principles of De Stijl painting. The stencil construction of Josef Alber's 1925 stencil typeface generates an alphabetic ensemble out of a restricted repertoire of elementary shapes. Similarly, Herbert Bayer's 1925 "universal," designed at the Bauhaus, relies upon interchangeable geometric parts to produce a self-consciously rational font. An even more radical reduction is Wladystav Strzeminski's 1931 font, which generates letterforms out of right angles and the arcs of a single circle.

The experimentation which we call "structuralist typography" was inaugurated by Bodoni and Didot and was continued by advertising display faces; in the twentieth century, Modernism invested this mode of formal manipulation with ideological significance. Structuralist typography rejects the ideal of an essential, core letterform. By shifting the emphasis from the individual letter to the overall series of characters, structuralist typography exchanges the fixed identity of the letter for the relational system of the font.

The format parameters of these avant-garde typefaces suppress the individuality of letters by forcing attention to the system—the discrete figures in Strzeminski's radically geometric font, for example, are indecipherable apart from the surrounding code. These fonts are a typographic analogue for structuralist philosophy and linguistics, which seeks to find, as Derrida has written, "a form or function organized according to an internal legality in which elements have meaning only in the solidarity of their correlation or opposition."<sup>9</sup>

The Modernism of De Stijl, Dada, Futurism, Constructivism, and the Bauhaus aimed to "defamiliarize" writing. Defamiliarization, as theorized by the Russian formalist critic Victor Shklovsky in the 1910s, held that the everyday world is invisible until we are forced to see it differently, and that art is a primary means for "making strange" the already-seen and already-known. Cinematic shock techniques, the "New Vision" of photography, and typographic experimentation were facets of the Modernist attack on the familiar.

## NEO-MODERNISM

Designers today continue to invent typefaces which manipulate the formal system of the alphabet, and attempt to defamiliarize the experience of reading. Zuzana Licko's font Emperor, 1985, embraces the limits of coarse-resolution output. Jeffery Keedy's 1989 font Neo Theo is an homage to Modernism. The reduced template of angles which generates Max Kisman's 1988 Zwartvet is akin to the minimal geometric vocabulary used in Alber's 1925 stencil letters. The emphatic constructedness of Licko's 1988 Variex family shares the fascination with system and geometry found in Bayer's 1925 "universal."

These neo-avant-garde fonts do not, however, take the structuralist principle to the extremes approached by the historical avant-gardes. Licko's 1989 Lunatix, for example, conserves the conventional relationships of the alphabet, while in contrast, Strzeminski's elliptical font expresses a vast range of functional roles with a minimal set of elements.

Like the fonts of the avant-gardes, many of these neo-modern typefaces look to technology for aesthetic cues, rather than imitating traditional typography. In the 1920s

Bayer saw industry as the potential foundation for a universal and democratic society. A similar technological optimism appears to inform many neo-modern typefaces; these are produced, however, in a changed, post-industrial world in which technology can no longer be seen as a benign source of liberation.

The exuberance of nineteenth-century display typography is distinct from the avant-garde experimentation of the twentieth century. Modernism brought a self-consciously ideological attitude to typographic design, displacing the solicitous novelty of advertising display faces with the vanguardist assault of defamiliarization. Echoing the historical avant-gardes, neo-modernism implicitly defines itself against the commercial mainstream, which has included such “novel” fonts as Milton Glaser’s *Baby Teeth* and Herb Lubalin’s *Lubalin Graph*. While the typefaces of the neo-avant-garde initially projected a mystique of removal from mainstream culture, however, they were rapidly absorbed into the graphics of advertising, mass-circulation magazines, and department stores.

#### POST-STRUCTURALISM

Post-structuralist theory builds upon and revises Saussure’s ideas by questioning the generation of “meaning” by the speaking—rather than the *writing*—subject. Saussure had faulted writing for not being a transparent sign system or “crystal goblet” for conveying speech; Derrida has challenged this devaluation of writing, seeing it as another instance of Western philosophy’s characterization of writing as a faulty reflection of speech, an artificial by-product of the otherwise natural workings of the mind. In response, Derrida has foregrounded the typographic and rhetorical force of writing. Post-structuralism has provoked suspicion of coherent “master-codes” such as Marxism, which grounds meaning in a single totalizing structure. This destabilizing, (de-structuring, deconstructing) move corresponds to a philosophical shift which has been termed *post-structuralism*.

In typography there has been a shift between the approach we have described as structuralist and the attitude seen in fonts such as Jeffery Keedy’s 1990 *Manuscript*, and Barry Deck’s 1990 *Canicopulus Script* and *Template Gothic*. While these faces participate in the structuralist displacement of the archetypal letter in favor of the alphabetic structure, they modify that tradition by setting up systems which are not consistent or univocal, which fail to obey consistent master codes. Deck’s *Canicopulus Script*, for example, engages in a conspicuously “bi-fontual” cross breeding. It does not, in the tradition of classical typography, attempt to synthesize the best features of two fonts; instead, it is a schizophrenic hybrid. Keedy’s *Manuscript* is an anti-heroic amalgam of Modernist geometry and grade-school penmanship, recalling the naive yet normative scenario of learning to write—its forms suggest the plodding of the pencil rather than the precision of the Machine Age. Deck’s *Template Gothic* similarly mixes the hand-made and machine-made. While Albers’s stencil font foregrounds its means of production and celebrates industrial standardization, Deck’s “template” is an imperfect matrix yielding irregular yet mechanically mediated characters.

These fonts which we call post-structuralist are involved with issues of representation: Deck’s *Template Gothic* implies an inexact, degraded form of mechanical reproduction, while Keedy’s *Manuscript* recalls elementary school exercises—“reproduction” is shown to result not only from external technologies but from the disciplinary socialization of the individual. These post-structuralist fonts have a figurative, narrative character that

is distinct from the hermetic abstraction of structuralist typography. They suggest a typographic practice that participates in the broader cultural re-evaluation of Modernism; while the avant garde and its afterlife in the neo-avant-garde have institutionalized the “shock of the new,” Post-modernism has replaced this faith in renewal with parody, quotation, pastiche, and an uneasy alliance with technology.

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#### Endnotes

1. In natural history a *type specimen* is the one example of an organism that is used to describe it. In printing a *type specimen* refers to display of typography, collected in books or presented on *specimen sheets*.
2. *Dead-matter* refers to metal type that has been composed, but is no longer in use. It is stored in *dead-matter cabinets*.
3. Geoffroy Tory's *Champ Fleury*, published in 1529, advocated the design of letters based on the proportions of the body.
4. For a comparison of Darwin and Saussure, see Jonathan Culler, *Ferdinand de Saussure* (Ithaca: Cornell University Press, 1976, 1986).
5. “You have two goblets before you. One is of solid gold, wrought in the most exquisite patterns. The other is of crystal-clear glass, thin as a bubble, and as transparent ... [an] amateur of fine vintages ... will choose the crystal, because everything about it is calculated to reveal rather than to hide the beautiful thing which it was meant to contain.... the virtues of the perfect wine glass also have a parallel in typography.” Beatrice Warde, *The Crystal Goblet*, 1932.
6. Jacques Derrida, *Of Grammatology* (Baltimore: Johns Hopkins University Press, 1976).
7. Frank Denman, *The Shaping of Our Alphabet* (New York: Alfred Knopf, 1955).
8. In the early twentieth century, reform-minded designers and typographers dismissed the genetic experiments of the nineteenth century as evidence of deteriorating standards and typographic decadence. Edward Johnston published diagrams of “essential” letterforms based on inscriptions from Roman monuments. While he derided the structural aberrations found in commercial display faces, Johnston accepted similar devices used in manuscript initials, reflecting the Arts-and-Crafts tolerance for all things medieval. Edward Johnston, *Writing & Illuminating & Lettering* (London: Sir Issac Pitman & Sons, 1932).
9. Jacques Derrida, *Writing and Difference* (London: Routledge and Kegan Paul, 1978).

## GOOD HISTORY/BAD HISTORY<sup>1</sup>

by

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It's been over a year since the end of the eighties. This gives us some distance, some perspective. The eighties are now, officially, history.

The eighties were a decade of comebacks: suspenders, mini-skirts, Roy Orbison, Sugar Ray Leonard.... But the really big comeback was history. We got rid of history in the sixties; saw what the world looked like without it in the seventies; and begged it to come back in the eighties.

And it did; it came back with a vengeance.

In design, history came back as well. Suddenly, there were countless books—big, glossy, oversize volumes—and starchy<sup>4</sup> little<sup>5</sup> journals<sup>6</sup> devoted to the history of design. Careers were constructed around this fascination. Conferences, too.

And there's nothing wrong with studying the history of design. In fact, it's healthy and smart, especially for design professionals. At the same time, the indiscriminate use of history has produced some really bad, unhealthy design. History in itself isn't bad, but its influence can be.

There are two problems with design history. The first is how design history is