Typography is what language looks like.
Dedicated to George Sadek (1928–2007) and all my teachers.
 thinking  
with  
type  

A CRITICAL GUIDE  
FOR DESIGNERS,  
WRITERS, EDITORS,  
& STUDENTS  

SECOND, REVISED AND  
EXPANDED EDITION  

ELLEN LUPTON
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Hood's Sarsaparilla Advertisement, lithograph, 1884.
Reproduced at actual size. A woman's healthy face bursts through a sheet of text, her bright complexion proving the product's efficacy better than any written claim. Both text and image were drawn by hand, reproduced via color lithography.
Since the first edition of *Thinking with Type* appeared in 2004, this book has been widely adopted in design programs around the world. Whenever a young designer hands me a battered copy of *Thinking with Type* to sign at a lecture or event, I am warmed with joy from serif to stem. Those scuffed covers and dinged corners are evidence that typography is thriving in the hands and minds of the next generation.

I’ve put on some weight since 2004, and so has this book. For the new edition, I decided to let out the seams and give the content more room to breathe. If you—like most graphic designers—like to sweat the little stuff, you’ll find a lot to love, honor, and worry about in the pages that follow. Finicky matters such as kerning, small capitals, non-lining numerals, punctuation, alignment, and baseline grids that were touched on briefly in the first edition are developed here in more detail, along with new topics that were previously omitted, such as how to style a drop capital, what you need to know about optical sizes, and when to say “typeface” instead of “font” at your next AIGA wine-and-carrot-stick party. This new book has more of everything: more fonts, more exercises, more examples, a more bodacious index, and best of all, more type crimes—more disgraceful “don’ts” to complement the dignified “do’s.”

I was inspired to write the first edition of this book while searching for a textbook for my own type classes, which I have been teaching at Maryland Institute College of Art (MICA) since 1997. Some books on typography focus on the classical page; others are vast and encyclopedic, overflowing with facts and details. Some rely heavily on illustrations of their authors’ own work, providing narrow views of a diverse practice, while others are chatty and dumbed down, presented in a condescending tone.

I sought a book that is serene and intelligible, a volume where design and text gently collaborate to enhance understanding. I sought a work that is small and compact, economical yet well constructed—a handbook designed for the hands. I sought a book that reflects the diversity of typographic life, past and present, exposing my students to history, theory, and ideas. Finally, I sought a book that would be relevant across the media of visual design, from the printed page to the glowing screen.

I found no alternative but to write the book myself.
Thinking with Type is assembled in three sections: letter, text, and grid, building from the basic atom of the letterform to the organization of words into coherent bodies and flexible systems. Each section opens with a narrative essay about the cultural and theoretical issues that fuel typographic design across a range of media. The demonstration pages that follow each essay show not just how typography is structured, but why, asserting the functional and cultural basis for design habits and conventions. Throughout the book, examples of design practice demonstrate the elasticity of the typographic system, whose rules can (nearly) all be broken.

The first section, letter, reveals how early typefaces referred to the body, emulating the work of the hand. The abstractions of neoclassicism bred the strange progeny of nineteenth-century commercial typography. In the twentieth century, avant-garde artists and designers explored the alphabet as a theoretical system. With the rise of digital design tools, typography revived its connections with the body.

The second section, text, considers the massing of letters into larger bodies. Text is a field or texture whose grain, color, density, and silhouette can be endlessly adjusted. Technology has shaped the design of typographic space, from the concrete physicality of metal type to the flexibility—and constraints—offered by digital media. Text has evolved from a closed, stable body to a fluid and open ecology.

The third section, grid, looks at spatial organization. In the early twentieth century, Dada and Futurist artists attacked the rectilinear constraints of metal type and exposed the mechanical grid of letterpress. Swiss designers in the 1940s and 1950s created design’s first total methodology by rationalizing the grid. Their work, which introduced programmatic thinking to a field governed by taste and convention, remains profoundly relevant to the systematic thinking required when designing for multimedia.

This book is about thinking with typography—in the end, the emphasis falls on with. Typography is a tool for doing things with: shaping content, giving language a physical body, enabling the social flow of messages. Typography is an ongoing tradition that connects you with other designers, past and future. Type is with you everywhere you go—the street, the mall, the web, your apartment. This book aims to speak to, and with, all the readers and writers, designers and producers, teachers and students, whose work engages the ordered yet unpredictable life of the visible word.
ACKNOWLEDGMENTS

As a designer, writer, and visual thinker, I am indebted to my teachers at the Cooper Union, where I studied art and design from 1981 to 1985. Back then, the design world was neatly divided between a Swiss-inflected modernism and an idea-based approach rooted in American advertising and illustration. My teachers, including George Sadek, William Bevington, and James Craig, staked out a place between those worlds, allowing the modernist fascination with abstract systems to collide with the strange, the poetic, and the popular.

The title of this book, *Thinking with Type*, is an homage to James Craig’s primer *Designing with Type*, the utilitarian classic that was our textbook at the Cooper Union. If that book was a handyman’s manual to basic typography, this one is a naturalist’s field guide, approaching type as a phenomenon that is more evolutionary than mechanical. What I really learned from my teachers was not rules and facts but how to think: how to use visual and verbal language to develop ideas. For me, discovering typography was like finding the bridge that connects art and language.

To write my own book for the twenty-first century, I decided to educate myself again. In 2003 I enrolled in the Doctorate in Communications Design program at the University of Baltimore and completed my degree in 2008. There I worked with Stuart Moulthrop and Nancy Kaplan, world-class scholars, critics, and designers of networked media and digital interfaces. Their influence is seen throughout this book.

My colleagues at MICA have built a distinctive design culture at the school; special thanks go to Ray Allen, Fred Lazarus, Guna Nadarajan, Brockett Horne, Jennifer Cole Phillips, and all my students.

The editor of *Thinking with Type*’s first edition, Mark Lamster, remains one of my most respected colleagues. The editor of the second edition, Nicola Bednarek, helped me balance and refine the expanded content. I thank Kevin Lippert, publisher at Princeton Architectural Press, for many, many years of support. Numerous designers and scholars helped me along the way, including Peter Bilak, Matteo Bologna, Vivian Folkenflik, Jonathan Hoefler, Eric Karnes, Elke Gasselseder, Hans Lijklema, William Noel, and Jeffrey Zeldman, as well as all the other designers who shared their work.

I learn something every day from my children, Jay and Ruby, and from my parents, my twin sister, and the amazing Miller family. My friends—Jennifer Tobias, Edward Bottone, Claudia Matzko, and Joy Hayes—sustain my life. My husband, Abbott Miller, is the greatest designer I know, and I am proud to include his work in this volume.
{LETTER}
In a letterpress printing shop, gridded cases hold fonts of type and spacing material. Capital letters are stored in a drawer above the minuscule letters. Hence the terms “uppercase” and “lowercase” are derived from the physical space of the print shop.
This is not a book about fonts. It is a book about how to use them. Typefaces are an essential resource employed by graphic designers, just as glass, stone, steel, and other materials are employed by architects. Graphic designers sometimes create their own typefaces and custom lettering. More commonly, however, they tap the vast library of existing typefaces, choosing and combining them in response to a particular audience or situation. To do this with wit and wisdom requires knowledge of how—and why—letterforms have evolved.

Words originated as gestures of the body. The first typefaces were directly modeled on the forms of calligraphy. Typefaces, however, are not bodily gestures—they are manufactured images designed for infinite repetition. The history of typography reflects a continual tension between the hand and the machine, the organic and the geometric, the human body and the abstract system. These tensions, which marked the birth of printed letters over five hundred years ago, continue to energize typography today.

Movable type, invented by Johannes Gutenberg in Germany in the early fifteenth century, revolutionized writing in the West. Whereas scribes had previously manufactured books and documents by hand, printing with type allowed for mass production: large quantities of letters could be cast from a mold and assembled into “forms.” After the pages were proofed, corrected, and printed, the letters were put away in gridded cases for reuse.

Movable type had been employed earlier in China but had proven less useful there. Whereas the Chinese writing system contains tens of thousands of distinct characters, the Latin alphabet translates the sounds of speech into a small set of marks, making it well-suited to mechanization. Gutenberg’s famous Bible took the handmade manuscript as its model. Emulating the dense, dark handwriting known as “blackletter,” he reproduced its erratic texture by creating variations of each letter as well as numerous ligatures (characters that combine two or more letters into a single form).

NICOLAS JENSON
learned to print in Mainz, the German birthplace of typography, before establishing his own printing press in Venice around 1465. His letters have strong vertical stems, and the transition from thick to thin emulates the path of a broad-nibbed pen.

CENTAUR, designed from 1912 to 1914 by Bruce Rogers, is a revival of Jenson's type that emphasizes its ribbonlike stroke.

RUIT was designed in the 1990s by the Dutch typographer, teacher, and theorist Gerrit Noordzij. This digitally constructed font captures the dynamic, three-dimensional quality of fifteenth-century roman typefaces as well as their gothic (rather than humanist) origins. As Noordzij explains, Jenson “adapted the German letters to Italian fashion (somewhat rounder, somewhat lighter), and thus created roman type.”

GOLDEN TYPE was created by the English design reformer William Morris in 1890. He sought to recapture the dark and solemn density of Jenson's pages.

ADOBE JENSON was designed in 1995 by Robert Slimbach, who reconceives historical typefaces for digital use. Adobe Jenson is less mannered and decorative than Centaur.

SCALA was introduced in 1991 by the Dutch typographer Martin Majoor. Although this thoroughly contemporary typeface has geometric serifs and rational, almost modular forms, it reflects the calligraphic origins of type, as seen in letters such as a.
In fifteenth-century Italy, humanist writers and scholars rejected gothic scripts in favor of the lettera antica, a classical mode of handwriting with wider, more open forms. The preference for lettera antica was part of the Renaissance (rebirth) of classical art and literature. Nicolas Jenson, a Frenchman who had learned to print in Germany, established an influential printing firm in Venice around 1469. His typefaces merged the gothic traditions he had known in France and Germany with the Italian taste for rounder, lighter forms. They are considered among the first—and finest—roman typefaces.

Many typefaces we use today, including Garamond, Bembo, Palatino, and Jenson, are named for printers who worked in the fifteenth and sixteenth centuries. These typefaces are generally known as “humanist.” Contemporary revivals of historical typefaces are designed to conform with modern technologies and current demands for sharpness and uniformity. Each revival responds to—or reacts against—the production methods, printing styles, and artistic habits of its own time. Some revivals are based on metal types, punches (steel prototypes), or drawings that still exist; most rely solely on printed specimens.

Italic letters, also introduced in fifteenth-century Italy, were modeled on a more casual style of handwriting. While the upright humanist scripts appeared in expensively produced books, the cursive form thrived in the cheaper writing shops, where it could be written more rapidly than the carefully formed lettera antica. Aldus Manutius, a Venetian printer, publisher, and scholar, used italic typefaces in his internationally distributed series of small, inexpensive printed books. For calligraphers, the italic form was economical because it saved time, while in printing, the cursive form saved space. Aldus Manutius often paired cursive letters with roman capitals; the two styles still were considered fundamentally distinct.

In the sixteenth century, printers began integrating roman and italic forms into type families with matching weights and x-heights (the height of the main body of the lowercase letter). Today, the italic style in most fonts is not simply a slanted version of the roman; it incorporates the curves, angles, and narrower proportions associated with cursive forms.
GEOFROY TORY argued that letters should reflect the ideal human body. Regarding the letter A, he wrote: "the cross-stroke covers the man’s organ of generation, to signify that Modesty and Chastity are required, before all else, in those who seek acquaintance with well-shaped letters."

WILLIAM CASLON produced typefaces in eighteenth-century England with crisp, upright characters that appear, as Robert Bringhurst has written, “more modelled and less written than Renaissance forms.”

JOHN BASKERVILLE was a printer working in England in the 1750s and 1760s. He aimed to surpass Caslon by creating sharply detailed letters with more vivid contrast between thick and thin elements. Whereas Caslon’s letters were widely used during his own time, Baskerville’s work was denounced by many of his contemporaries as amateur and extremist.

GIAMBATTISTA BODONI created letters at the close of the eighteenth century that exhibit abrupt, unmodulated contrast between thick and thin elements, and razor-thin serifs unsupported by curved brackets. Similar typefaces were designed in the same period by François-Ambroise Didot (1784) in France and Justus Erich Walbaum (1800) in Germany.

LOUIS SIMONNEAU designed model letterforms for the printing press of Louis XIV. Instructed by a royal committee, Simonneau designed his letters on a finely meshed grid. A royal typeface (romain du roi) was then created by Philippe Grandjean, based on Simonneau’s engravings.
ENLIGHTENMENT AND ABSTRACTION

Renaissance artists sought standards of proportion in the idealized human body. The French designer and typographer Geofroy Tory published a series of diagrams in 1529 that linked the anatomy of letters to the anatomy of man. A new approach—distanced from the body—would unfold in the age of scientific and philosophical Enlightenment.

A committee appointed by Louis XIV in France in 1693 set out to construct roman letters against a finely meshed grid. Whereas Tory’s diagrams were produced as woodcuts, the gridded depictions of the romain du roi (king’s alphabet) were engraved, made by incising a copper plate with a tool called a graver. The lead typefaces derived from these large-scale diagrams reflect the linear character of engraving as well as the scientific attitude of the king’s committee.

Engraved letters—whose fluid lines are unconstrained by the letterpress’s mechanical grid—offered an apt medium for formal lettering. Engraved reproductions of penmanship disseminated the work of the great eighteenth-century writing masters. Books such as George Bickham’s The Universal Penman (1743) featured roman letters—each engraved as a unique character—as well as lavishly curved scripts.

Eighteenth-century typography was influenced by new styles of handwriting and their engraved reproductions. Printers such as William Caslon in the 1720s and John Baskerville in the 1750s abandoned the rigid nib of humanism for the flexible steel pen and the pointed quill, writing instruments that rendered a fluid, swelling path. Baskerville, himself a master calligrapher, would have admired the thinly sculpted lines that appeared in the engraved writing books. He created typefaces of such sharpness and contrast that contemporaries accused him of “blinding all the Readers in the Nation; for the strokes of your letters, being too thin and narrow, hurt the Eye.” To heighten the startling precision of his pages, Baskerville made his own inks and hot-pressed his pages after printing.

At the turn of the nineteenth century, Giambattista Bodoni in Italy and Firmin Didot in France carried Baskerville’s severe vocabulary to new extremes. Their typefaces—which have a wholly vertical axis, sharp contrast between thick and thin, and crisp, waferlike serifs—were the gateway to an explosive vision of typography unhinged from calligraphy.

The romain du roi was designed not by a typographer but by a government committee consisting of two priests, an accountant, and an engineer. —ROBERT BRINGHURST, 1992
P. VIRGILII MARONIS

BUCOLICA

ECLOGA I. cui nomen TITYRUS.

MELIBOEUS, TITYRUS.

Tityre, tu patulæ recubans sub tegmine fagi
Silvestrem tenui Musam meditaris avena:
Nos patriæ fines, et dulcia linquimus arva;
Nos patriam fugimus: tu, Tityre, lentus in umbra

5 Formofam resonare doces Amaryllida silvas.

T. O Melibœæ, Deus nobis hæc otiæ fecit:
Namque erit ille mihi semper Deus: illius aram
Sæpe tener nostris ab ovilibus imbuet agnus.
Ille meas errare boves, ut cernis, et ipsum

10 Ludere, quæ vellem, calamo permisit agresti.

M. Non equidem invideo; miror magis: undique totis
Utque adeo turbatur agris. en ipse capellas
Protenus æger ago: hanc etiam vix, Tityre, duco:
Hic inter densas corylos modo namque gemellos,

15 Spem gregis, ah! sille in nuda connixa reliquit.
Sæpe malum hoc nobis, si mens non læva fuisset,
De cælo tacatas memini prædicere quercus:
Sæpe sinister cava prædictit ab iles cornix.
Sed tamen, iste Deus qui sit, da, Tityre, nobis.

20 T. Urbem, quam dicunt Romam, Melibœæ, putavi
Stultus ego huic nostræ similem, quo sœpe solemus
Pastores ovium teneros depellere foœtus.
Sic canibus catulos similes, sic matribus hœdos

A Noram;
Virgil (left) Book page, 1757. Printed by John Baskerville. The typefaces created by Baskerville in the eighteenth century were remarkable—even shocking—in their day for their sharp, upright forms and stark contrast between thick and thin elements. In addition to a roman text face, this page utilizes italic capitals, large-scale capitals (generously letterspaced), small capitals (scaled to coordinate with lowercase text), and non-lining or old-style numerals (designed with ascenders, descenders, and a small body height to work with lowercase characters).

Racine (right) Book page, 1801. Printed by Firmin Didot. The typefaces cut by the Didot family in France were even more abstract and severe than those of Baskerville, with slablike, unbracketed serifs and a stark contrast from thick to thin. Nineteenth-century printers and typographers called these glittering typefaces “modern.”

Both pages reproduced from William Dana Orcutt, In Quest of the Perfect Book (New York: Little, Brown and Company, 1926); margins are not accurate.
Plan for the Improvement of the Art of Paper War, whilst a passionate man, engaged in a warm controversy, would thunder vengeance in French Canon.

It follows of course, that writers of great irascibility should be charged higher for a work of the same length, than meek authors; on account of the extraordinary space their performances must necessarily occupy; for these gigantic, wrathful types, like ranters on the stage, must have sufficient elbow-room.

For example: Suppose a newspaper quarrel to happen between *M* and *L*. *M* begins the attack pretty smartly in

Long Primer.

*L* replies in Pica Roman.

*M* advances to Great Primer.

*L* retorts in Double Pica.

And so the contest swells to Rascal, Villain.

*Left some ill-disposed person should misapply these initials, I think proper to declare, that *M* signifies Merchant, and *L* Lawyer.
Plan for the Improvement of the Art of Paper War. 441

Coward,

In five line Pica; which, indeed, is as far as the art of printing or a modern quarrel can well go.

A philosophical reason might be given to prove that large types will more forcibly affect the optic nerve than those of a smaller size, and are therefore naturally expressive of energy and vigour. But I leave this discussion for the amusement of the gentleme, lately elected into our philosophical society. It is sufficient for me, if my system should be found to be justified by experience and fact, to which I appeal.

I recollect a case in point. Some few years before the war, the people of a western county, known by the name of Paxton Boys, assembled, on account of some discontent, in great numbers, and came down with hostile intentions against the peace of government, and with a particular view to some leading men in the city. Sir John St. Clair, who assumed military command for defence of the city, met one of the obnoxious persons in the street, and told him that he had seen the manifesto of the insurgents, and that his name was particularized in letters as long as his fingers. The gentleman immediately picked up his most valuable effects, and sent them with his family into Jersey for security. Had Sir John only said that he had seen his name in the manifesto, it is probable that he would not have been so seriously alarmed; but the unusual size of the letters was to him a plain indication, that the insurgents were determined to carry their revenge to a proportionable extremity.

I could confirm my system by innumerable instances in fact and practice. The title-page of every book is a proof in point. It announces the subject treated of, in conspicuous characters; as if the author stood at the door of his edifice, calling

Plan for the Improvement of the Art of Paper War. Satirical essay by Francis Hopkinson, The American Museum, Volume 1 (1787). Courtesy of the Boston Public Library. This eighteenth-century essay is an early example of expressive typography. The author, poking fun at the emerging news media, suggests a “paper war” between a lawyer and a merchant. As the two men toss attacks at each other, the type gets progressively bigger. The terms Long Primer, Pica Roman, Great Primer, Double Pica, and Five Line Pica were used at the time to identify type sizes. The ß symbol is an s. Hopkinson was no stranger to design. He created the stars and stripes motif of the American flag.
My person was hideous, my stature gigantic. What did this mean? Who was I? What was I?... Accursed creator! Why did you create a monster so hideous that even you turned away from me in disgust? — MARY SHELLEY, Frankenstein, 1831
Although Bodoni and Didot fueled their designs with the calligraphic practices of their time, they created forms that collided with typographic tradition and unleashed a strange new world, where the structural attributes of the letter—serif and stem, thick and thin strokes, vertical and horizontal stress—would be subject to bizarre experiments. In search of a beauty both rational and sublime, Bodoni and Didot had created a monster: an abstract and dehumanized approach to the design of letters.

With the rise of industrialization and mass consumption in the nineteenth century came the explosion of advertising, a new form of communication demanding new kinds of typography. Type designers created big, bold faces by embellishing and engorging the body parts of classical letters. Fonts of astonishing height, width, and depth appeared—expanded, contracted, shadowed, inlined, fattened, faceted, and floriated. Serifs abandoned their role as finishing details to become independent architectural structures, and the vertical stress of traditional letters canted in new directions.

Lead, the material for casting metal type, is too soft to hold its shape at large sizes under the pressure of the printing press. In contrast, type cut from wood can be printed at gigantic scales. The introduction of the combined pantograph and router in 1834 revolutionized wood-type manufacture. The pantograph is a tracing device that, when linked to a router for carving, allows a parent drawing to spawn variants with different proportions, weights, and decorative excrescences.

This mechanized design approach treated the alphabet as a flexible system divorced from calligraphy. The search for archetypal, perfectly proportioned letterforms gave way to a new view of typography as an elastic system of formal features (weight, stress, stem, crossbars, serifs, angles, curves, ascenders, descenders). The relationships among letters in a typeface became more important than the identity of individual characters.

Printing, having found in the book a refuge in which to lead an autonomous existence, is pitilessly dragged out into the street by advertisements....Locust swarms of print, which already eclipse the sun of what is taken for intellect in city dwellers, will grow thicker with each succeeding year. —WALTER BENJAMIN, 1925
FULL MOON.

ST. MICHAEL’S TEMPERANCE BAND!

Prof. V. Yeager, Leader, will give a

GRAND MOONLIGHT EXCURSION

On the Steamer BELLE!

To Osbrook and Watch Hill,
On Saturday Evening, July 17th,
Leaving Wharf at 7½ o’clock. Returning to Westerly at 10½ o’clock. Kenneth will be at Osbrook.

TICKETS, - FORTY CENTS.

G. B. & J. H. Utter, Steam Printers, Westerly, R. I.
Paul Renner designed Futura in Germany in 1927. Although it is strongly geometric, with perfectly round Os, Futura is a practical, subtly designed typeface that remains widely used today.

Vilmos Huszár designed this logo for the magazine De Stijl in 1917. Whereas van Doesburg’s characters are unbroken, Huszár’s letters consist of pixel-like modules.

Theo van Doesburg, founder and chief promoter of the Dutch De Stijl movement, designed this alphabet with perpendicular elements in 1919. Applied here to the letterhead of the Union of Revolutionary Socialists, the hand-drawn characters vary in width, allowing them to fill out the overall rectangle. The De Stijl movement called for the reduction of painting, architecture, objects, and letters to elemental units.

Herbert Bayer created this typeface design, called universal, at the Bauhaus in 1925. Consisting only of lowercase letters, it is built from straight lines and circles.

Bono van Revolutionair: Socialistische Intellectueelen

De Stijl

abcdefg
ijklmnop
qrstuvwxyz
A

Fette Futura

Goeth Stoff
Some designers viewed the distortion of the alphabet as gross and immoral, tied to a destructive and inhumane industrial system. Writing in 1906, Edward Johnston revived the search for an essential, standard alphabet and warned against the “dangers” of exaggeration. Johnston, inspired by the nineteenth-century Arts and Crafts movement, looked back to the Renaissance and Middle Ages for pure, uncorrupted letterforms.

Although reformers like Johnston remained romantically attached to history, they redefined the designer as an intellectual distanced from the commercial mainstream. The modern design reformer was a critic of society, striving to create objects and images that would challenge and revise dominant habits and practices.

The avant-garde artists of the early twentieth century rejected historical forms but adopted the model of the critical outsider. Members of the De Stijl group in the Netherlands reduced the alphabet to perpendicular elements. At the Bauhaus, Herbert Bayer and Josef Albers constructed letters from basic geometric forms—the circle, square, and triangle—which they viewed as elements of a universal language of vision.

Such experiments approached the alphabet as a system of abstract relationships. Like the popular printers of the nineteenth century, avant-garde designers rejected the quest for essential letters grounded in the human hand and body, but they offered austere, theoretical alternatives in place of the solicitous novelty of mainstream advertising.

Assembled like machines from modular components, these experimental designs emulated factory production. Yet most were produced by hand rather than as mechanical typefaces (although many are now available digitally). Futura, completed by Paul Renner in 1927, embodied the obsessions of the avant garde in a multipurpose, commercially available typeface. Although Renner disdained the active movement of calligraphy in favor of forms that are “calming” and abstract, he tempered the geometry of Futura with subtle variations in stroke, curve, and proportion. Renner designed Futura in numerous weights, viewing his type family as a painterly tool for constructing a page in shades of gray.

The calming, abstract forms of those new typefaces that dispense with handwritten movement offer the typographer new shapes of tonal value that are very purely attuned. These types can be used in light, semi-bold, or in saturated black forms. — PAUL RENNER, 1931
Responding in 1967 to the rise of electronic communication, the Dutch designer Wim Crouwel published designs for a “new alphabet” constructed from straight lines. Rejecting centuries of typographic convention, he designed his letters for optimal display on a video screen (CRT), where curves and angles are rendered with horizontal scan lines. In a brochure promoting his new alphabet, subtitled “An Introduction for a Programmed Typography,” he proposed a design methodology in which decisions are rule-based and systematic.

In the mid-1980s, personal computers and low-resolution printers put the tools of typography in the hands of a broader public. In 1985 Zuzana Licko began designing typefaces that exploited the rough grain of early desktop systems. While other digital fonts imposed the coarse grid of screen displays and dot-matrix printers onto traditional typographic forms, Licko embraced the language of digital equipment. She and her husband, Rudy VanderLans, cofounders of Emigre Fonts and Emigre magazine, called themselves the “new primitives,” pioneers of a technological dawn.

By the early 1990s, with the introduction of high-resolution laser printers and outline font technologies such as PostScript, type designers were less constrained by low-resolution outputs. While various signage systems and digital output devices still rely on bitmap fonts today, it is the fascination with programmed, geometric structures that has enabled bitmap forms to continue evolving as a visual ethos in print and digital media.

Living with computers gives funny ideas. — WIM CROUWEL, 1967
Ed Fella produced a body of experimental typography that strongly influenced typeface design in the 1990s. His posters for the Detroit Focus Gallery feature damaged and defective forms, drawn by hand or culled from third-generation photocopies or from sheets of transfer lettering. Collection of the Cooper-Hewitt, National Design Museum.
In the early 1990s, as digital design tools began supporting the seamless reproduction and integration of media, many designers grew dissatisfied with clean, unsullied surfaces, seeking instead to plunge the letter into the harsh and caustic world of physical processes. Letters, which for centuries had sought perfection in ever more exact technologies, became scratched, bent, bruised, and polluted.

**Template Gothic: flawed technology**

Barry Deck’s typeface Template Gothic, designed in 1990, is based on letters drawn with a plastic stencil. The typeface thus refers to a process that is at once mechanical and manual. Deck designed Template Gothic while he was a student of Ed Fella, whose experimental posters inspired a generation of digital typographers. After Template Gothic was released commercially by Emigre Fonts, its use spread worldwide, making it an emblem of digital typography for the 1990s.

**Dead History: feeding on the past**

P. Scott Makela’s typeface Dead History, also designed in 1990, is a pastiche of two existing typefaces: the traditional serif font Centennial and the Pop classic VAG Rounded. By manipulating the vectors of readymade fonts, Makela adopted the sampling strategy employed in contemporary art and music. He also embraced the burden of history and precedent, which play a role in nearly every typographic innovation.

**CcDdEeFfGgHhIiJjKk**

The Dutch typographers Erik van Blokland and Just van Rossum have combined the roles of designer and programmer, creating typefaces that embrace chance, change, and uncertainty. Their 1990 typeface Beowulf was the first in a series of typefaces with randomized outlines and programmed behaviors.

*The industrial methods of producing typography meant that all letters had to be identical....Typography is now produced with sophisticated equipment that doesn't impose such rules. The only limitations are in our expectations. —ERIK VAN BLOKLAND AND JUST VAN ROSSUM, 2000*
Although the 1990s are best remembered for images of chaos and decay, serious type designers continued to build general purpose typefaces designed to comfortably accommodate broad bodies of text. Such workhorse type families provide graphic designers with flexible palettes of letterforms.

Mrs Eaves: working woman seeks reliable mate

Licko produced historical revivals during the 1990s alongside her experimental display faces. Her 1996 typeface Mrs Eaves, inspired by the eighteenth-century types of Baskerville, became one of the most popular typefaces of its time. In 2009, Mrs Eaves was joined by Mr Eaves, a sans-serif version of the feminine favorite.

Quadraat: all-purpose hardcore BAROQUE

Fred Smeijers’s Quadraat (above) and Martin Majoor’s Scala (used for the text of this book) offer crisp interpretations of typographic tradition. These typefaces look back to sixteenth-century printing from a contemporary point of view, as seen in their simply drawn, decisively geometric serifs. Introduced in 1992, the Quadraat family soon expanded to include sans-serif forms in numerous weights and styles.

Gotham: Blue-Collar Curves

In 2000 Tobias Frere-Jones introduced Gotham, derived from letters found at the Port Authority Bus Terminal in New York City. With its distinctive yet utilitarian style, Gotham became the signature typeface of Barack Obama’s 2008 presidential campaign. By 2009, typography’s First Family had over fifty weights and styles.

When choosing a typeface, graphic designers consider the history of typefaces, their current connotations, as well as their formal qualities. The goal is to find an appropriate match between a style of letters and the specific social situation and body of content that define the project at hand. There is no playbook that assigns a fixed meaning or function to every typeface; each designer must confront the library of possibilities in light of a project’s unique circumstances.
OurType.com Website, 2004. Design: Fred Smeijers and Rudy Geeraerts. This Flash-based website for a digital type foundry allows users to test fonts on the fly. The designers launched their own “label” after creating typefaces such as Quadraat for FontShop International. Shown here is Arnhem.
1. a font that asks more questions than it answers
2. a font that has projective memory that reminds you to remember
3. a font with a limited life span
4. a font with an expiry date
5. a font that’s gone bad
6. a font without temporal inflection, without the imprint of its time
7. an apolitical font, a font that doesn’t care
8. a font unaffected by the force of gravity and the weight of human history
9. a font without family, without ancestry
10. a Marshall McLuhan font that stubbornly persists in bidding farewell to itself
11. a font that takes advantage of all that promised “processing power”
12. a font that does something other than sit on its ass in a digital museum
13. a font with the capacity to breed with other fonts
14. a recombinant font — every letterform the unruly child of a predictable but random process
15. a font that sounds as good as it looks
16. a font that writes its own script
17. a font that thickens the plot
18. a font that responds and reacts to the meaning it carries and conveys
19. a font that assumes the intelligence of its reader
20. a font that might sense your level of agitation, fear, or aggression
21. a font prone to sudden outbursts and tantrums
22. a font that exceeds the typographic genome
23. a font whose parents are Father Time and the Mother of Invention
24. an ambient font, a font without qualities
25. an everyday font, a font of common sense

Can we envision
In this postindustrial manifesto, graphic designer Bruce Mau imagines a typeface that comes alive with simulated intelligence.
The distance from the baseline to the top of the capital letter determines the letter’s point size.

The baseline is where all the letters sit. This is the most stable axis along a line of text, and it is a crucial edge for aligning text with images or with other text.

The curves at the bottom of letters hang slightly below the baseline. Commas and semicolons also cross the baseline. If a typeface were not positioned this way, it would appear to teeter precariously. Without overhang, rounded letters would look smaller than their flat-footed compatriots.

Although kids learn to write using ruled paper that divides letters exactly in half, most typefaces are not designed that way. The x-height usually occupies more than half of the cap height. The larger the x-height is in relation to the cap height, the bigger the letters appear to be. In a field of text, the greatest density occurs between the baseline and the x-height.

Hey, look! They supersized my x-height.
Attempts to standardize the measurement of type began in the eighteenth century. The point system is the standard used today. One point equals 1/72 inch or .35 millimeters. Twelve points equal one pica, the unit commonly used to measure column widths. Typography can also be measured in inches, millimeters, or pixels. Most software applications let the designer choose a preferred unit of measure; picas and points are standard defaults.

NERD ALERT:
ABBREVIATING PICAS AND POINTS
8 picas = 8p
8 points = p8, 8 pts
8 picas, 4 points = 8p4
8-point Helvetica with 9 points of line spacing = 8/9 Helvetica

WIDE LOAD
INTERSTATE BLACK
The set width is the body of the letter plus the space beside it.

TIGHT WAD
INTERSTATE BLACK COMPRESSED
The letters in the compressed version of the typeface have a narrower set width.

WIDE LOAD
TIGHT WAD

HEIGHT

A letter also has a horizontal measure, called its set width. The set width is the body of the letter plus a sliver of space that protects it from other letters. The width of a letter is intrinsic to the proportions and visual impression of the typeface. Some typefaces have a narrow set width, and some have a wide one.

You can change the set width of a typeface by fiddling with its horizontal or vertical scale. This distorts the line weight of the letters, however, forcing heavy elements to become thin, and thin elements to become thick. Instead of torturing a letterform, choose a typeface that has the proportions you are looking for, such as condensed, compressed, wide, or extended.
When two typefaces are set in the same point size, one often looks bigger than the other. Differences in x-height, line weight, and set width affect the letters' apparent scale.

Mrs Eaves rejects the twentieth-century appetite for supersized x-heights. This typeface, inspired by the eighteenth-century designs of Baskerville, is named after Sarah Eaves, Baskerville’s mistress, housekeeper, and collaborator. The couple lived together for sixteen years before marrying in 1764.

The x-height of a typeface affects its apparent size, its space efficiency, and its overall visual impact. Like hemlines and hair styles, x-heights go in and out of fashion. Bigger type bodies became popular in the mid-twentieth century, making letterforms look larger by maximizing the area within the overall point size.

Because of its huge x-height, Helvetica can remain legible at small sizes. Set in 8 pts for a magazine caption, Helvetica can look quite elegant. The same typeface could look bulky and bland, however, standing 12 pts tall on a business card.

Typefaces with small x-heights, such as Mrs Eaves, use space less efficiently than those with big lower bodies. However, their delicate proportions have lyrical charm.

Like his lovely wife, MR EAVES has a low waist and a small body. His loose letterspacing also makes him work well with his mate.

The size of a typeface is a matter of context. A line of text that looks tiny on a television screen may appear appropriately scaled in a page of printed text. Smaller proportions affect legibility as well as space consumption. A diminutive x-height is a luxury that requires sacrifice.

The default type size in many software applications is 12 pts. Although this generally creates readable type on screen displays, 12-pt text type usually looks big and horsey in print. Sizes between 9 and 11 pts are common for printed text. This caption is 7.5 pts.
All the typefaces shown below were inspired by the sixteenth-century printing types of Claude Garamond, yet each one reflects its own era. The lean forms of Garamond 3 appeared during the Great Depression, while the inflated x-height of ITC Garamond became an icon of the flamboyant 1970s.

**Garamond in the Twentieth Century: Variations on a Theme**

**1930s:** Franklin D. Roosevelt, **Salvador Dalí**, Duke Ellington, **Scarface**, chicken and waffles, shoulder pads, radio.

*18-pt Garamond 3, designed by Morris Fuller Benton and Thomas Maitland Cleland for ATF, 1936*


*18-pt ITC Garamond, designed by Tony Stan, 1976*

**1980s:** Margaret Thatcher, **Barbara Kruger**, Madonna, *Blue Velvet*, shoulder pads, pasta salad, desktop publishing.

*18-pt Adobe Garamond, designed by Robert Slimbach, 1989*

**2000s:** Osama Bin Laden, **Matthew Barney**, the White Stripes, *The Sopranos*, mom jeans, heirloom tomatoes, Twitter.

*18-pt Adobe Garamond Premiere Pro Medium Subhead, designed by Robert Slimbach, 2005*
A type family with *optical sizes* has different styles for different sizes of output. The graphic designer selects a style based on context. Optical sizes designed for headlines or display tend to have delicate, lyrical forms, while styles created for text and captions are built with heavier strokes.

**Optical Sizes**

**Headlines** are slim, *high-strung* prima donnas.  
27-PT ADOBE GARAMOND PREMIERE PRO DISPLAY

**Subheads** are *frisky* supporting characters.  
27-PT ADOBE GARAMOND PREMIERE PRO SUBHEAD

**Text** is the *everyman* of the printed stage.  
27-PT ADOBE GARAMOND PREMIERE PRO REGULAR

**Captions** get *heavy* to play small roles.  
27-PT ADOBE GARAMOND PREMIERE PRO CAPTION

10 PT

In the era of *metal type*, type designers created a different *punch* for each size of type, adjusting its weight, spacing, and other features. Each size required a unique typeface design.

ADOBE GARAMOND PREMIERE PRO DISPLAY

When the type design process became automated in the *nineteenth century*, many typefounders economized by simply *enlarging* or *reducing* a base design to generate different sizes.

ADOBE GARAMOND PREMIERE PRO REGULAR

This *mechanized approach* to type sizes became the norm for photo and digital type production. When a text-sized letterform is enlarged to poster-sized proportions, its thin features become too heavy (and vice versa).

ADOBE GARAMOND PREMIERE PRO CAPTION

**No Job**

Too Small  
48-PT BODONI  
8-PT BODONI

**Type Crime**

Some typefaces that work well at large sizes look too fragile when reduced.
Scale is the size of design elements in comparison to other elements in a layout as well as to the physical context of the work. Scale is relative. 12-pt type displayed on a 32-inch monitor can look very small, while 12-pt type printed on a book page can look flabby and overweight. Designers create hierarchy and contrast by playing with the scale of letterforms. Changes in scale help create visual contrast, movement, and depth as well as express hierarchies of importance. Scale is physical. People intuitively judge the size of objects in relation to their own bodies and environments.

The strong contrast between type sizes gives this design dynamism, decisiveness, and depth.

Type Crime
Minimal differences in type size make this design look tentative and arbitrary.

THE WORLD IS FLAT

BLOW-UP: PHOTOGRAPHY, CINEMA, AND THE BRAIN
UNITED NATIONS’ OFFICE ON DRUGS AND CRIME (UNODC)
Pentagram. This series of posters for the United Nations’ Office on
Drugs and Crime uses typographic scale to compare drug treatment
programs, HIV incidence, and other data worldwide. The designers
built simple world maps from country abbreviation codes (GBR,
USA, RUS, etc.). The posters are aimed specifically at the Russian
crime, whose country has a poor track record in drug treatment.
Note Russia’s high incidence of HIV and low availability of
addiction rehabilitation programs.
Revolver: Zeitschrift für Film (Magazine for Film)


Designer: Gerwin Schmidt.

This magazine is created by and for film directors. The contrast between the big type and the small pages creates drama and surprise.
A basic system for classifying typefaces was devised in the nineteenth century, when printers sought to identify a heritage for their own craft analogous to that of art history. *Humanist* letterforms are closely connected to calligraphy and the movement of the hand. *Transitional* and *modern* typefaces are more abstract and less organic. These three main groups correspond roughly to the Renaissance, Baroque, and Enlightenment periods in art and literature. Historians and critics of typography have since proposed more finely grained schemes that attempt to better capture the diversity of letterforms. Designers in the twentieth and twenty-first centuries have continued to create new typefaces based on historic characteristics.
This is not a book about fonts. It is a book about how to use them. Typefaces are essential resources for the graphic designer, just as glass, stone, steel, and other materials are employed by the architect.

**Sabon**

<table>
<thead>
<tr>
<th>Size</th>
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<tbody>
<tr>
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**Baskerville**

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**Bodoni**

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**Clarendon**

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**Gill Sans**

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**Helvetica**

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**Futura**

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In the sixteenth century, printers began organizing roman and italic typefaces into matched families. The concept was formalized in the early twentieth century.

**ANATOMY OF A TYPE FAMILY**

The roman form is the core or spine from which a family of typefaces derives.

The italic form is used to create emphasis. Especially among serif faces, it often employs shapes and strokes distinct from its roman counterpart. Note the differences between the roman and italic a.

**Small caps have a height that is similar to the lowercase x-height.**

Small caps (capitals) are designed to integrate with a line of text, where full-size capitals would stand out awkwardly. Small capitals are slightly taller than the x-height of lowercase letters.

**Bold (and semibold) typefaces are used for emphasis within a hierarchy.**

Bold versions of traditional text fonts were added in the twentieth century to meet the need for emphatic forms. Sans-serif families often include a broad range of weights (thin, bold, black, etc.).

**Bold (and semibold) typefaces each need to include an italic version, too.**

The typeface designer tries to make the two bold versions feel similar in comparison to the roman, without making the overall form too heavy. The counters need to stay clear and open at small sizes. Many designers prefer not to use bold and semi-bold versions of traditional typefaces such as Garamond, because these weights are alien to the historic families.

**Italics are not slanted letters.**

Some italics aren’t slanted at all.

In the type family Quadraat, the italic form is upright.

**TRUE ITALIC**

**TYPE CRIME:**

PSEUDO ITALICS
The wide, ungainly forms of these mechanically skewed letters look forced and unnatural.
This magazine cover uses the Garamond 3 typeface family in various sizes. Although the typeface is classical and conservative, the obsessive, slightly deranged layout is distinctly contemporary.
A traditional roman book face typically has a small family—an intimate group consisting of roman, italic, small caps, and possibly bold and semibold (each with an italic variant) styles. Sans-serif families often come in many more weights and sizes, such as thin, light, black, compressed, and condensed. A superfamily consists of dozens of related fonts in multiple weights and/or widths, often with both sans-serif and serif versions. Small capitals and non-lining numerals (once found only in serif fonts) are included in the sans-serif versions of Thesis, Scala Pro, and many other contemporary superfamilies.

Scala
Scala Italic
SCALA CAPS
Scala Bold

Scala Pro, designed by Martin Majoor, includes Scala (1991) and Scala Sans (1993). The serif and sans-serif forms have a common spine. Scala Pro (OpenType format) was released in 2005.

Ticket of Admittance,
WITHIN THE ENCLOSURE,
TO VIEW THE
CEREMONY.

One Shilling

The Money raised by these Tickets will be applied to defray the expenses of the Day.

W. Pratt, Printer, Stokesley

Univers was designed by the Swiss typographer Adrian Frutiger in 1957. He designed twenty-one versions of Univers, in five weights and five widths. Whereas some type families grow over time, Univers was conceived as a total system from its inception.

Trilogy, a superfamily designed by Jeremy Tankard in 2009, is inspired by three nineteenth-century type styles: sans serif, Egyptian, and fat face. The inclusion of the fat face style, with its wafer-thin serifs and ultrawide verticals, gives this family an unusual twist.
This is not a book about fonts. It is a book about how to use them. Typefaces are essential resources for the graphic designer, just as glass, stone, steel, and other materials are employed by the architect. Some designers create their own custom fonts. But most graphic designers will tap the vast store of already existing typefaces, choosing and combining each with regard to the audience or situation. Selecting type with wit and wisdom requires knowledge of how and why letterforms have evolved. The history of typography reflects a continual tension between the hand and machine, the organic and geometric, the human body and the abstract system. These tensions marked the birth of printed letters five centuries ago, and they continue to in Germany. Whereas documents and books had previously been written by hand, printing with type mobilized all of the techniques of mass production.

ANATOMY OF A SUPERFAMILY

energize typography today. Writing in the West was revolutionized early in the Renaissance, when Johannes Gutenberg introduced moveable type

thesis, designed by Lu(cas) de Groot, 1994
A word set in ALL CAPS within running text can look big and bulky, and A LONG PASSAGE SET ENTIRELY IN CAPITALS CAN LOOK UTTERLY INSANE. SMALL CAPITALS are designed to match the x-height of lowercase letters. Designers, enamored with the squarish proportions of true small caps, employ them not only within bodies of text but for subheads, bylines, invitations, and more. Rather than MIXING SMALL CAPS WITH CAPITALS, many designers prefer to use all small caps, creating a clean line with no ascending elements. InDesign and other programs allow users to create FALSE SMALL CAPS at the press of a button; these SCRAWNY LETTERS look out of place.

PSEUDO SMALL CAPS are shrunken versions of FULL-SIZE CAPS.

**TYPE CRIME**

PSEUDO SMALL CAPS

Helvetica was never meant to include small caps. These automatically generated characters look puny and starved; they are an abomination against nature.

TRUE SMALL CAPS integrate PEACEFULLY with lowercase letters.

SMALL CAPS, SCALA PRO

Only use small caps when they are officially included with the type family. When working with OpenType fonts (labeled Pro), access small caps in InDesign via the Character Options>OpenType menu. Older formats list small caps as a separate file in the Type>Font menu.
En cette fin de mois de mars, Keita Takahashi fait escale en France. Quelques jours plus tôt, le game designer japonais était à San Francisco pour la Game Developers Conference, grand râout annuel de la profession où, comme à son habitude, il a abreuvé ses confrères de réflexions rafraîchissantes sur le jeu vidéo. Mais, avant toute chose, il leur a montré sa nouvelle écharpe, qu’il porte encore sur lui pour ce mini-séjour parisien. Confectionnée par Madame Takahashi mère, celle-ci a notamment pour avantage de permettre au fiston d’y glisser ses mains afin de les protéger en cas de grand froid. Ce précieux tricot est aussi le premier « produit dérivé » de Noby Noby Boy, le dernier jeu en date de Keita Takahashi, disponible depuis le mois de février sur le service de téléchargement de la PS3 pour la somme quasi-ridicule de 3,99 euros. Cette écharpe à l’effigie du souriant Boy se révèle même remarquablement en phase avec le jeu qui l’a inspirée : tranquillement singulière, résolument artisanale et conçue pour qu’on se sente bien quand on y met les mains.

Sara Forestier

« JE FINIRAI PAR METTRE LE BAZAR UN PEU PARTOUT ! »

SIMULIER AVEC UNE GRANDE FINESSE SES TRAITS PSYCHOLOGIQUES, PERSONNALISER SON AVATAR AVEC TANT DE POSSIBILITÉS QU’ILS LE RENDENT UNIQUE, PROPOSER UNE EXPÉRIENCE INTERACTIVE QUI VA AU-DELÀ DU SIMPLE JEU, ET Y PROPULSER DANS LES ÉDIFICTIONS DE NOS MODÈLES DE VIE ? VOICI UN PETIT APERÇU DE CE QUE PROPOSE LES SIMS 3, DERNIER EPISODE DE LA SAGA CULTE LANCEE IL Y A TOUT JUSTE DIX ANS.

Sara Forestier montre dans chacun de ses rôles une grande créativité qu’elle exprime également depuis plusieurs années dans la réalisation de courts-métrages. A l’affiche à la rentrée dans Victor, une comédie de Thomas Gilou sur les relations familiales, Sara était toute trouvée pour casser la baraque dans Les Sim 3 ! Et elle ne s’est pas gênée !

Casse la Baraque dans Les Sims 3

Simuler avec une grande finesse ses traits psychologiques, personnaliser son avatar avec tant de possibilités qu’ils le rendent unique, proposer une expérience interactive qui va au-delà du simple jeu, et y propulser dans les edifices de nos modes de vie ? Voici un petit aperçu de ce que propose Les Sim 3, dernier épisode de la saga culte lancée il y a tout juste dix ans.

Sara Forestier montre dans chacun de ses rôles une grande créativité qu’elle exprime également depuis plusieurs années dans la réalisation de courts-métrages. A l’affiche à la rentrée dans Victor, une comédie de Thomas Gilou sur les relations familiales, Sara était toute trouvée pour casser la baraque dans Les Sim 3 ! Et elle ne s’est pas gênée !
Combining typefaces is like making a salad. Start with a small number of elements representing different colors, tastes, and textures. Strive for contrast rather than harmony, looking for emphatic differences rather than mushy transitions. Give each ingredient a role to play: sweet tomatoes, crunchy cucumbers, and the pungent shock of an occasional anchovy. When mixing typefaces on the same line, designers usually adjust the point size so that the x-heights align. When placing typefaces on separate lines, it often makes sense to create contrast in scale as well as style or weight. Try mixing big, light type with small, dark type for a criss-cross of contrasting flavors and textures.

**SINGLE-FAMILY MIXES**

Creamy and **Extra Crunchy** | Differences within a **single family**

*Univers 47 Light Condensed* and *Univers 67 Bold Condensed*

Sweet Child of **MINE** | Differences within a **SUPERFAMILY**

*Quadraat Regular* and *Quadraat Sans Italic*; *Quadraat Sans Bold*

**Noodles with Potato Sauce** | **Bland and blander**

*Helvetica Neue 56 Medium* and *Helvetica Neue 75 Bold*

**MULTIPLE-FAMILY MIXES**

Jack Sprat and his **voluptuous wife** | **Two-way contrast**

*Thesis Serif Extra Light* and *Vag Rounded Bold*

Sweet, sour, and **hot** | **Three-way contrast**

*Bodoni Roman*, *Thesis Serif Extra Light Small Caps*, and *Futura Bold*

**Mr. Potatohead and Mrs. Pearbutt** | **Too close for comfort**

*Adobe Garamond Pro Bold* and *Adobe Jenson Pro Bold*
This content-intensive page detail mixes four different type families from various points in history, ranging from the early advertising face Egyptian Bold Condensed to the functional contemporary sans Verlag. These diverse ingredients are mixed here at different scales to create typographic tension and contrast.

**Egyptian Bold Condensed,** a Linotype font based on a typeface from 1820. This quirky, chunky face has been used intermittently at New York Magazine since the publication was first designed by Milton Glaser in the 1970s. Here, the ultra-black type set at a relatively small size makes an incisive bite in the page.

**Verlag,** designed by Jonathan Hoefler, 1996. Originally commissioned by Abbott Miller for exclusive use by the Guggenheim Museum, Verlag has become a widely used general-purpose typeface. Its approachable geometric forms are based on Frank Lloyd Wright’s lettering for the facade of the Guggenheim.

**Glypha Thin,** designed by Adrian Frutiger, 1979. The large scale of the letters is counterbalanced by the fine line of the stroke.

**Miller Small Caps,** designed by Matthew Carter with Jonathan Hoefler and Tobias Frere-Jones, 1997–2000. Known as a Scotch Roman typeface, it has crisp serifs and strong contrast between thick and thin.
Lining numerals take up uniform widths of space, enabling the numbers to line up when tabulated in columns. They were introduced around the turn of the twentieth century to meet the needs of modern business. Lining numerals are the same height as capital letters, so they sometimes look big and bulky when appearing in running text.

Non-lining numerals, also called text or old style numerals, have ascenders and descenders, like lowercase letters. Non-lining numerals returned to favor in the 1990s, valued for their idiosyncratic appearance and their traditional typographic attitude. Like letterforms, old style numerals are proportional; each one has its own set width.

<table>
<thead>
<tr>
<th>Lining Numerals</th>
<th>Non-lining Numerals</th>
</tr>
</thead>
<tbody>
<tr>
<td>123 456</td>
<td>123 456</td>
</tr>
<tr>
<td>Futura Bold</td>
<td>Scala Sans Pro Bold</td>
</tr>
</tbody>
</table>

**Text Set with Lining Numerals**

What is the cost of *War and Peace*? The cover price of the Modern Library Classics paperback edition is $15.00, discounted 32% by Amazon to $10.50. But what about the human cost in terms of hours squandered reading a super-sized work of literary fiction? If you can read 400 words per minute, double the average, it will take you 1,476 minutes (24.6 hours) to read *War and Peace*. Devoting just four hours per day to the task, you could finish the work in a little over six days. If you earn $7.25 per hour (minimum wage in the U.S.), the cost of reading *War and Peace* will be $184.50 (£130.4716, €11.9391, or ¥17676.299).

Adobe Garamond Pro includes both lining and non-lining numerals, allowing designers to choose a style in response to the circumstances of the project. The lining numerals appear large, because they have the height of capital letters.

**Text Set with Non-lining Numerals**

What is the cost of *War and Peace*? The cover price of the Modern Library Classics paperback edition is $15.00, discounted 32% by Amazon to $10.50. But what about the human cost in terms of hours squandered reading a super-sized work of literary fiction? If you can read 400 words per minute, double the average, it will take you 1,476 minutes (24.6 hours) to read *War and Peace*. Devoting just four hours per day to the task, you could finish the work in a little over six days. If you earn $7.25 per hour (minimum wage in the U.S.), the cost of reading *War and Peace* will be $184.50 (£130.4716, €11.9391, or ¥17676.299).

Non-lining numerals integrate visually with the text. Different math and currency symbols are designed to match the different numeral styles. Smaller currency symbols look better with non-lining numerals.
MONTHLY CALENDAR, 1892
The charming numerals in this calendar don't line up into neat columns, because they have varied set widths. They would not be suitable for setting modern financial data.

RETINA, designed by Tobias Frere-Jones, 2000, was created for the extreme typographic conditions of the Wall Street Journal’s financial pages. The numerals are designed to line up into columns. The different weights of Retina have matching set widths, allowing the newspaper to mix weights while maintaining perfectly aligned columns. The notched forms (called ink traps) prevent ink from filling in the letterforms when printed at tiny sizes.
COMMONLY ABUSED PUNCTUATION MARKS

A well-designed comma carries the essence of the typeface down to its delicious details. Helvetica’s comma is a chunky square mounted to a jaunty curve, while Bodoni’s is a voluptuous, thin-stemmed orb. Designers and editors need to learn various typographic conventions in addition to mastering the grammatical rules of punctuation. A pandemic error is the use of straight prime or hatch marks (often called *dumb quotes*) in place of apostrophes and quotation marks (also known as *curly quotes*, *typographer’s quotes*, or *smart quotes*). Double and single quotation marks are represented with four distinct characters, each accessed with a different keystroke combination. Know thy keystrokes! It usually falls to the designer to purge the client’s manuscript of spurious punctuation.

5'2" eyes of blue

PRIME OR HATCH MARKS INDICATE INCHES AND FEET

It’s a dog’s life.

APOSTROPHES SIGNAL CONTRACTION OR POSSESSION

He said, “That’s what she said.”

QUOTATION MARKS SET OFF DIALOGUE

“The thoughtless overuse” of quotation marks is a disgrace upon literary style—and on typographic style as well.

“Hanging punctuation” prevents quotations and other marks from taking a bite out of the crisp left edge of a text block.

TYPE CRIME

Quotation marks carve out chunks of white space from the edge of the text.

See appendix for more punctuation blunders.

NERD ALERT: To create hanging punctuation in InDesign, insert a word space before the quotation mark. Pressing the option key, use the left arrow key to back the quotation mark into the margin. You can also use the Optical Margin Alignment or Indent to Here tools.
TYPE CRIMES
NEW YORK CITY TOUR
City streets have become a dangerous place. Millions of dollars a year are spent producing commercial signs that are fraught with typographic misdoings. While some of these signs are cheaply made over-the-counter products, others were designed for prominent businesses and institutions. There is no excuse for such gross negligence.

GETTIN’ IT RIGHT
Apostrophes and quotation marks are sometimes called curly quotes. Here, you can enjoy them in a meat-free environment.

GETTIN’ IT WRONG
The correct use of hatch marks is to indicate inches and feet. Alas, this pizza is the hapless victim of a misplaced keystroke. In InDesign or Illustrator, use the Glyphs palette to find hatch marks when you need them.
Not all typographic elements represent language. For centuries, ornaments have been designed to integrate directly with text. In the letterpress era, printers assembled decorative elements one by one to build larger forms and patterns on the page. Decorative rules served to frame and divide content. In the nineteenth century, printers provided their customers with vast collections of readymade illustrations that could easily be mixed with text. Today, numerous forms of ornament are available as digital fonts, which can be typed on a keyboard, scaled, and output like any typeface. Some contemporary ornaments are modular systems designed to combine into larger patterns and configurations, allowing the graphic designer to invent new arrangements out of given pieces. Themed collections of icons and illustrations are also available as digital fonts.


DANCE INK MAGAZINE Design: Abbott Miller, 1996. The designer repeated a single ornament from the font Whirligigs, designed by Zuzana Licko in 1994, to create an ethereal veil of ink. Whirligigs are modular units that fit together to create an infinite variety of patterns.

WHIRLIGIGS, designed by Zuzana Licko, Emigre, 1994.
Everybody dance now Postcard, 2009. Design: Abbott Miller, Kristen Spilman, Jeremy Hoffman/Pentagram. Peter Bilak’s typeface History, designed in 2008, consists of numerous decorative and structural elements that can be layered into distinctive combinations.
Creating letters by hand allows graphic artists to integrate imagery and text, making design and illustration into fluidly integrated practices. Lettering can emulate existing typefaces or derive from the artist’s own drawing or writing style. Designers create lettering by hand and with software, often combining diverse techniques.
Tokion Magazine: Kings
Lettering is a vibrant force in graphic design, as seen in these music posters. Lettering is the basis of many digital typefaces, but nothing is quite as potent as the real thing.
GOOD TYPE FEELS GOOD

MONOZINE PRESENTS

MELTBANANA

WITH

YA

STARS

OF

THE

DOGON

AND

DOUBLE

DAGGER

OTTO

BARK

ALL

AGES

SAT

NOV

16

YOU DON'T LOVE ME YOU JUST LOVE MY DINO STYLE

TICKETS: MISSIONMEDIA.NET

POSTER: ROBEN STRAUS - FLAGEOFLTIGERS.NET

COM
A logotype uses typography or lettering to depict the name or initials of an organization in a memorable way. Whereas some trademarks consist of an abstract symbol or a pictorial icon, a logotype uses words and letters to create a distinctive visual image. Logotypes can be built with existing typefaces or with custom-drawn letterforms. A logotype is part of an overall visual brand, which the designer conceives as a “language” that lives (and changes) in various circumstances. A complete visual identity can consist of colors, patterns, icons, signage components, and a selection of typefaces. Sometimes a logotype becomes the basis for the design of a complete typeface. Many type designers collaborate with graphic designers to create typefaces that are unique to a given client.

Hübner Identity program, 1998. Design: Jochen Stankowski. This identity for an engineering firm is built around the H, whose proportions change in different contexts.
This ambitious visual identity program uses custom letterforms based on the typeface Agenda. The letters in the custom typeface are designed to split apart into elements that can be mirrored, layered, flipped, and animated for a variety of applications, including signage, posters, printed matter, and web communications.
**LOGOTYPES AND BRANDING**

1. **EL BANCO DE UNO**

2. Logotypes and branding

3. Color palette

6. **EL BANCO UNO**

8. **La Tarjeta**

9. **El Crédito**

10. **Un Nuevo México, Un Nuevo Banco.**

**EL BANCO DE UNO** Visual branding, 2007. Agency: Saffron. Identity design: Joshua Distler, Mike Abbink, Gabor Schreier, Virginia Sardón. Custom typeface design: Mike Abbink, Paul van der Laan. This elaborate identity program for a Mexican bank uses a custom typeface whose blocky forms are inspired by Mayan glyphs.
A logotype is part of a larger graphic language. Duffy & Partners develop logotypes in concert with a rich range of elements, including colors, patterns, and typefaces. The designers use techniques such as outlining, layering, and framing to create depth, detail, and the sense of a human touch. These elements work together to express the personality of the brand.
During the early years of the World Wide Web, designers were forced to work within the narrow range of typefaces commonly installed on the computers of their end users. Since then, several techniques have emerged for embedding fonts within web content or for delivering fonts to end users when they visit a site. In one approach, specially formatted fonts are hosted on a third-party server and then downloaded by users; designers pay a fee for the service. Another approach implements the @font-face rule in CSS, which can download any kind of digital font hosted on a server; only typefaces licensed for this use can be accessed legally via @font-face.

**Web Fonts 1.0**

**Verdana** was designed by the legendary typographer Matthew Carter in 1996 for digital display. Verdana has a large x-height, simple curves, open forms, and loose spacing.

**Georgia** is a serif screen face built with sturdy strokes, simple curves, open counters, and generous spacing. Designed by Matthew Carter in 1996 for Microsoft, Georgia is widely used on the web.

**Verdana and Georgia**, released in 1996 by Microsoft, were designed specifically for the web. Prior to the rise of font embedding, these were among a handful of typefaces that could be reliably used online.
Anti-aliasing creates the appearance of smooth curves on screen by changing the brightness of the pixels or sub-pixels along the edges of each letterform. Photoshop and other software packages allow designers to select strong or weak anti-aliasing. When displayed at very small sizes, strongly anti-aliased type can look blurry. It also increases the number of colors in an image file.
Bitmap typefaces are built out of the *pixels* (picture elements) that structure a screen display or other output device. While a PostScript letter consists of a vector outline, a true bitmap character contains a fixed number of rectilinear units that are displayed either on or off. True bitmap characters are used on devices such as cash registers, signboard displays, and various small-scale screens.

Most contemporary bitmap typefaces are not true bitmaps. They are drawn as outlines on a grid and then output as PostScript, TrueType, or OpenType fonts. Thus they can be easily used with any standard layout software. Many designers like to exploit the visible geometry of pixelated characters.

**Lo-Res Narrow**, designed by Zuzana Licko, Emigre. Released in 2001, the Lo-Res type family is a collection of outline (PostScript) fonts based on bitmap designs created by Licko in 1985. Lo-Res Narrow consists of a series of different sizes, each one constructed with a one-pixel stroke weight. Thus Lo-ResTwentyEight Narrow has dramatically lighter and tighter forms than Lo-ResNine Narrow, which gets blockier as it is enlarged. Designed for display on screen at low resolutions, a bitmap font should be used at its root size or at integer multiples of that size. (Enlarge 9-pixel type to 18, 27, 36, and so on).
Elementar, designed by Gustavo Ferreira in 2009 and distributed by Typotheque. Elementar is a bitmap type family consisting of dozens of weights and styles made by manipulating common parameters such as height, width, and the degree of contrast between horizontal and vertical elements. Elementar is suitable for print, screen, and interfaces. It is inspired by Adrian Frutiger’s Univers type family.
Fontlab and other applications allow designers to create functional fonts that work seamlessly with standard software programs such as InDesign and Photoshop.

The first step in designing a typeface is to define a basic concept. Will the letters be serif or sans serif? Will they be modular or organic? Will you construct them geometrically or base them on handwriting? Will you use them for display or for text? Will you work with historic source material or invent the characters more or less from scratch?

The next step is to create drawings. Some designers start with pencil before working digitally, while others build their letterforms directly with font design software. Begin by drawing a few core letters, such as $o$, $u$, $h$, and $n$, building curves, lines, and shapes that will reappear throughout the font. All the letters in a typeface are distinct from each other, yet they share many attributes, such as x-height, line weight, stress, and a common vocabulary of forms and proportions.

You can control the spacing of the typeface by adding blank areas next to each character as well as creating kerning pairs that determine the distance between particular characters. Producing a complete typeface is an enormous task. However, for people with a knack for drawing letterforms, the process is hugely rewarding.

Castaways  Drawing and finished type, 2001. Art and type direction: Andy Cruz. Typeface design: Ken Barber/House Industries. Font engineering: Rich Roat. House Industries is a digital type foundry that creates original typefaces inspired by popular culture and design history. Designer Ken Barber makes pencil drawings by hand and then digitizes the outlines. Castaways is from a series of typefaces based on commercial signs from Las Vegas. The shapes of the letters recall the handpainted strokes made by traditional sign painters and lettering artists.
Mercury Bold Page proof and screen shot, 2003. Design: Jonathan Hoeffer/Hoeffer & Frere-Jones. Mercury is a typeface designed for modern newspapers, whose production demands fast, high-volume printing on cheap paper. The typeface's bullet-proof letterforms feature chunky serifs and sturdy upright strokes. The notes marked on the proof below comment on everything from the width or weight of a letter to the size and shape of a serif. Many such proofs are made during the design process. In a digital typeface, each letterform consists of a series of curves and lines controlled by points. In a large type family, different weights and widths can be made automatically by interpolating between extremes such as light and heavy or narrow and wide. The designer then adjusts each variant to ensure legibility and visual consistency.
Create a prototype for a bitmap typeface by designing letters on a grid of squares or a grid of dots. Substitute the curves and diagonals of traditional letterforms with gridded and rectilinear elements. Avoid making detailed “staircases,” which are just curves and diagonals in disguise. This exercise looks back to the 1910s and 1920s, when avant-garde designers made experimental typefaces out of simple geometric parts. The project also speaks to the structure of digital technologies, from cash register receipts and LED signs to on-screen font display, showing that a typeface is a system of elements.

Examples of student work from Maryland Institute College of Art

Wendy Neese

Brendon McClean

Bruce Willen

James Alvarez

Joey Potts
READ
Becky Slogeris

PUSH
Bryan Connor

Look
Virginia Sasser

SPAM
Julia Kim

COPY
Michelle Ghiotti
Where do fonts come from, and why are there so many different formats? Some come loaded with your computer’s operating system, while others are bundled with software packages. A few of these widely distributed typefaces are of the highest quality, such as Adobe Garamond Pro and Hoefler Text, while others (including Comic Sans, Apple Chancery, and Papyrus) are reviled by design snobs everywhere.

If you want to expand your vocabulary beyond this familiar fare, you will need to purchase fonts from digital type foundries. These range from large establishments like Adobe and FontShop, which license thousands of different typefaces, to independent producers that distribute just a few, such as Underware in the Netherlands or Jeremy Tankard Typography in the U.K. You can also learn to make your own fonts as well as find fonts that are distributed for free online.

The different font formats reflect technical innovations and business arrangements developed over time. Older font formats are still generally usable on modern operating systems.

**POSTSCRIPT/TYPE 1** was developed for desktop computer systems in the 1980s by Adobe. Type 1 fonts are output using the PostScript programming language, created for generating high-resolution images on paper or film. A Type 1 font consists of two files: a screen font and a printer font. You must install both files in order to fully use these fonts.

**TRUETYPE** is a later font format, created by Apple and Microsoft for use with their operating systems. TrueType fonts are easier to install than Type 1 fonts because they consist of a single font file rather than two.

**OPENTYPE**, a format developed by Adobe, works on multiple platforms. Each file supports up to 65,000 characters, allowing multiple styles and character variations to be contained in a single font file. In a TrueType or Type 1 font, small capitals, alternate ligatures, and other special characters must be contained in separate font files (sometimes labelled “Expert”); in an OpenType font they are part of the main font. These expanded character sets can also include accented letters and other special glyphs needed for typesetting a variety of languages. OpenType fonts with expanded character sets are commonly labeled “Pro.” OpenType fonts also automatically adjust the position of hyphens, brackets, and parentheses for letters set in all-capitals.

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**NERD ALERT:** Access small caps and numerals quickly through the Type>OpenType options menu or other OpenType layout tool in your design software. Small caps will not appear as a style variant in the Font menu, because OpenType treats them as part of the main font. With any font, you can view all the special characters through the Type and Tables>Glyphs menu. You will find many unexpected elements, including swashes, ligatures, ornaments, fractions, and more. Double click a glyph to insert it into your text frame.

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**SCALA PRO**, OpenType font, designed by Martin Majoor, 2005. Scala Pro has numerous special characters for typesetting diverse European languages. You can access these characters using the Glyphs palette in InDesign.
SAVE YOURSELF SOME EMBARRASSMENT
AND LEARN TO USE THESE COMMONLY ABUSED TERMS CORRECTLY.

**typeface or font?**
A *typeface* is the design of the letterforms; a *font* is the delivery mechanism. In metal type, the design is embodied in the punches from which molds are made. A font consists of the cast metal printing types. In digital systems, the typeface is the visual design, while the font is the software that allows you to install, access, and output the design. A single typeface might be available in several font formats. In part because the design of digital typefaces and the production of fonts are so fluidly linked today, most people use the terms interchangeably. Type nerds insist, however, on using them precisely.

**character or glyph?**
Type designers distinguish *characters* from *glyphs* in order to comply with Unicode, an international system for identifying all of the world’s recognized writing systems. Only a symbol with a unique function is considered a character and is thus assigned a code point in Unicode. A single character, such as a lowercase *a*, can be embodied by several different glyphs (*a*, *a*, *a*). Each glyph is a specific expression of a given character.

**Roman or roman?**
The Roman Empire is a proper noun and thus is capitalized, but we identify roman letterforms, like italic ones, in lowercase. The name of the Latin alphabet is capitalized.
Who is the user of a typeface? In the end, the user is the reader. But before a set of letters can find their way onto the cover of a book or the back of a cereal box, they must pass through the hands of another user: the graphic designer.

Digital fonts are easy to copy, alter, and distribute, but when you purchase a font, you accept an end user license agreement (EULA) that limits how you can use it. Intellectual property law in the United States protects the font as a piece of software (a unique set of vector points), but it does not protect the visual design of the typeface. Thus it is a violation of standard EULAs to copy a digital font and share it with other people (your friends, your clients, or your Uncle Bob). It is also illegal to open a font file in FontLab, add new glyphs or alter some of its characters, and save the font under a new name or under its trademarked name. In addition to having economic concerns, typeface designers worry about their work being corrupted as users edit their fonts and then share them with other people.

Most EULAs do allow you to alter the outlines of a font for use in a logo or headline, however, as long as you do not alter the software itself. It is also legal to create new digital versions of printed type specimens. For example, you could print out an alphabet in Helvetica, redraw the letters, digitize them with font design software, and release your own bespoke edition of Helvetica. If nothing else, this laborious exercise would teach you the value of a well-designed typeface. A broadly usable typeface includes numerous weights, styles, and special characters as well as a strong underlying design. Fonts are expensive because they are carefully crafted products.

### Free Fonts

Most of the FREE FONTS found on the Internet have poor spacing and incomplete character sets. Many are stolen property distributed without consent. The fonts displayed here, however, are freely given by their creators. A typeface comes to life and finds a voice as people begin to use it.

**Fontin**, designed by Jos Buivenga/Ex Ljbris, 2004

**Audimat**, designed by Jack Usine/SMeltery.net, 2003

**Antykwa Poltawskiego**, designed by Adam Półtawski, 1920s–1930s; digitized by Janusz Marian Nowacki, 1996

**Gentium** Open Font License, designed by Victor Gaultney, 2001

Some fonts are distributed freely in order to preserve UNFAMILIAR traditions. Disseminating a historic revival at no cost to users encourages a broader understanding of history. Reviving typefaces is a DEEP-ROOTED practice. Why should one creator claim ownership of another’s work? Who controls the past?

**Antykwa Poltawskiego**, designed by Adam Półtawski, 1920s–1930s; digitized by Janusz Marian Nowacki, 1996

SOME FREE FONTS are produced for underserved linguistic communities for whom few typefaces are available. Still others are created by people who want to participate in the open source movement. The OFL (Open Font License) permits users to alter a typeface and contribute to its ongoing evolution.

**Gentium** Open Font License, designed by Victor Gaultney, 2001

TO PARTICIPATE IN a viable, diverse ecology of content (journalism, design, art, typography, and more), everyone has to pay. **But perhaps everyone shouldn’t have to pay for everything.** If some resources are willingly given away, the result is a richer world.

**OFL Sorts Mill Goudy**, revival of Frederic W. Goudy’s Goudy Old Style, 1916, designed by Barry Schwartz, 2010; distributed by the League of Moveable Type
EVERY OBJECT IN THE WORLD CAN PASS FROM A

LEAGUE GOTHIC, designed by the League of Moveable Type, 2009; revival of Morris Fuller Benton’s

CLOSED, SILENT EXISTENCE TO AN ORAL STATE,

ALTERNATE GOTHIC NO.1., released by American Type Founders Company (ATF) in 1903.

OPEN TO APPROPRIATION BY SOCIETY, FOR THERE

DOWNCONE, designed by Eduardo Recife/ Misprinted Type, 2002

IS NO LAW, WHETHER NATURAL OR NOT, WHICH

FORBIDS TALKING ABOUT THINGS. A TREE IS A

SHORTCUT, designed by Eduardo Recife, 2003

TREE. YES, OF COURSE. BUT A TREE AS EXPRESSED BY

MINOU DROUET IS NO LONGER QUITE A TREE, IT IS A

DIRTY EGO, designed by Eduardo Recife, 2001

TREE WHICH IS DECORATED, ADAPTED TO A CERTAIN

TYPE OF CONSUMPTION, LADEN WITH LITERARY SELF-

MISPROJECT, designed by Eduardo Recife, 2001

INDULGENCE, REVOLT, IMAGES, IN SHORT WITH A TYPE

OF SOCIAL USAGE WHICH IS ADDED TO PURE MATTER.