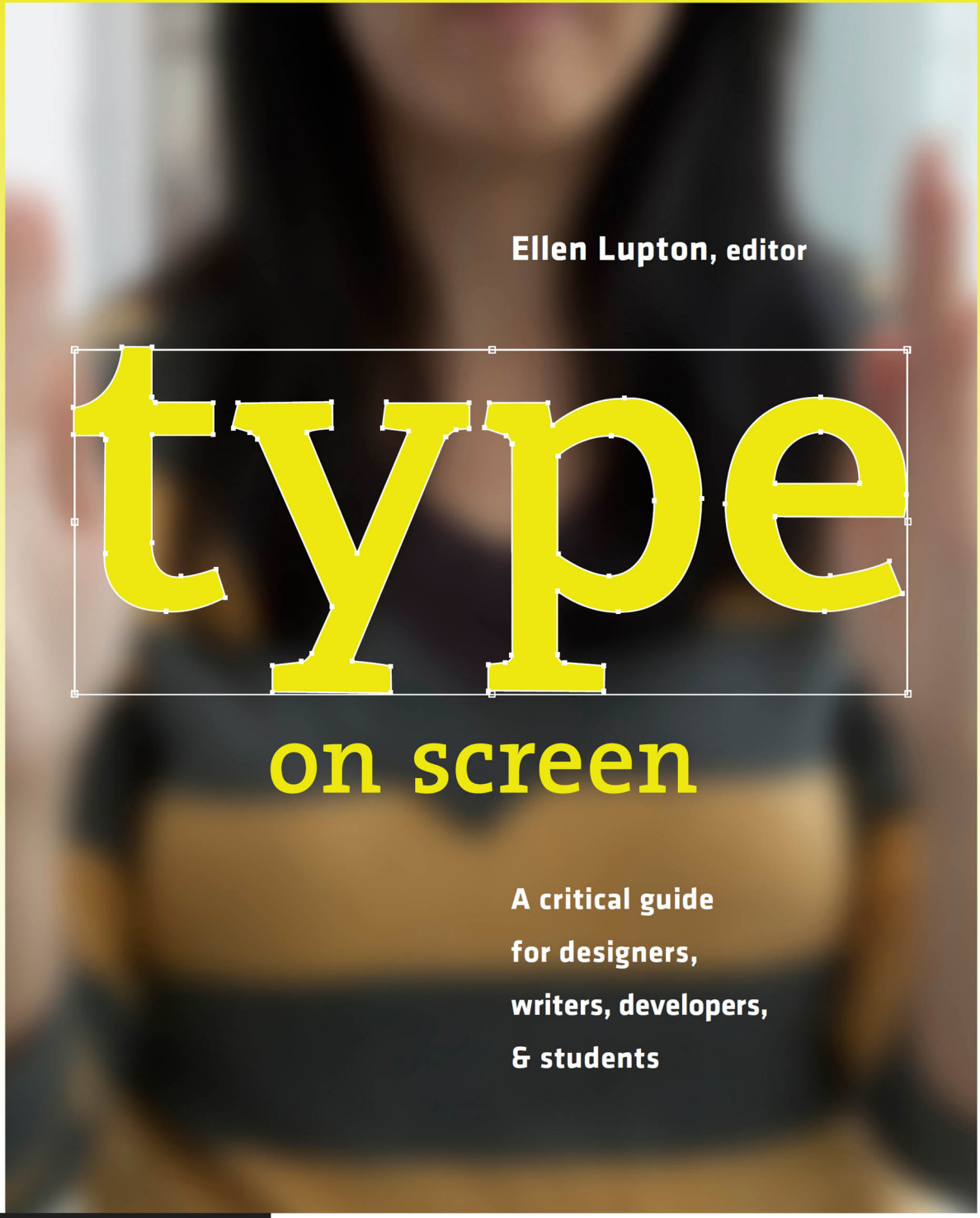

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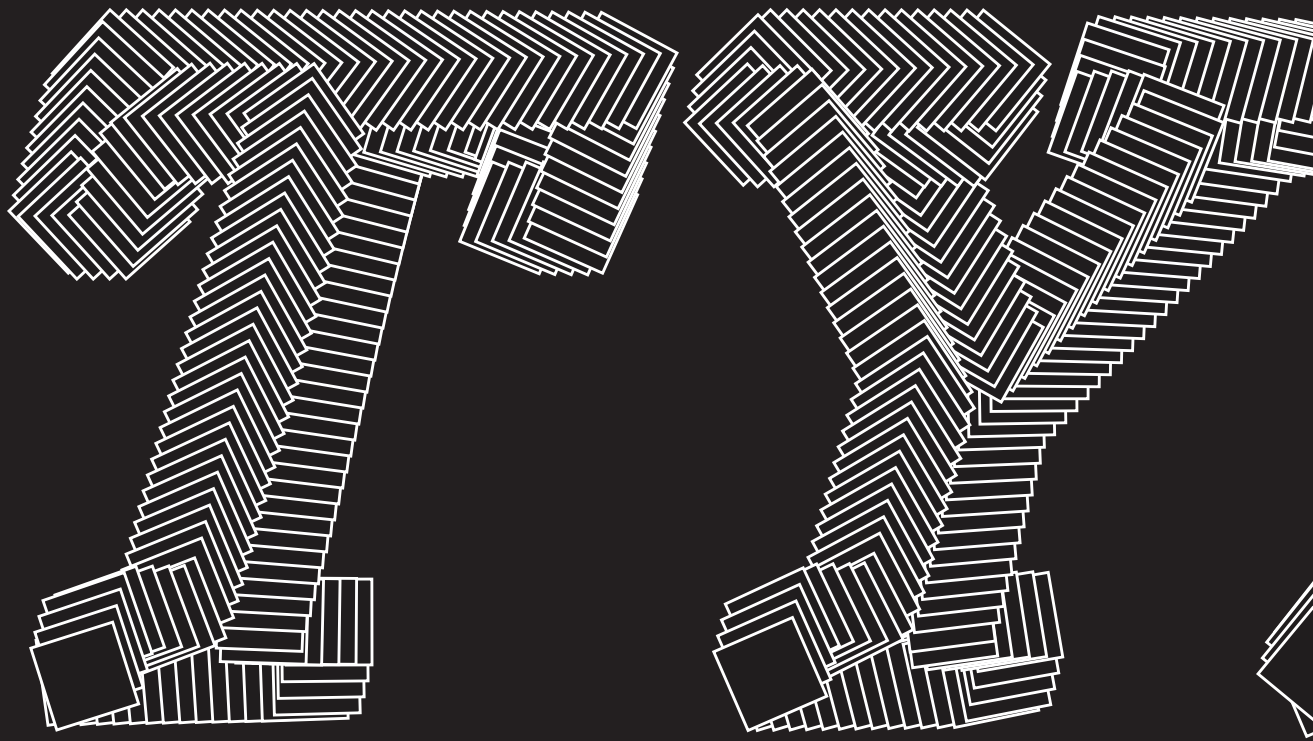
type on screen

A critical guide for designers, writers, developers, & students

A DESIGN HANDBOOK



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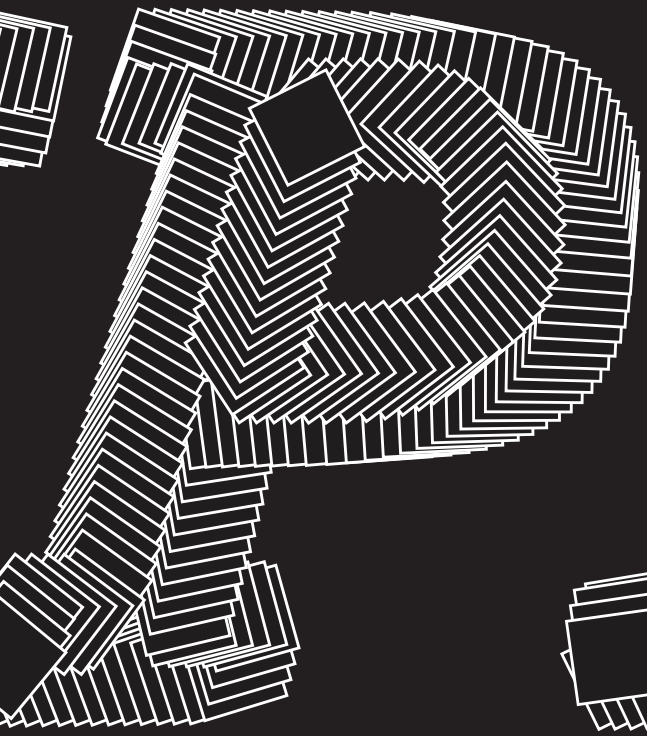

ON SCREEN

A GUIDE FOR DESIGNERS, DEVELOPERS, WRITERS, AND STUDENTS

PRINCETON ARCHITECTURAL PRESS
NEW YORK

MARYLAND INSTITUTE COLLEGE OF ART
BALTIMORE

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Design Briefs Series Editor
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PUBLISHED BY
Princeton Architectural Press
37 East Seventh Street
New York, New York 10003

Visit our website at www.papress.com.

Library of Congress Cataloging-in-Publication Data
Type on screen : a guide for designers, developers, writers, and students / Ellen Lupton, editor.
pages cm. – (Design briefs-essential texts on design)
Includes index.
ISBN 978-1-61689-170-1 (pb)
ISBN 978-1-61689-346-0 (epub3 fxl)
ISBN 978-1-61689-400-9 (mobi fxl)
1. Graphic design (Typography) 2. Digital media.
I. Lupton, Ellen.
Z246.T87 2014
686.2'2–dc23 2013036784

EDITOR, PRINCETON ARCHITECTURAL PRESS
Nicola Brower

DESIGN DIRECTION
Brian Pelsoh

BOOK DESIGN CONCEPT
Brian Pelsoh with Nico Kremershof and Aviv Lichter

DESIGN IMPLEMENTATION
Brian Pelsoh, Young Sun Compton, and Javier Lopez

COVER DESIGN
Noel Cunningham

IMAGE RESEARCH
Benjamin Chemelski

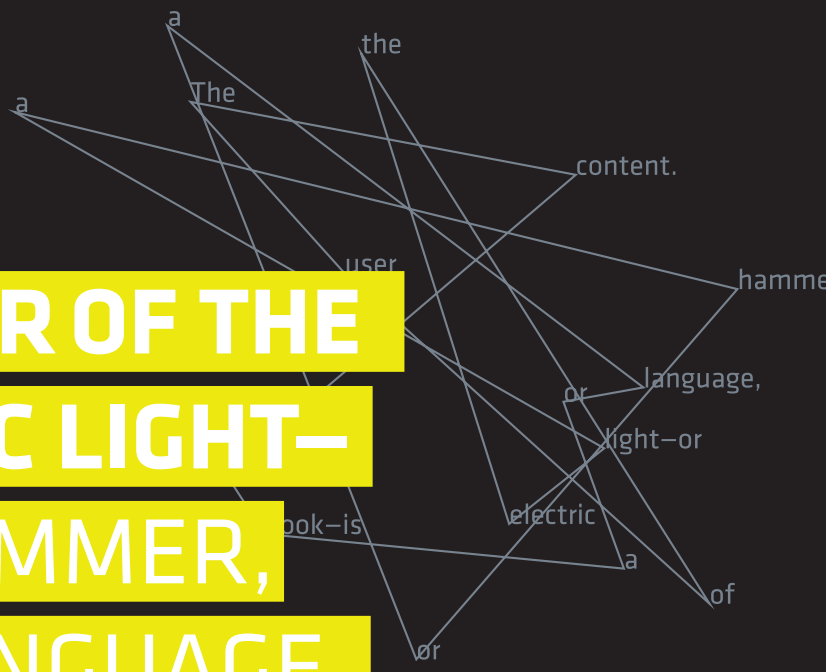
TYPOGRAPHY
Berthold Akzidenz-Grotesk, 1898
Klavika, designed by Eric Olson, 2004
Fedra Mono, designed by Peter Bil'ak, 2002

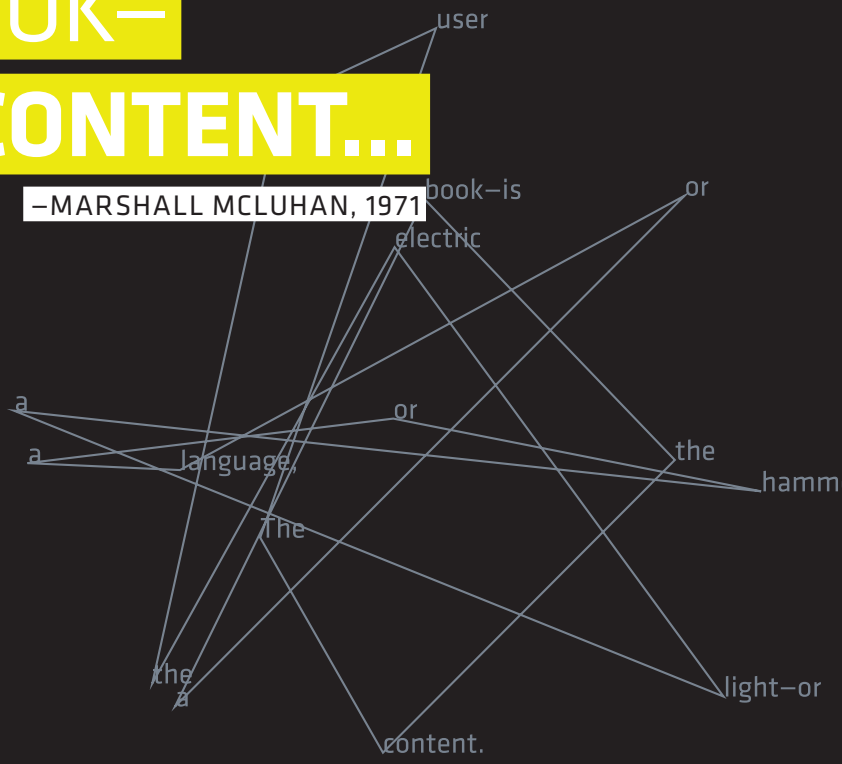
This book is a project of Maryland Institute College of Art's Center for Design Thinking.

SPECIAL THANKS TO: Meredith Baber, Sara Bader, Janet Behning, Megan Carey, Carina Cha, Andrea Chlad, Barbara Darko, Benjamin English, Russell Fernandez, Will Foster, Jan Hartman, Jan Haux, Diane Levinson, Jennifer Lippert, Katharine Myers, Lauren Palmer, Rob Shaeffer, Andrew Stepanian, Sara Stemen, Marielle Suba, Paul Wagner, and Joseph Weston of Princeton Architectural Press
–Kevin C. Lippert, publisher

THE USER OF THE ELECTRIC LIGHT–
OR A HAMMER,
OR A LANGUAGE,
OR A BOOK–
IS THE CONTENT...

–MARSHALL MCLUHAN, 1971





CONTENTS

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PREFACE

ELLEN LUPTON

Typography embodies written language in a concrete form. A typeface communicates through its strokes, proportions, and visual weight. Characters group together into columns and grids, bodies and heads, blocks and lists. These graphic elements carry their own physical presence. But what happens when typography sheds its fixed, static body and becomes a virtual phenomenon? What happens when readers are free to transform the parameters of visual display to serve their own needs and preferences?

This book is a guide to the flickering, ephemeral world of type on screen. Authored by a team of graduate students and faculty at MICA (Maryland Institute College of Art), *Type on Screen* explores diverse typographic issues, from choosing fonts to building brands. We plunged into the churning waters of today's tools and platforms knowing that the world we are studying won't stop changing. We expect this volume to be the first edition among many.

Type on Screen is not a software manual or a book of technical tutorials. Rather, it surveys new design principles born of screen-based communication while drawing on traditions of form and function that have evolved over hundreds of years. Typography has always responded to new technologies and new audiences. From Johannes Gutenberg in the fifteenth century to Peter Bil'ak today, the great typeface designers have forged new technologies and new business models as well as new visual forms. Typography is forever in motion—and never more so than now.

We conceived this guide with a range of readers in mind: the visual designer working across print and screen media, the student or educator exploring screen-based creativity, the developer trying to better understand visual design principles, and the editor or content producer seeking more sophisticated control over digital tools and systems.

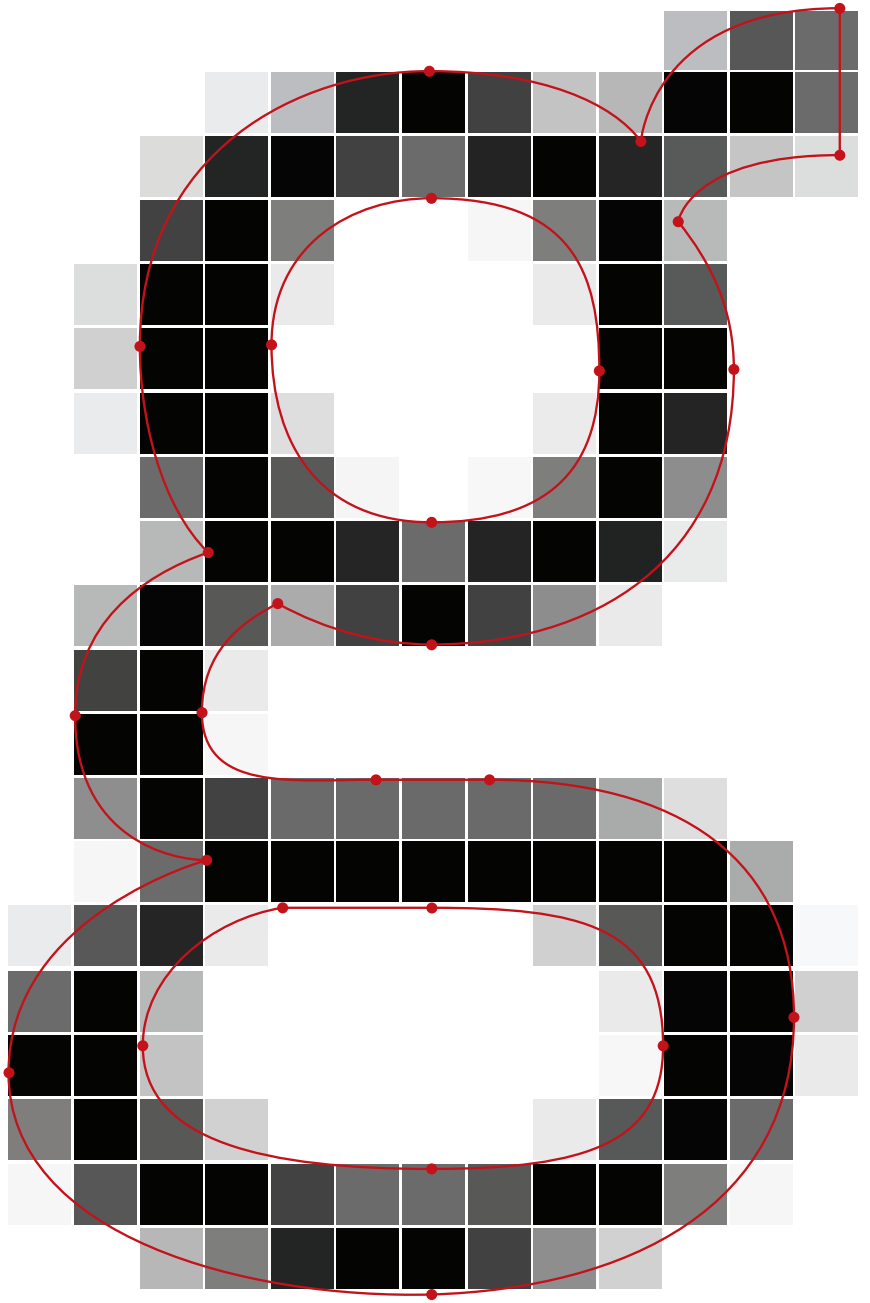
Designers manipulate the basic parameters of typography on screen—weight, size, style, alignment, and spacing—in order to help users find the information they are seeking. In many instances the user can change those parameters, too, whether the user is the reader of a final document or an editor or writer working with a content management system.

The first four chapters of *Type on Screen* present basic concepts for shaping written content, be it a book, a news article, a blog, an infographic, or an advertisement. Such content needs to be coded in typefaces, shaped into columns and sections, accessed by an interface, linked to other texts, and packaged for distribution. The output might be a web browser, a mobile device, a tablet, or an e-reader. Designers make a series of interconnected choices—from typeface and page structure to modes of linearity, interactivity, and navigation—to create pleasing and engaging experiences for all readers.

Beyond the basics of using type on screen, this guide introduces concepts that explore sceen-based design in more depth, explaining how to create icon systems, how to approach branding in a screen-dominated world, and how to enliven text with animation and code. In place of static logotypes constrained by the printing process, today's designers are creating complex branding systems alive with color and movement. Designers play with speed, color, opacity, and pacing to tell stories and convey emotion. Letterforms can move and change on screen, just as the background, camera, and surrounding elements can shift and transform. Designers are writing code to generate letters and texts endowed with the quirks and peculiarities of living things. They are using handcrafted software to create a less predictable world.

Throughout this book, general principles are demonstrated with examples of outstanding work created by some of the world's leading practitioners as well as by students and emerging artists. We are grateful to the many designers who shared their work so that others can learn from it.

Type on Screen is the sixth in a series of books published by Princeton Architectural Press and MICA. By producing these books, our graduate students and faculty expand their own knowledge of design while exchanging ideas with a community of designers and creative people working around the world. Our classrooms have become practical laboratories, and these books are the results of our research. We are proud to share them with a growing community of people who are actively engaging the medium of design, both professionally and in their daily lives.



01 FONTS ON SCREEN

CHRISTOPHER CLARK

Back in 2006, before web fonts changed the design world, hypertext luminary Oliver Reichenstein crashed into the scene with his article "Web Design Is 95% Typography." He suggested that because the World Wide Web is composed mostly of letters, web designers had better start paying more attention to text. Good typography, he argued, is not about choosing from a multitude of fonts. The pioneering printers of the Italian Renaissance (as well as the Swiss design rationalists of the 1950s and 1960s) plied their craft with just a few type styles; so too could web designers create beautifully structured pages with a minimal range of typefaces.

The idea of solving any design problem with a single font had great appeal back then, when web designers were restricted to the skimpy handful of type styles that could be found on the operating systems of end users. The graphic landscape of the web has since radically expanded. Digital typography now teems with the diversity of a tropical rainforest—and it is littered with more trash than an urban underpass.

This chapter aims to help designers and developers make their way through today's welter of typographic choices. By looking at the visual anatomy and cultural geography of letterforms, you will start to see why a great typeface works so well—and why a bad one doesn't. Armed with these typographical field notes, designers will be ready to venture on through a hand-picked menagerie of screen-ready fonts.

Collected here are typefaces that have proven their beauty and usefulness across platforms. We have ranked each font for its readability, showmanship, and classiness, and have looked at how each one renders on multiple operating systems and browsers. The result of these labors is a small but powerful army of trustworthy typefaces that will enable designers to speak clearly and consistently to users of every stripe.

A-SANS The lowercase letter *g* is shown here with its vector outlines and hinted nodes optimized for screen use. Design: Young Sun Compton, 2013.

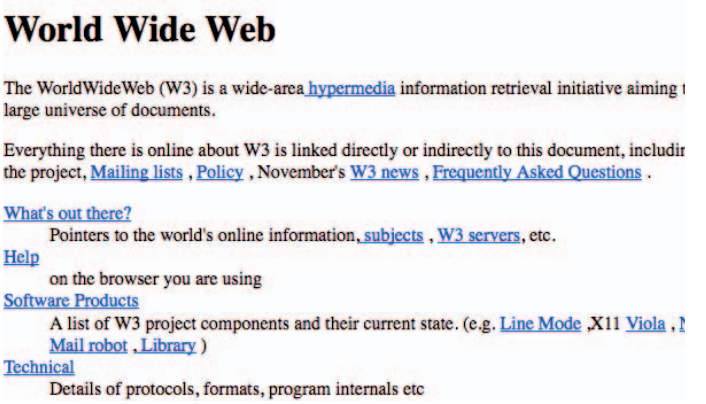
READ MORE >> Oliver Reichenstein, "Web Design Is 95% Typography," *Information Architects*, October 2006, http://ia.net/blog/the-web-is-all-about-typography-period/.

WEB FONTS: A SHORT HISTORY

Typographic diversity on the web is not a new idea. The style sheet language CSS 2 (Cascading Style Sheets 2), drafted in 1998, included the @font-face rule, which enabled browsers to download font information and thus permitted, in principle, virtually any font to be used on any site. Internet Explorer 4 implemented the @font-face rule and has supported it ever since. However, @font-face contained no piracy protections whatsoever, allowing users to download unlicensed fonts and even link them across different sites. Such unfettered font use threatened the entire business of type design, causing @font-face to be banished from CSS for nearly a decade.

Perhaps the Internet wasn't ready for fonts in 1998. Adhering to the Web Standards Movement was still an evangelist's badge, not a job requirement, and the way operating systems rendered type varied so wildly that designers might as well have used a different typeface for each browser. But by the mid-2000s, things had started to change. The implementation of web standards had made developing sites a quicker process, allowing designers to spend less time writing different versions of the same page and more time perfecting their craft. As websites became more complex and web design grew more elegant, the wish for more fonts grew. Technologies popped up to fill the void left by CSS 2.1. Techniques such as Scalable Inman Flash Replacement (SIFR), Cufón (Scalable Vector Graphics, SVG), and Typeface.js (canvas) worked reasonably well and allowed any print font to be used on the web without the need to purchase additional licenses. Type designers began to worry less about piracy and more about a design market that was rapidly moving on without them.

HOW THE WEB LOOKED IN 1992 The early Internet was designed to connect scientists working on different platforms around the world. Fonts were accessed by default from the user's computer. The ubiquity of Times Roman fit the web's aim "to give universal access to a large universe of documents." The World Wide Web Consortium "The Project," *W3C*, accessed May 29, 2012, http://www.w3.org/History/19921103-hypertext/hypertext/WWW/TheProject.html.



World Wide Web

The WorldWideWeb (W3) is a wide-area hypermedia information retrieval initiative aiming t
large universe of documents.

Everything there is online about W3 is linked directly or indirectly to this document, includir
the project, Mailing lists , Policy , November's W3 news , Frequently Asked Questions .

What's out there?
Pointers to the world's online information, subjects , W3 servers, etc.
Help
on the browser you are using
Software Products
A list of W3 project components and their current state. (e.g. Line Mode ,X11 Viola , N
Mail robot , Library)
Technical
Details of protocols, formats, program internals etc

In 2008 Mozilla Firefox and Apple Safari implemented the @font-face rule, making web typography accessible to most Internet users while engulfing the web community in a firestorm of buzz. Type hosting services such as Typekit, Fontdeck, and Google Fonts stepped in to fill the licensing and piracy void that still existed in CSS 3. They helped smooth out many of the wrinkles that came with cross-browser support and provided a range of typefaces for convenient one-stop shopping. Font hosting providers became the go-to resource for web fonts.

Endless font-o-graphic variety on the web would be a gleeful proposition—if only the fonts themselves were up to the task of looking good and holding their shapes across a mixed bag of rendering environments. In reality, most fonts offered by web hosting services fall short of what is demanded by today's uneven technologies.

Initially, type designers lashed out against the web font explosion, which raised a myriad of problems. Typefaces that looked great on a Mac fell apart in Windows; variations among browsers and operating systems broke designs and ruined reading experiences. Poorly optimized fonts were swamping the web. Before 2008, the classic web fonts Georgia and Verdana had set a narrow horizon of choice, but they were flexible, consistent, and screen-ready, meticulously designed to function on screen. With the flood of fonts now available for use, designers were free to make poor choices, using display fonts for body copy, applying faux bolding and italics, and picking type on a Mac without checking it in Windows. Today, designers and foundries are working to create typefaces that can withstand the hardships of life on screen.

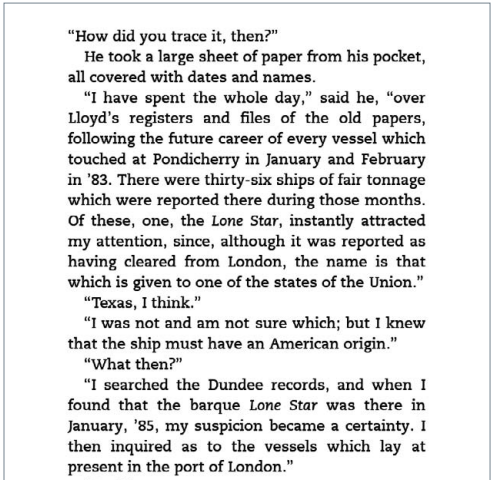
REINVENTING GEORGIA AND VERDANA These classic web fonts, designed by Matthew Carter for Microsoft in 1996, were engineered to display consistently across platforms, thanks to immaculate hinting by Tom Rickner. In 2011 Font Bureau, Carter & Cone, and Monotype Imaging released extended families of these web classics. Design: Matthew Carter, Steve Matteson, and David Berlow.

RENDERING TYPE ON SCREEN

How a font looked on screen used to be just an issue of representation; you could rely on the printing process to make it look better. But nowadays the screen is often the final output. Many products of interaction design must perform across multiple platforms, browsers, and devices, each of which translates the vector soul of a typeface into digital rasters of diverse and sometimes monstrous shapes. The user's device could be mobile or desktop, Mac or Windows; it could be an LCD monitor, an Apple iPad, an Amazon Kindle, or a Blackberry Playbook. (Probably not that last one, but anything is possible.)

There are different font formats, including TrueType, favored by Windows, and PostScript, created for the Mac. PostScript fonts allow the operating system or browser to figure out how to best translate a character's precise vector outlines onto the cruder grid of the screen. PostScript fonts look good on any system that displays them; as rasterizers improve, the typefaces follow along. A TrueType font, on the other hand, carries around its own instructions for making the leap from outline to raster. These instructions—called hinting—demand many hours of specialized labor and are a stubborn obstacle to achieving universal web typography.

According to type designer Peter Bil'ak, 99 percent of fonts lack hinting, which makes them display poorly and inconsistently on the Windows systems that still dominate the Earth. Typography's lucky 1 percent includes web stalwarts such as Georgia and Verdana as well as Bil'ak's own typeface, Fedra, meticulously hinted for display on screen. Hinting tells the operating system


"How did you trace it, then?"

He took a large sheet of paper from his pocket, all covered with dates and names.

"I have spent the whole day," said he, "over Lloyd's registers and files of the old papers, following the future career of every vessel which touched at Pondicherry in January and February in '83. There were thirty-six ships of fair tonnage which were reported there during those months. Of these, one, the *Lone Star*, instantly attracted my attention, since, although it was reported as having cleared from London, the name is that which is given to one of the states of the Union."

"Texas, I think."

"I was not and am not sure which; but I knew that the ship must have an American origin."

"What then?"

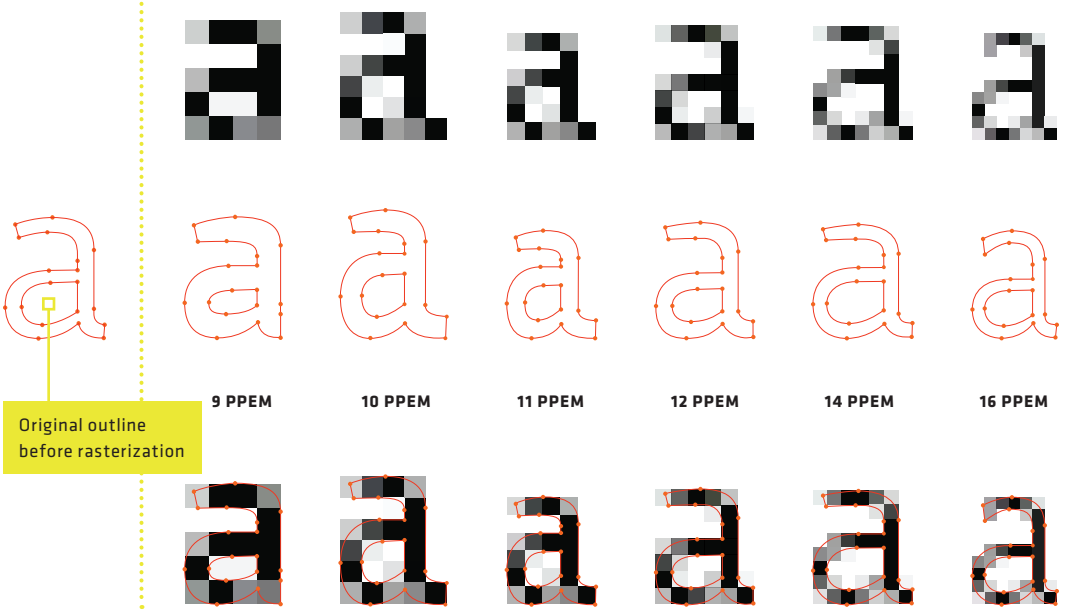
"I searched the Dundee records, and when I found that the barque *Lone Star* was there in January, '85, my suspicion became a certainty. I then inquired as to the vessels which lay at present in the port of London."

READ MORE >> Peter Bil'ak, "Font Hinting," *Typotheque*, 2010, https://www.typotheque.com/articles/hinting.

SHADES OF GRAY E-readers such as the Amazon Kindle provide a relatively coarse rendering of type, employing just a few shades of gray. Shown here is a screenshot from the Kindle Paper White.

or browser to adjust such features as height, stem width, white space, the slant of italics, and the relationship between uppercase and lowercase letters. Hinting creates a sharper look by increasing contrast along the edges of the letterforms, at the expense of preserving character shape and the space between letters. Depending on the kind of output, from the harsh extreme of a black-and-white bitmap to the soft, antialiased outlines of a grayscale monitor to the RGB subpixel rendering made possible by LCDs, hinting instructions vary. Hinting also transforms the shape of the letters based on the size at which they are displayed; the forms of a well-hinted font can change substantially from size to size.

Hinted versions of Fedra Sans Screen Regular in different pixels per em (ppem). The original outline is transformed by TrueType hinting instructions to fit the pixel grid of the computer screen.



FEDRA TAKES A HINT At the core of any digital font is an essential set of points and curves. How that vector essence becomes rasterized reality is a matter of intrepretation. Hinting is a set of instructions that tells the rasterizer of a browser or operating system how to reposition a typeface's outlines for better display at different sizes, conforming to the pixel grid of the screen. Design: Peter Bil'ak, Typotheque.

TYPE ANATOMY AND TAXONOMY

Choosing typefaces can be a bewildering task. Understanding how the proportions of letters affect their visual impact and knowing how a type design fits into the broader history of typography can help. Many of the typefaces we use today are based on designs produced hundreds of years ago. Classical serif faces, introduced in the fifteenth century, imitated older media—handwriting and stone carving. In the nineteenth century, printers devised simpler, bolder sans serif forms to meet the needs of commercial advertising. Slab serifs—also first appearing in the nineteenth century—have chunky, geometric endstrokes with as much heft and presence as the main strokes of the letters. Slab faces are popular on the web because they combine aspects of both sans serif and serif letterforms, and they function well in light and heavy weights, enduring the rigors of rasterization.

SERIF

MINION

HUMANIST
The roman typefaces of the fifteenth and sixteenth centuries emulated classical calligraphy. The ribbonlike strokes and angled stress of Minion, designed by Robert Slimbach for Adobe (1990), exemplify the humanist style.

GEORGIA

TRANSITIONAL
Typefaces with sharper serifs and a more vertical axis are known as transitional. Carter's web classic Georgia (1996) embraces these upright qualities.

BODONI

MODERN
Giambattista Bodoni designed high-contrast typefaces with razor-sharp serifs. The forms of Bodoni are generally considered too high-contrast for screen reading.

SANS

GILL SANS

HUMANIST SANS SERIF
Sans serif typefaces became common in the twentieth century. Gill Sans, designed by Eric Gill in 1928, has humanist characteristics. Note the small, lilting counter in the letter *a*, and the calligraphic variations in line weight. Gill Sans is found on many operating systems.

HELVETICA

TRANSITIONAL SANS SERIF
Helvetica, designed by Max Miedinger in 1957, is available on most users' computer systems. Its uniform, upright character makes it similar to transitional serif letters. Helvetica is considered an "anonymous sans serif."

FUTURA

GEOMETRIC SANS SERIF
Some sans serif types are built around geometric forms. In Futura, designed by Paul Renner in 1927, the *O*s are perfect circles, and the peaks of the *A* and *M* are sharp triangles. Futura is a widely distributed typeface.

SLAB

TISA

HUMANIST SLAB SERIF
Also called "Egyptian," slab serifs appeared in the nineteenth century. Tisa, designed by Mitja Miklavčič in 2008, has an angled stress and serifs that have been softened with subtle curves, reflecting the humanist tradition.

CHAPARRAL

TRANSITIONAL SLAB
Carol Twombly's Chaparral (designed between 1997 and 2000) has gently modulated forms and sleek slab serifs. Typefaces like Chaparral make for readable text as well as distinctive heads and subheads.

KULTURISTA

GEOMETRIC SLAB
Architects are often drawn to slab serifs with a stark geometric style, such as Kulturista (above) and Rockwell (by Frank Hinman Pierpont). These faces have big, structural slab serifs and minimal modulation.

HEADS AND BODIES

On screen, as on the printed page, written text falls into two main categories: body and head. Body copy is the principal reading matter of a text, while heads are shorter pieces of text that call out sections and subsections. A designer may choose to set a text entirely in a single type family, using different weights, sizes, and styles to distinguish the parts from the whole. Alternatively, designers can assemble a mix of diverse type families to create clear visual distinctions between elements of content.

A list or a block quote should look like a subset of the main text, while a caption can be more visually distinct. Headings should reflect the relative importance of the text that follows. By using type to signal levels of information, designers help readers graze through a document at their own pace, picking and choosing the content they want. Some may only read captions and headings, while others want to dig deep and pursue an argument or narrative from beginning to end.

Display

DISPLAY FACES are designed primarily for heads. Their complex forms or extreme proportions become tiresome in large quantities. Think of display faces as garnish and spice for the meat and potatoes of basic body text.

League Gothic

from the League of Moveable Type
Designed by Micah Rich with Caroline Hadilaksono

LEAGUE GOTHIC is a product of the League of Moveable Type (LMT), a group that offers typefaces for free download to the open-source community. LMT supports freeware, copyleft, and related ideas. LEAGUE GOTHIC is based on Morris Fuller Benton's Alternate Gothic No. 1, a compressed typeface that embraces the loud and excitable aesthetic of twentieth-century news media.

Prater Script

from FontFont
Designed by Henning Wegenbreth and Steffen Sauerteig

Prater is a beer garden in Berlin whose graphic identity was handmade by artist-illustrator Henning Wagenbreth. Wagenbreth's lettering was the launching point for this playful type family, digitally reconstructed by Steffen Sauerteig. To approximate the irregularity of hand lettering, each weight comes in two versions.

Some typefaces are designed specifically for body text. Type designers work hard to create typefaces that fly under the reader's radar, using subtle, well-crafted forms and evenly spaced characters to achieve effortless reading. A good text family includes multiple weights and styles (roman, italic, and bold, at the very least) suitable for expressing a rich hierarchy of information. A text face with appealing details can also be used for heads, its character changing as it moves up in size.

MINION PRO A single family can be used for headings and body text. The italic enlarges to become a handsome title, while the small caps provide quiet subheads.

Cinderella

ACT ONE: STATUS QUO

Many years ago a gentleman had a charming lady for his wife. When their daughter was very young, the mamma died. After a time, the little girl's papa married another lady, who had two grown daughters as disagreeable as herself.

ACT TWO: CALL TO ACTION

The King's son gave a grand ball, and all persons of quality were invited. In Cinderella's home nothing was talked of but the rich dresses the two sisters were to wear. At last the happy day arrived. The two proud sisters set off in high spirits. When

PRATER SCRIPT AND SKOLAR Here, a fancy display face offers a counterpoint to a more traditional text face.

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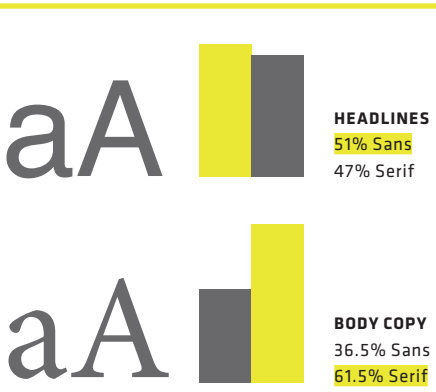

SANS VS. SERIF In 2013 a study of global news sites found that when it comes to headlines, sans faces have a slight edge over serifs. Body copy, however, still leans resolutely toward tradition, with 61.5 percent of sites opting for serif. While the majority of sites surveyed were using nonstandard web fonts, the most commonly occurring typefaces were Georgia, Arial, and Chaparral Pro for headlines, and Georgia, Arial, and Helvetica for body copy.

READ MORE >> Jan Constantin, "Typographic Design Patterns and Current Practices (2013 Edition)," *Smashing Magazine*, May 17, 2013, http://www.smashingmagazine.com/2013/05/17/typographic-design-patterns-practices-case-study-2013/.

A BRIEF SURVEY OF WEB FONTS

The purpose of this guide is to help designers and developers make smart typographic decisions on the web. From the enormous range of fonts now available for online licensing, we have chosen a small selection of prominent typefaces—produced by foundries large and small and created by designers from around the world—that have proven popular among web designers. We examined how each typeface renders on different operating systems and browsers and rated each typeface for its legibility, readability, flexibility, showmanship, classiness, and what we call amphibiousness. Also included are some taster's notes on history, style, and sensibility. At the end of the day, these judgments are more subjective than scientific; you will need to test any typeface against your own content, intentions, and personal preferences until you hit just the note you are looking for.

THE RATING SYSTEM

LEGIBILITY
How distinct are the characters from one another? Typefaces that are highly modular or geometric may be less legible than those with more organic and individualized forms.

READABILITY
How comfortable is the typeface to read in body copy? Does it invite long-form reading and writing?

FLEXIBILITY
How well does the typeface work in different sizes and weights? Would it function well for both headlines and text? A flexible typeface can solve many kinds of problems.

SHOWMANSHIP
How memorable is the font? How unique are its details? Does it have a standout *Q* or spectacular numerals? Does it look amazing when blown up to a large size?

CLASSINESS
Would it take you to Red Lobster? Would you buy it a diamond ring?

AMPHIBIOUSNESS
Has it been optimized for screen? How well is it hinted? If a font only looks good on a Mac, it scores low on the amphibiousness scale.

BAKER'S FOURTEEN Like any top-ten list, our baker's dozen (plus one) is an arbitrary sampling from the wildly diverse typographic biosphere. Dozens of other designs could take the place of most of the typefaces listed here. When you find a typeface you like, look for more created by the same designer or foundry. The choices are endless and growing in number every day.

SERIF

Fedra Serif
Georgia
Meta Serif
Minion
Skolar

SANS

Dagny
DIN
Helvetica
Proxima Nova

SLAB

Adelle
Chaparral
Kulturista
Museo Slab
Tisa

aA **aA**

Adelle

from Typetogether
Designed by José Scaglione and Veronika Burian

Adelle works well both in print and on screen. Created for publication design in 2009, this family has flourished on the web. **Adelle**'s open, boxy forms and generous x-height make it legible at small sizes. Scaled up for headlines, **Adelle** begins to flaunt her friskier side, with decisive details and sweetly angled serifs. **Adelle**'s warm but modern demeanor fits the approachable aesthetic so sought after by web designers.

Handgloves
Handgloves

LEGIBILITY	■■■
READABILITY	■■■
FLEXIBILITY	■■■■■
SHOWMANSHIP	■■■■■
CLASSINESS	■■
AMPHIBIOUSNESS	■■■

SAFARI ON MAC

FIREFOX ON MAC

CHROME ON WINDOWS

INTERNET EXPLORER ON WINDOWS

Chaparral

from Adobe
Designed by Carol Twombly

Chaparral has the heft of a slab serif and the smooth-bodied proportions of a roman book face. In this way it resembles Adelle and Meta Serif, though it has softer details and greater line variation. Designed in 1997 by Twombly, **Chaparral** was a bit of a wallflower in the age of print; as a web font, its popularity has soared, offering a comfortable reading experience and bold, memorable headlines. **Chaparral** provides excellent support for Eastern European languages.

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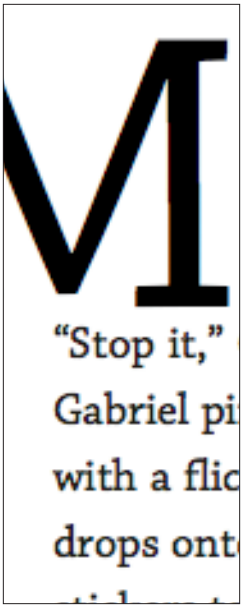
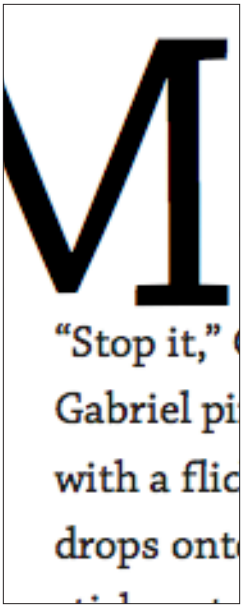
Handgloves
Handgloves

LEGIBILITY	■■
READABILITY	■■■■
FLEXIBILITY	■■■
SHOWMANSHIP	■■■■
CLASSINESS	■■■
AMPHIBIOUSNESS	■■■

SAFARI ON MAC

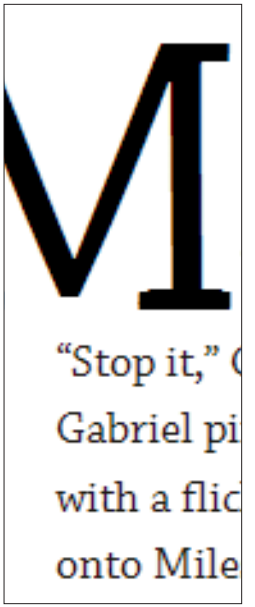


FIREFOX ON MAC



CHROME ON WINDOWS

INTERNET EXPLORER ON WINDOWS



aA **aA**

Dagny

from FontShop
Designed by Örjan Nordling and Göran Södeström

Dagny was created for the Swedish newspaper *Dagens Nyheter* in 2002. Its large x-height, open forms, and relatively narrow width keep it readable at small sizes. **Dagny** is a strong choice for designers who want the bold corporate look of Helvetica without creating yet another website relying on the ubiquitous typeface. Like all web fonts from FontShop, **Dagny** has been fully optimized for online display.

Handgloves
Handgloves

LEGIBILITY	■■■■
READABILITY	■■■
FLEXIBILITY	■■■■
SHOWMANSHIP	■■■
CLASSINESS	■■
AMPHIBIOUSNESS	■■

SAFARI ON MAC

FIREFOX ON MAC

CHROME ON WINDOWS

INTERNET EXPLORER ON WINDOWS

aA **aA**

Handgloves
Handgloves

DIN

from Parachute
Designed by Panos Vassiliou

DIN (which stands for Deutsches Institut für Normung) became a standard signage face in 1940s Germany and was used in trainyards and on highways. There are many cuts of **DIN**, including Vassilou's family for Parachute (shown here) and Albert Jan-Pool's version for FontShop. With its hard angles and boxy geometry, **DIN** is appropriate for headlines wherever a bold and architectural look is required. Its tall x-height and open shapes make **DIN** a decent body type as well.

LEGIBILITY	■■■■
READABILITY	■■
FLEXIBILITY	■■■
SHOWMANSHIP	■■■
CLASSINESS	■■
AMPHIBIOUSNESS	■■

SAFARI ON MAC

FIREFOX ON MAC

CHROME ON WINDOWS

INTERNET EXPLORER ON WINDOWS

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Handgloves
Handgloves

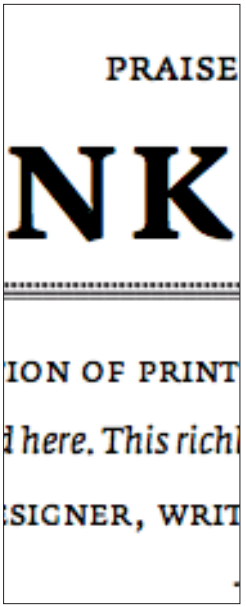
Fedra Serif

from Typotheque
Designed by Peter Bil'ak

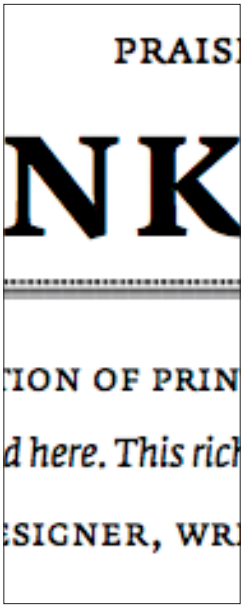
Fedra Serif, created by Bil'ak in 2003, belongs to the vast **Fedra** superfamily, a coordinated collection of typefaces that includes both sans and serif variants. Superfamilies such as **Fedra** provide designers with a diverse set of faces that are unified by matching x-heights and ascenders and descenders of consistent length. Shown here is **Fedra Serif A**, whose low-contrast strokes make this typeface especially suitable for display on screen.

LEGIBILITY	■■■■
READABILITY	■■■■
FLEXIBILITY	■■■■■
SHOWMANSHIP	■■■
CLASSINESS	■■■■
AMPHIBIOUSNESS	■■■■

SAFARI ON MAC

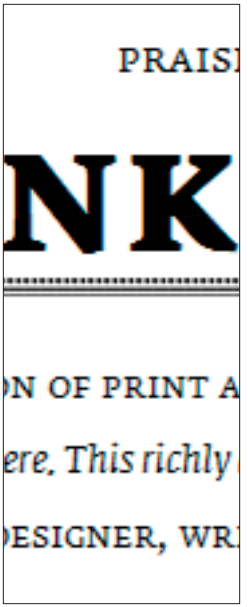


FIREFOX ON MAC



CHROME ON WINDOWS

INTERNET EXPLORER ON WINDOWS



aA aA

Georgia

from Microsoft
Designed by Matthew Carter

Georgia was custom built for on-screen display in 1996. Similar in some aspects to Times New Roman (compare the lowercase *a*), **Georgia** has a larger x-height and more open forms. Because it already exists on virtually every modern operating system and has been meticulously hinted to render handsomely across platforms, **Georgia** remains popular (and practical) on the web. It functions well at smaller sizes, but doesn't carry much weight as a display face.

Handgloves
Handgloves

LEGIBILITY	■■■■
READABILITY	■■■■
FLEXIBILITY	■■■
SHOWMANSHIP	■
CLASSINESS	■■■
AMPHIBIOUSNESS	■■■■■

SAFARI ON MAC

FIREFOX ON MAC

CHROME ON WINDOWS

INTERNET EXPLORER ON WINDOWS

aA aA

Handgloves
Handgloves

Helvetica

from Apple OS
Designed by Max Miedinger with Eduard Hoffmann

Helvetica, one of the world's most widely used typefaces, was designed in 1957 to compete with the then-popular Akzidenz-Grotesk in Switzerland. **Helvetica** quickly became a ubiquitous feature of the commercial and corporate landscape, alternately loved and reviled by generations of designers. Apple adopted **Helvetica** as its system sans serif face on Mac OSX, where it is legible at small sizes. **Helvetica** performs worse on Windows, where Arial and Verdana fare better.

LEGIBILITY	■■■■
READABILITY	■■■
FLEXIBILITY	■■■■
SHOWMANSHIP	■■■
CLASSINESS	■■
AMPHIBIOUSNESS	■■

SAFARI ON MAC

FIREFOX ON MAC

CHROME ON WINDOWS

INTERNET EXPLORER ON WINDOWS

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Handgloves
Handgloves

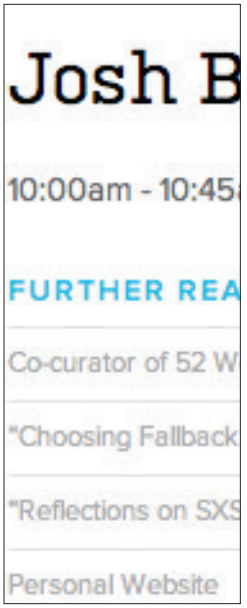
Kulturista

from Suitcase Type Foundry
Designed by Tomáš Brousil

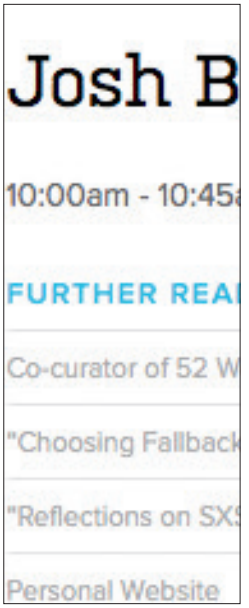
Kulturista is the most geometric slab serif on our list. Designed by Brousil in 2009, **Kulturista** was introduced as a companion to Nudista, a boxy sans serif conceived for publication. **Kulturista**'s balance of architectural slabs and bubbly geometric curves has helped it achieve popularity among web designers. **Kulturista** shows a lot of personality (especially in the light and bold weights shown here).

LEGIBILITY	■■
READABILITY	■■
FLEXIBILITY	■■
SHOWMANSHIP	■■■■
CLASSINESS	■■■
AMPHIBIOUSNESS	■■■■■

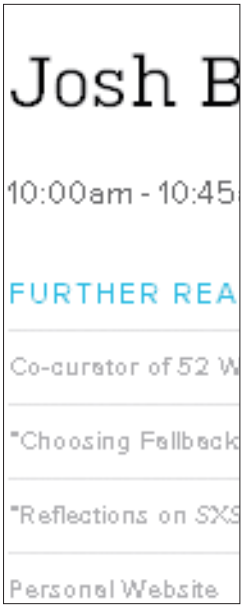
SAFARI ON MAC



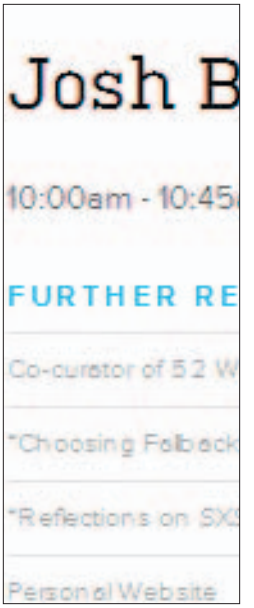
FIREFOX ON MAC



CHROME ON WINDOWS



INTERNET EXPLORER ON WINDOWS



Meta Serif

from FontFont
Designed by Erik Spiekermann, Christian Schwartz, and Kris Sowersby

Meta Serif was conceived as a companion to Meta, Spiekermann's hugely popular sans serif type family. This companion creation, however, quickly took off on its own. Endowed with a gracious x-height and lightly bracketed serifs, **Meta Serif** is taller and narrower than classic serif faces. Its economical, space-saving proportions, coupled with its excellent hinting and early introduction into the web font ecosystem, have made **Meta Serif** a worldwide success, especially for body text.

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Handgloves
Handgloves

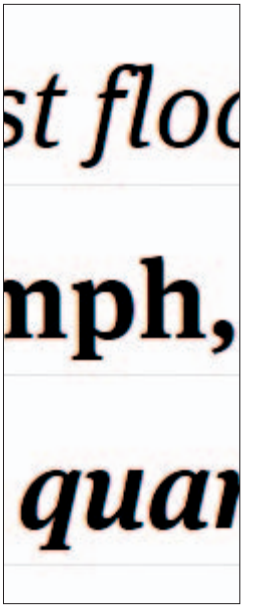
LEGIBILITY	■■■■
READABILITY	■■■■
FLEXIBILITY	■■■
SHOWMANSHIP	■
CLASSINESS	■■■
AMPHIBIOUSNESS	■■■■■

SAFARI ON MAC

FIREFOX ON MAC

CHROME ON WINDOWS

INTERNET EXPLORER ON WINDOWS



aA aA

Minion

from Adobe
Designed by Robert Slimbach

Minion, created by Slimbach for Adobe in 1990, takes inspiration from late Renaissance typography, which introduced roman letterforms as a humanist alternative to medieval blackletter scripts. **Minion**—by far the most traditional typeface on our list—sets beautiful body copy that is comfortable to read. The calligraphic details of **Minion** become more visible at larger sizes, making this typeface a sophisticated choice for headlines.

Handgloves
Handgloves

LEGIBILITY	■■■■
READABILITY	■■■■■
FLEXIBILITY	■■■
SHOWMANSHIP	■■■
CLASSINESS	■■■■■
AMPHIBIOUSNESS	■■

SAFARI ON MAC

FIREFOX ON MAC

CHROME ON WINDOWS

INTERNET EXPLORER ON WINDOWS

aA **aA**

Museo Slab

from Exljbris
Designed by Jos Buivenga

Museo Slab was launched by Buivenga in 2009 as a free font. As the typeface burgeoned in popularity, Buivenga added weights to it, finding a ready market for this distinctive family whose half-slab serifs resemble bent pipes. (Several weights remain available for free download.) While it makes an assertive but intriguing text face, **Museo Slab** works especially well for headings and display.

Handgloves
Handgloves

LEGIBILITY	■■■
READABILITY	■■■
FLEXIBILITY	■■■
SHOWMANSHIP	■■■■■
CLASSINESS	■■■
AMPHIBIOUSNESS	■■■■■

SAFARI ON MAC

FIREFOX ON MAC

CHROME ON WINDOWS

INTERNET EXPLORER ON WINDOWS

aA**aA**

Handgloves
Handgloves

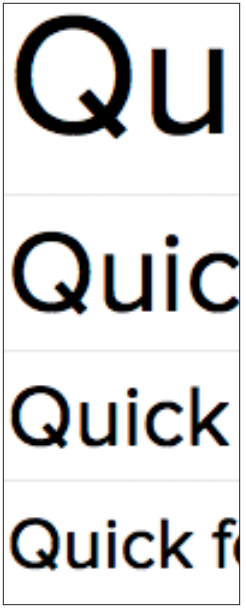
Proxima Nova

from Mark Simonson Studio
Designed by Mark Simonson

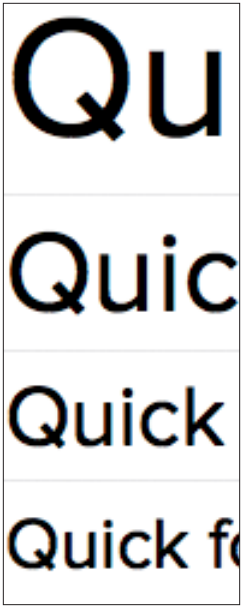
Proxima Nova is a sans serif face that combines humanistic lines (take note of the modulated strokes) with geometric precision (as seen in the nearly round *o*). This hybrid personality, combined with an extensive range of weights and widths, has made **Proxima Nova** a widely used workhorse among web designers. You are as likely to find **Proxima Nova** boldly aping Futura in a heavyset headline as you are to see it gracefully accompanying other typefaces as quiet and legible body text.

LEGIBILITY	■■■■■
READABILITY	■■■
FLEXIBILITY	■■■■■
SHOWMANSHIP	■■■■■
CLASSINESS	■■
AMPHIBIOUSNESS	■■■■

SAFARI ON MAC

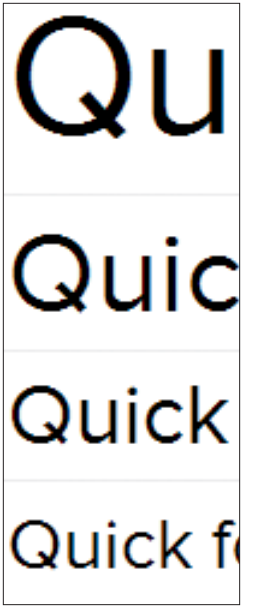


FIREFOX ON MAC



CHROME ON WINDOWS

INTERNET EXPLORER ON WINDOWS



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Skolar

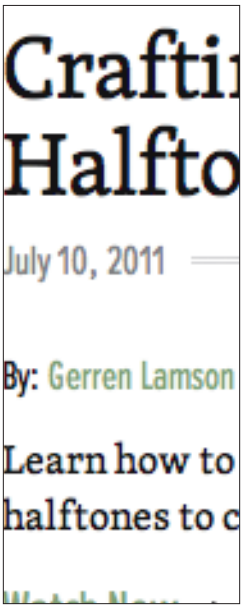
from TypeTogether
Designed by David Březina

Skolar, released in 2008, is a sturdy serif face with distinctive wedge-shaped serifs. Available in a wide range of weights and with a character set that supports diverse languages, **Skolar** was designed for typesetting complex editorial projects, including scholarly works. At once chunky and elegant, it stands up well to the rigors of the screen. The capital letters are slightly shorter than the ascenders, which lightens the overall heft of **Skolar** and makes room for uppercase diacritical marks.

Handgloves
Handgloves

LEGIBILITY	■■■
READABILITY	■■■■
FLEXIBILITY	■■■
SHOWMANSHIP	■■■■
CLASSINESS	■■■■
AMPHIBIOUSNESS	■■

SAFARI ON MAC



FIREFOX ON MAC

CHROME ON WINDOWS

INTERNET EXPLORER ON WINDOWS

aAaA

Handgloves
Handgloves

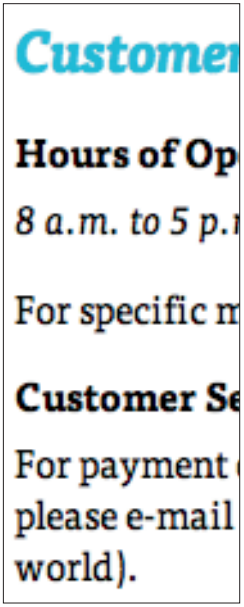
Tisa

from FontFont
Designed by Mitja Miklavčič

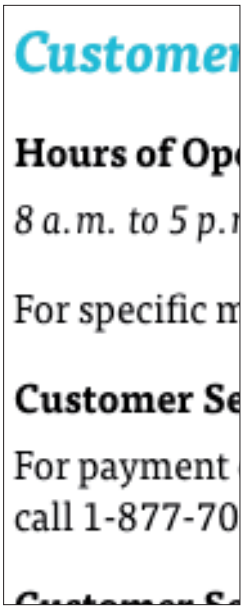
Tisa, designed by Miklavčič as a degree project at the University of Reading, has become a popular web font. **Tisa** sought out a new approach to the slab genre. Its serifs are a bit soft and asymmetrical, while its oblique stress recalls the humanist calligraphic tradition. With its low-contrast strokes and large x-height, **Tisa** works well as a text face at small sizes, while its surprising details make it stand out effectively in larger headings.

LEGIBILITY	■■■■
READABILITY	■■■■
FLEXIBILITY	■■■■
SHOWMANSHIP	■■■■
CLASSINESS	■■■■
AMPHIBIOUSNESS	■■■■

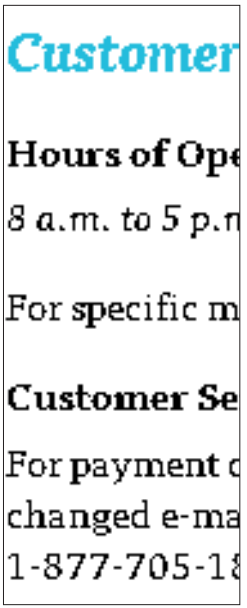
SAFARI ON MAC



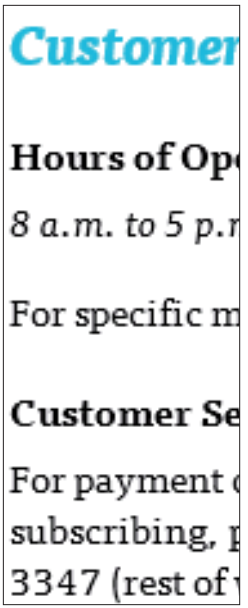
FIREFOX ON MAC



CHROME ON WINDOWS



INTERNET EXPLORER ON WINDOWS



GOOGLE FONTS

As a serious designer you may think that free fonts are a joke, but this is not always the case. Google has amassed a library of free fonts that are reasonably well designed. The company, which pays current market rates to commission its type designs, hopes that access to free web fonts will encourage designers to use real type in place of graphic GIFs in order to create searchable, translatable text.

We asked our friend Dave Crossland—type designer, educator, and font consultant for Google Fonts—to select five typefaces from Google's library that exemplify solid typographic values. He chose fonts that render well across platforms and browsers and identified some workhorse fonts appropriate for body text, heads, and subheads. While some of his picks lack the full range of weights demanded for complex web typography, these fonts will prove valuable for many purposes. What emerges from this list is a picture of a vibrant global type design community.

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PT Sans and Serif

Designed by ParaType

Developed by Russia's largest and most prestigious digital type foundry, ParaType, **PT Sans** and **PT Serif** comprise an expansive superfamily with top-quality hinting. Funded by the Russian federal government, these fonts have an unprecedented character set to support writing every name in the Cyrillic world.

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Alegreya

Designed by Juan Pablo del Peral at Huerta Tipográfica

Typeface design is an increasingly hot topic for graphic design students around the world, and the scene in Latin America is among the most active. Huerta Tipográfica is a new foundry formed by friends who met while taking part in the postgraduate program in typeface design at the University of Buenos Aires. Alegreya is their award-winning serif text type.

aA

Andika

Designed by Annie Olsen at SIL International

SIL International is a faith-based nonprofit organization committed to serving language communities worldwide as they build capacity for sustainable language development. That means providing free digital typography tools, including Andika, a typeface designed for kids.

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Montserrat

Designed by Julieta Ulanovsky

Unlike typical revival projects that remake existing typefaces, **Montserrat** is an attempt to save vanishing commercial lettering styles. Ulanovksy was inspired by early-twentieth-century urban typography from the **Montserrat** neighborhood in her native Buenos Aires. She launched a Kickstarter campaign to finance the project, and when she raised double her target, she proceeded to design an Alternates set that features more uncommon forms (such as Ê, Ë, and Ꮃ).

aA

Capriola

Designed by Viktoriya Gabrowska at Sorkin Type Co.

Pushing the boundary between display and body type, Capriola ambitiously seeks originality without sacrificing readability. When people ask the common question, "Why design new typefaces?" designs like this one prove that there is so much waiting to be discovered.

HONORABLE MENTIONS

Almendra
Designed by Ana Sanfelippo

ASAP
Designed by OmniBus-Type

Cantora One
Designed by Impallari Type

Courgette
Designed by Karolina Lach

Delius Regular
SWASH CAPS
Designed by Natalia Raices

Exo
Designed by Natanael Gama

Gentium Basic
Designed by Victor Gaultney

Inika
Designed by Constanza Artigas

Lobster
Designed by Pablo Impallari

Marko One
Designed by Cyreal

Open Sans
Designed by Steve Matteson

Quando
Designed by Joana Correia da Silva

Tienne
Designed by Vernon Adams

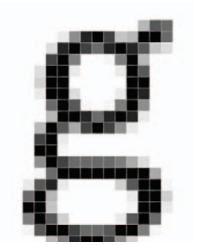
Trykker
Designed by Magnus Gaarde

Ubuntu
Designed by Dalton Maag

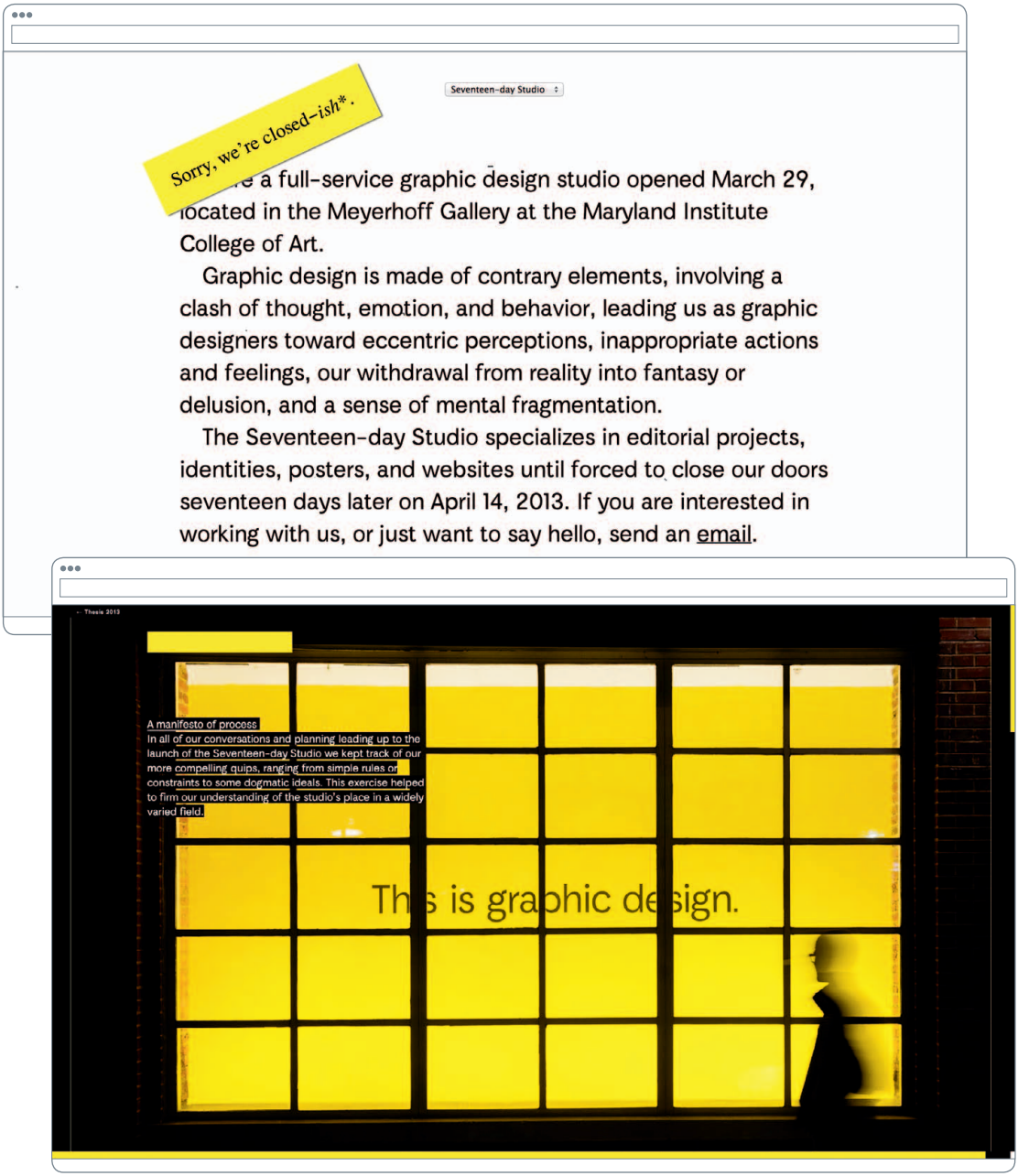
CASE STUDY

A-SANS

The screen poses challenges for type designers. Low pixel densities force designers to spend extra time fine tuning each character so it renders well on screen. While this hinting process usually takes place at the end of a font's production, a designer can also choose to design a typeface with an eye toward screen use from the beginning. To create the typeface A-Sans, Young Sun Compton used a coarse pixel grid as a constraint throughout his process, rather than trying to force his drawings onto the grid later. A-Sans is a geometric sans serif typeface drawn for reading on screen; the resulting oddities of form make for intriguing off-screen reading.



aA bB cC dD
eE fF gG hH
iI jJ kK lL mM
nN oO pP qQ
rR sS tT uU vV
wW xX yY zZ



BEHIND GLASS A-Sans was drawn to function on-screen as a web font as well as in print. The designer has employed it everywhere from websites to 1000pt vinyl wall graphics. Design: Young Sun Compton, 2013.

MUTABLE TYPEFACES

Researched by Rolando G. Alcantara

A mutable typeface gives a designer multiple ways to typeset the same message. If a typeface comes with an alternate *A,* the designer has two different ways to typeset the word "Apple"—one with the standard *A* and one with the alternate character. A typeface with an alternate for every letter in the alphabet gives the designer many more possibilities to set the same word (thirty-two, to be exact). Although mutable typography is not exclusive to screen design, the concept of change and variation lends itself to animation. Indeed, many experiments in mutable typography address the nature of fonts as software, adding new functionality to the art of typesetting.

Some mutable typefaces employ a carefully curated collection of ligatures and/or alternate characters. Others feature nonalphabetic ornaments that the designer can use to embellish the text. Still others use additive layering, a technique that allows each style within the type family to act as a different structural or decorative element, such as an inline character or a flourish.

The typeface Walker, designed by Matthew Carter for the Walker Art Center in 1995, employs five different styles and weights of "snap-on" serifs, yielding numerous variant styles while maintaining a unified look. Walker also includes horizontal rulers that serve as underlines or "overlines" from which to hang the text.

Ed Interlock, created by Ken Barber and Ed Benguiat, employs nearly fourteen hundred discretionary ligatures. Ed Interlock was released by House Industries as an homage to Benguiat, who created hundreds of typefaces in the 1960s and 1970s.

Julien, a typeface with more than a thousand alternate glyphs, was designed by Bil'ak for Typotheque in 2011. Julien is loosely inspired by the avant-garde design movements of the twentieth century. Texts set in Julien resemble collections of iconic geometric letters that have been carefully curated and recombined.

WALKER Matthew Carter created Walker for the Walker Art Center in Minneapolis, introducing the notion of the snap-on serif. Design: Matthew Carter, 1995.

ED INTERLOCK As the word *ligature* is typed, the font software actively searches through its stock of ligatures to find the best combination of glyphs to achieve a customized, hand-drawn feel. Design: Ken Barber and Ed Benguiat, House Industries, 2005.

JULIEN uses a pseudo-randomization script written by Tal Leming, which chooses from more than a thousand glyphs to avoid repetition while creating a unique flow of shapes. Design: Peter Bil'ak, Typotheque, 2011.

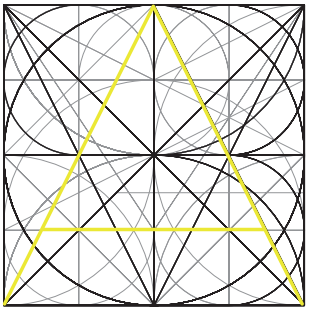
HISTORY Based on a skeleton of Roman inscriptional capitals, History is composed of twenty-one styles. Each one acts as a layer that can be mixed and matched with others to achieve a beautiful, varied look with depth and dimension. The layer options range from a basic sans serif hairline to ornamental outline shapes and a variety of serifs. Design: Peter Bil'ak, Typotheque, 2008.

CASE STUDY

ALPHABETA

The premise for Alcantara's typeface AlphaBeta is to create as many different legible glyphs for each character as possible based on a simple set of rules. Alcantara decided that AlphaBeta would be monospaced—meaning that every glyph would have the same width; it would be unicase (mixing upper- and lowercase characteristics); and it would be geometric and sans serif. He created a kit of parts for constructing the letterforms based on a square grid, with elements consisting of two curves, three angles, and a series of straight lines. The designer distilled eight alphabets from hundreds of iterations.

After establishing his alphabets, Alcantara made font files and converted them into web fonts. His system employs JavaScript in the browser (rather than coding native to the font file) to pick a glyph for each character at random every time the webpage is reloaded.



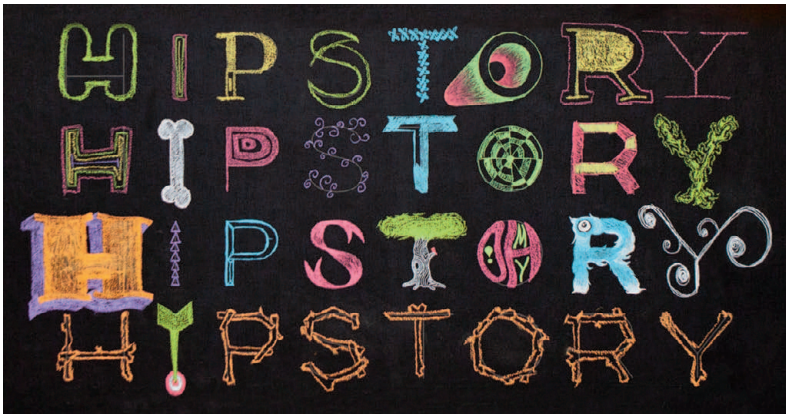
ALPHABETA From left to right: **1** Basic rule set. **2** AlphaBeta's main alphabet and seven alternate alphabets. **3** Layered character shapes of AlphaBeta; alternate glyphs are shown in gray, while the main character is shown in black. Design: Rolando G. Alcantara, 2012.

CASE STUDY

HISTORY + HIPSTER = HIPSTORY

A hipster sensibility—seeking out the latest in music, fashion, technology, and the arts—has spilled over into type design. Alcantara was inspired by the layering technique used in Bil'ak's History. The designer identified various trends in contemporary "hipster" typefaces and noted that they all leave humanist broad-pen strokes behind for a more geometric, low-contrast approach. Most are either wide and squat or tall and condensed. Sans serif is the style of choice, but the slab serif has made a strong comeback. Some are modular, and many use decorative features to stand out, such as bevels, embossing, and drop shadows. Alcantara's drawings for Hipstory began with a base layer of an all-caps, hairline-thin, sans serif alphabet. On top of that he added different layers that follow the basic structure of the substrate. He invited other designers to add layers as well.

HIPSTORY HIPSTORY
HIPSTORY HIPSTORY
HIPSTORY HIPSTORY
HIPSTORY HIPSTORY

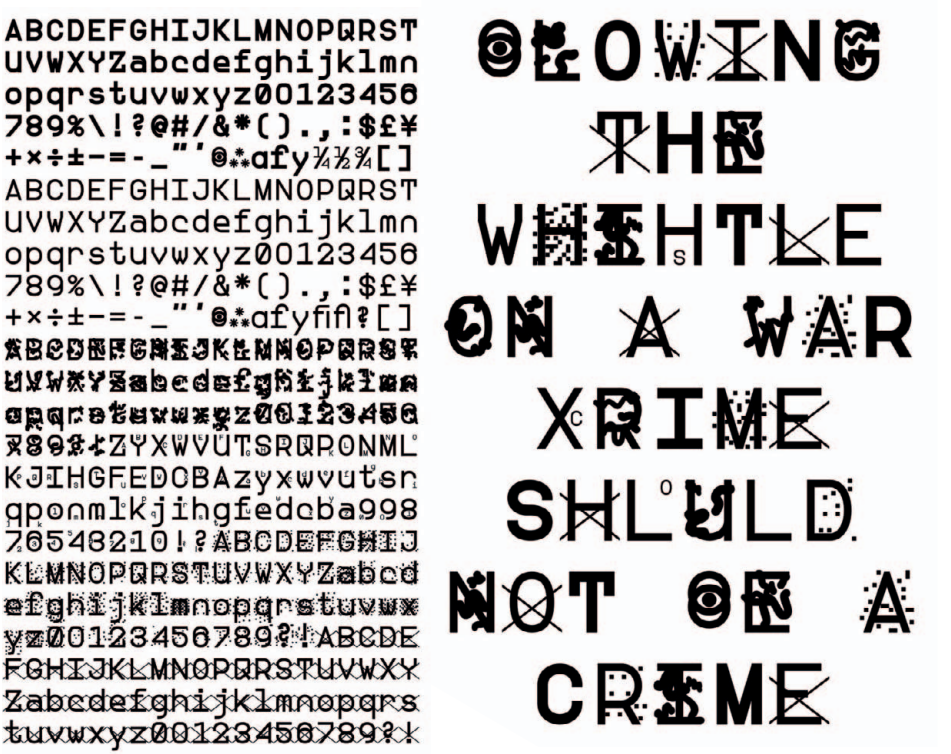


HIPSTORY has wide geometric shapes inspired by a "hipster" approach to typeface design and employs the layering technique created by Bil'ak for his typeface History. Design: Rolando G. Alcantara, 2012.

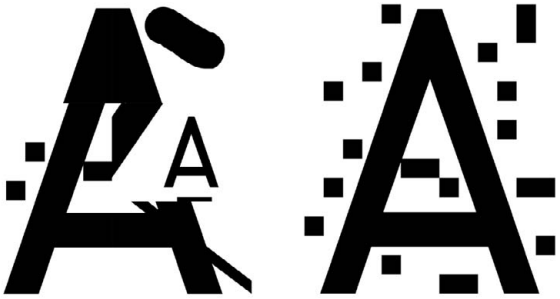
CASE STUDY

ZXX: DISRUPTIVE TYPOGRAPHY

While working as a contractor for the United States National Security Administration during his service in the Korean military, designer Sang Mun was surprised to learn how easy it is for governments and corporations to capture and decode information from "defense targets." Mun was moved to create ZXX, a disruptive typeface designed to be unreadable by text-scanning software. ZXX intentionally confuses the software by obscuring the letterforms with various kinds of noise and visual misdirection. In order to foil the efforts of hackers, cyberthieves, and government agencies, each weight in the ZXX family (Sans, Bold, Camo, False, Noise, and Xed) is designed to disrupt machine readers in a different way. In the spirit of transparency and open information, Mun offers the typeface as a free download on his website. The name ZXX refers to the three-letter codes used in libraries to classify books; the ZXX designation means "no linguistic content; not applicable."



ZXX TYPE SPECIMEN POSTER Each weight of ZXX presents a different way to evade the efforts of machine readers. Design: Sang Mun, *ZXX*, 2012, http://z-x-x.org/.



Good
Morning,
Mister
Orwell

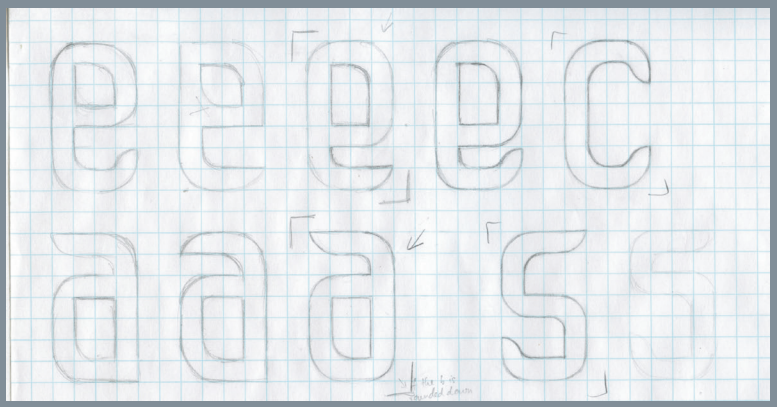
Good
Morning,
Mister
Orwell

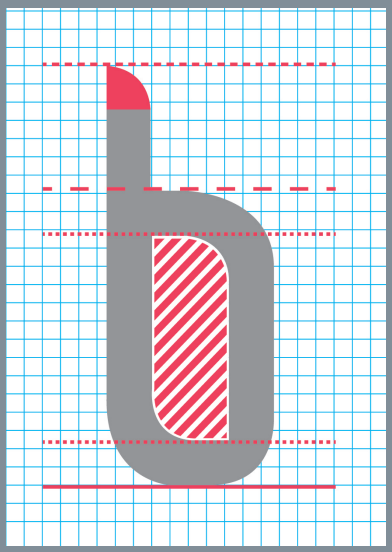
TRICKING THE SYSTEM ZXX Combination cannot be read by OCR software (right, top); ZXX Bold is readable by OCR software (right, bottom). Mixing readable and unreadable characters disrupts machines while remaining accessible to humans.

IN THE CLASSROOM: TYPEFACE DESIGN

WITH TAL LEMING

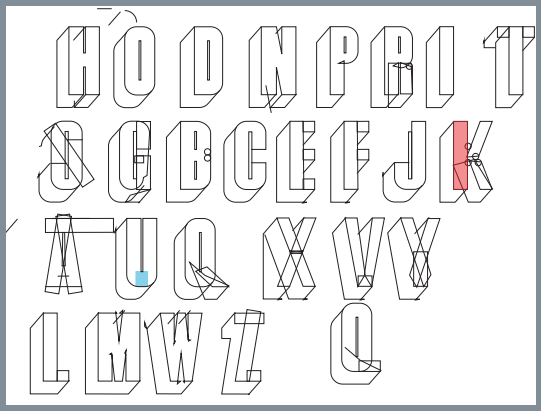
Students in Tal Leming's workshop at MICA were challenged to develop a typeface in just three weeks. Using found type, such as letters from public signs, as inspiration, students first made drawings by hand, then digitized their letterforms and created type specimens.

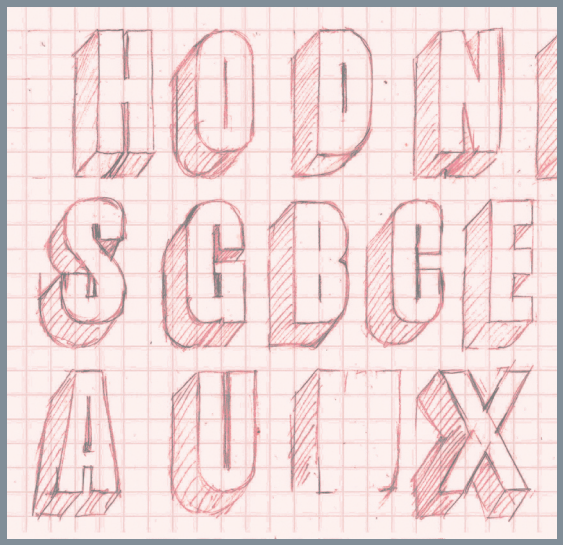




NEBA The designer started with an existing typeface built from uniform strokes and elements with equal widths. From there, she created modular letters based on a grid system. Design: Tanya Heindrich, 2013.

LANVALE Inspired by lettering found on a building in Philadelphia, this typeface mimics the dimensionality of the building's signage. The process started with hand sketches and ended with an alphabet and various applications. At bottom right, the exclamation point appears with an illustration. Design: Anne Lee, 2013.





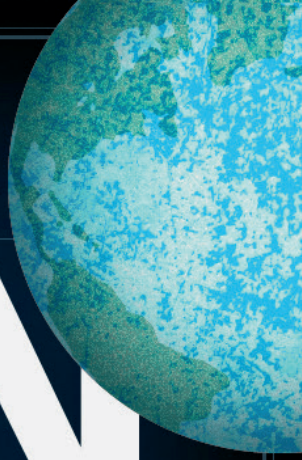
2040

2040-06-21T12:00:00Z/2040-08-11T18:00:00Z

A WORLDS' F
ON THE EART

MOON

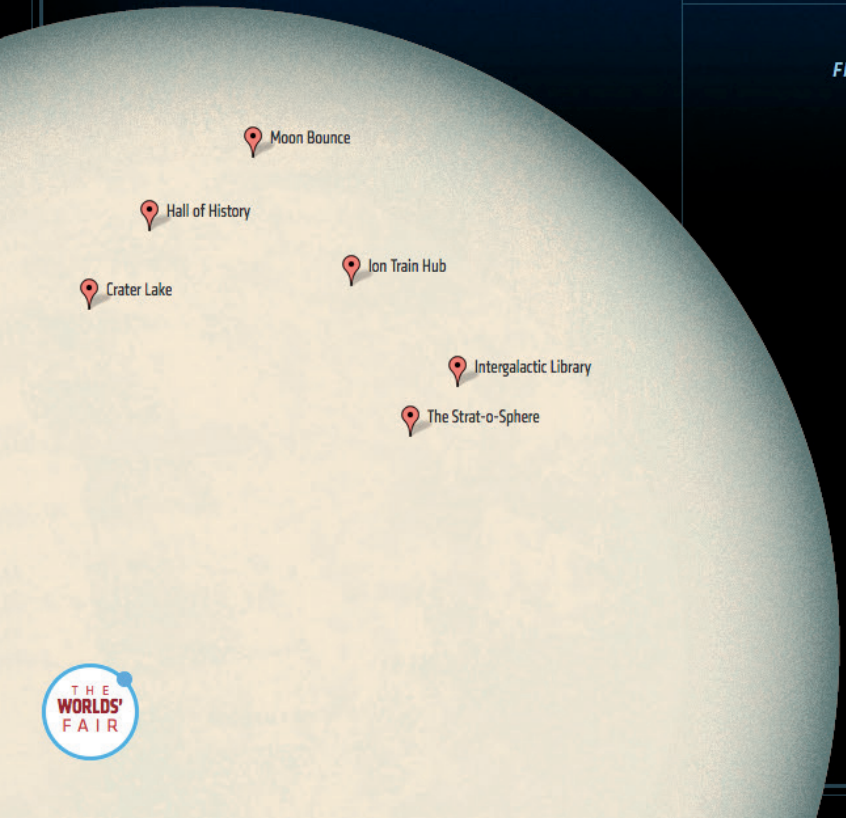
ONWARD & UPWARD



We look from the Milky Way into the universe beyond.

Life and time are enriched by science and technology. The pearl of our night sky welcomes Earthlings to reflect on our past home and prepare us for a future of exploration, discovery, and the marvels of space.

IN THE NAME OF
FRIENDSHIP AND PROSPERITY



THE WORLDS' FAIR

LOST WORLDS' FAIRS

02 TEXT ON SCREEN

YOUNG SUN COMPTON

So you picked some fonts. Now what? Typography isn't just about choosing typefaces. It's about what you do with them. Once you choose one or two type families that fit the context and content of your project, you are ready to tackle the principles of typographic composition. Designers manipulate size, contrast, weight, color, rhythm, texture, and hierarchy in order to craft pleasing and compelling reading experiences. Good typography often goes unnoticed, melting into the background. Bad typography, on the other hand, jumps out like a scary clown, making a project look amateur, artless, or confusing.

Imagine how your audience will encounter the content. Picture modern users consuming a long-form news article. Reading their phones on the way to work, they may be deeply immersed during a long commute or distractedly killing time while waiting for coffee. If the content is interesting and easy to read, they might go back to reading the piece while at the office, this time on a desktop or laptop, and again at home on a tablet. Strong web typography recognizes and responds to these varied circumstances. Adaptive grid structures and relative measuring units accommodate the diverse life of digital content.

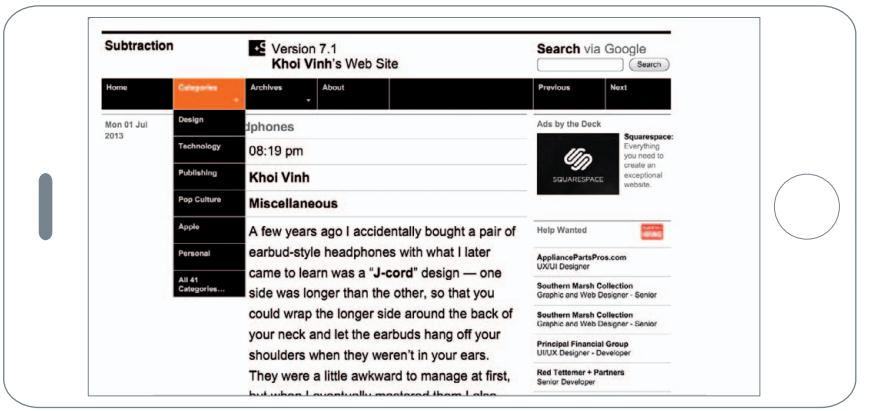
This chapter focuses on shaping the elements of written content that make up the primary body of most websites. Advancements in web standards are making it easier for designers to construct refined typographic systems. While myriad screen sizes and resolutions can rattle the user experience, designers employ a range of techniques to maintain a pleasant reading environment in a future-friendly way.

RECREATION IN WEB TYPOGRAPHY The *Lost Worlds' Fairs* was an online publication project in which leading web designers exploited features of the Web Open Font Format (WOFF). The goal was to create beautiful, engaging typography for the screen with an attention to detail that rivaled the domain of print design. The project was initiated by Microsoft and the Friends of Mighty. The webpage shown here, advertising a fictional World's Fair on the Moon, incorporates web fonts and a liquid layout. Design: Jason Santa Maria, "The Moon in 2040," *Lost Worlds' Fair*, 2010, http://lostworldsfairs.com/moon/.

CHOOSING A SCREEN SIZE

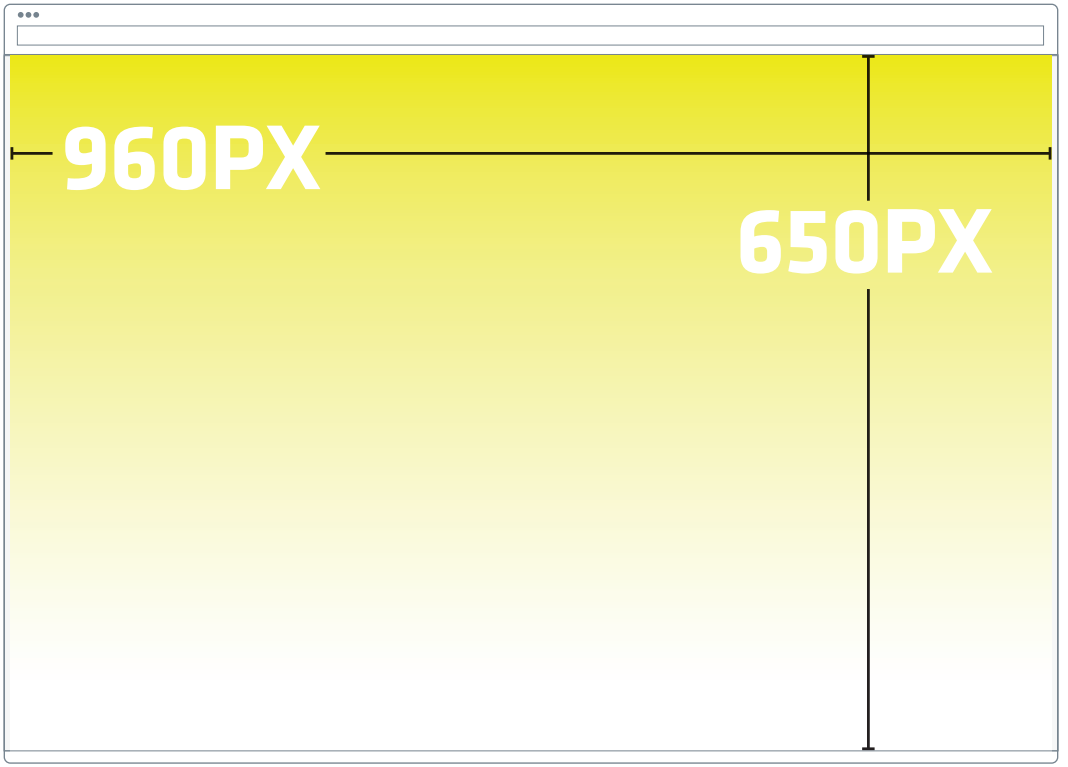
At the beginning of any project, the designer thinks about who its users are and how to best reach them. How will content be delivered, and how much space will it occupy? Until recently resolutions and screen sizes were relatively consistent among users. Now desktop monitors are getting bigger and bigger, while mobile browsing has stolen the lead in accessing the Internet, and tablets hope to replace everything in between. How can designers account for a landscape that won't stop changing?

Even in the fast-moving world of web design, we can work with helpful standards. Influential designer Khoi Vinh, in his comprehensive 2010 book *Ordering Disorder*, recommends a screen size of 1024 × 768 pixels as a starting point for web designers. At that resolution smartphones can keep up while the project is scalable enough for larger displays. In practice 1024 × 768 is the approximate size for the entire screen. A host of interface elements nibble away at the edges of this basic slab of real estate. The designer needs to account for the space occupied by system menus as well as the space needed for the tools, bookmarks, and status bars employed by modern browsers. When all these elements have been subtracted, what is left for the website itself is a modest parcel of about 960 × 650 pixels. Subdividing that space into a rational column grid is the designer's next task.



SUBTRACTION Vinh has long advocated for the application of grids to web design. Subtraction.com, a brilliant repository of Vinh's ideas about design and technology, uses a strong grid and elegant black-and-white typography to translate the theory and spirit of Swiss rationalist typography to the fluid, ever-changing world of the web. Design: Khoi Vinh, 2008.

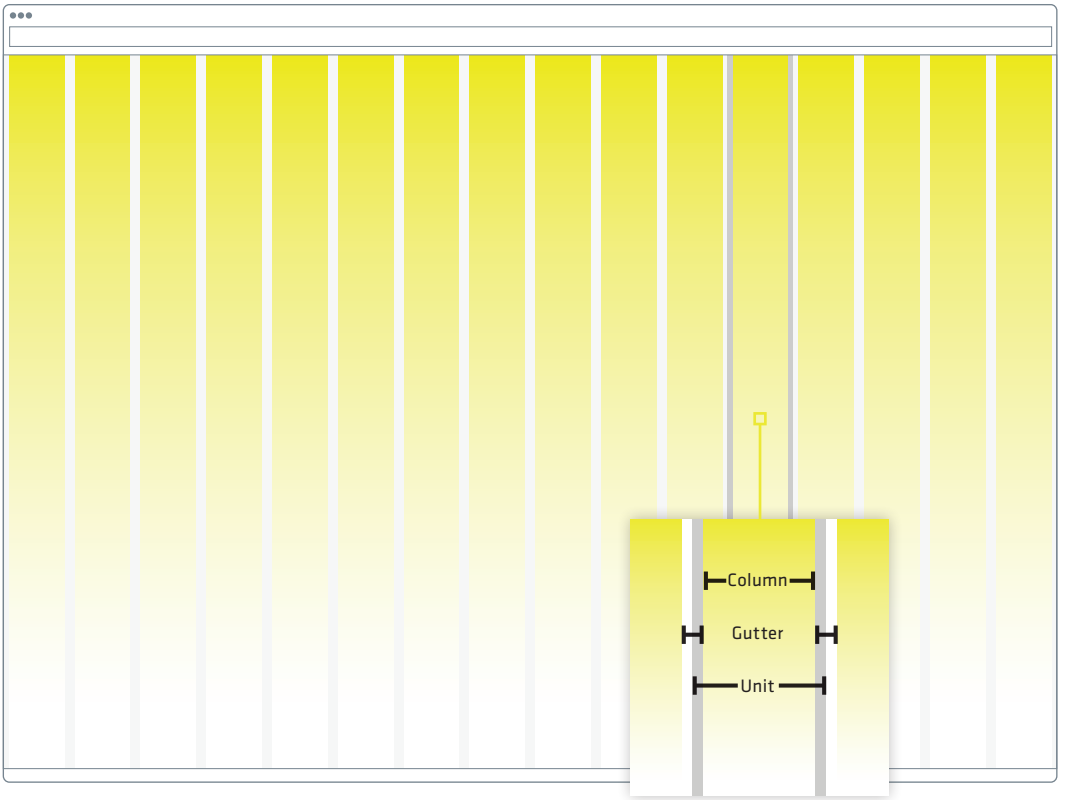
READ MORE >> Khoi Vinh, *Ordering Disorder: Grid Principles for Web Design* (San Francisco: Peachpit Press, 2010).



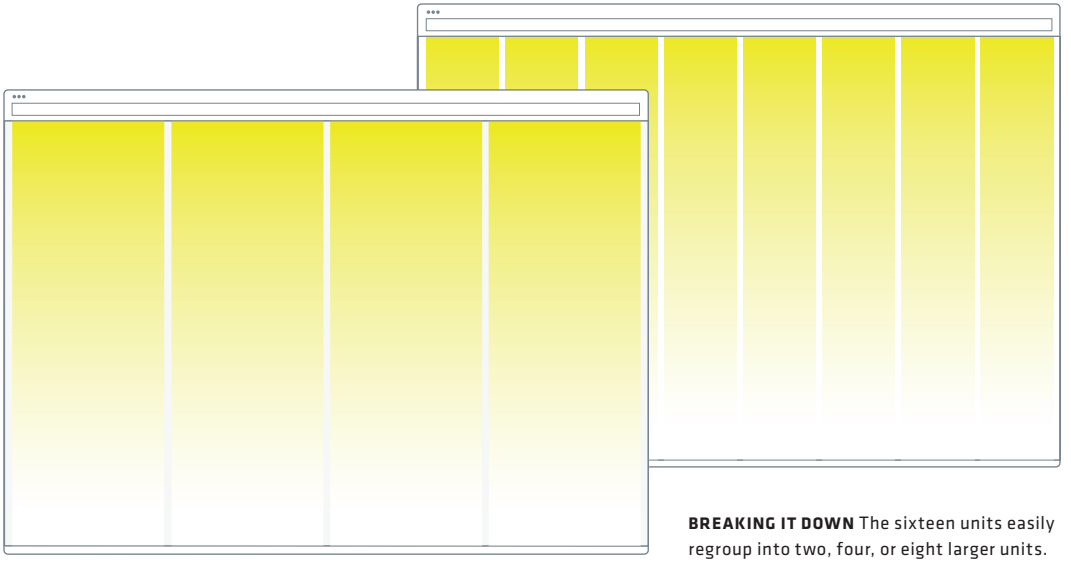
SEARCHING FOR A STANDARD A screen dimension of 1024 × 768 offers a useful, though not absolute, standard resolution. In a typical browser, roughly 80 percent of that space is available for the page content, leaving 974 × 650 pixels for the designer to work with. Adding some breathing room to the left and right edges of the content area reduces the active real estate to approximately 960 × 650 pixels. Diagram based on the guidelines established by Vinh in *Ordering Disorder*, 2010.

THE GRID

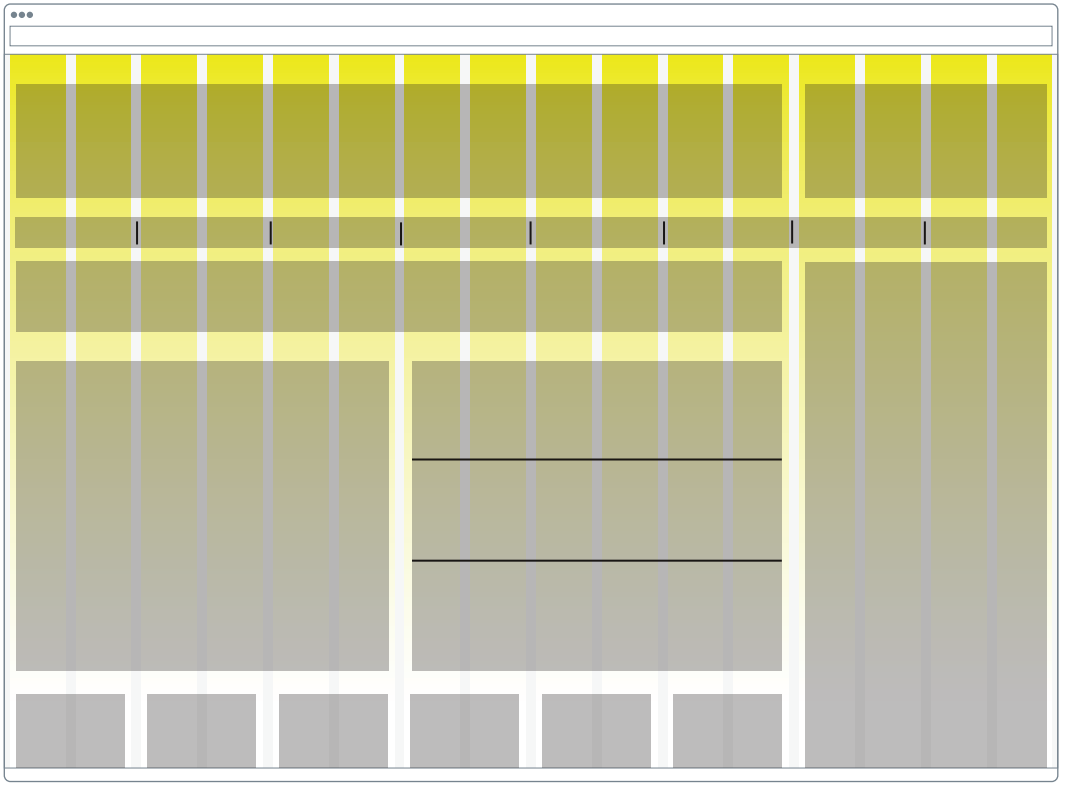
Since the 1950s print designers have used grids to organize the empty void of the page into columns and rows of "white space." A digital screen consists of thousands of square pixels. Although technological advances have helped pixel elements get smaller and curves appear smoother, the screen's underlying squareness hasn't changed. Embracing the innate rectilinear texture of the screen, designers can define robust and flexible grids for arranging content. Even a simple website contains varied parts. A home page doesn't serve the same purpose as an "about page" or a list of blog posts; a fine-grained grid serves to give these different elements a common structure while offering enough flexibility to support multiple templates.



MAKING THE GRID Working with 960 pixels of screen width, we have subdivided our real estate into sixteen equal units, establishing the basis for a flexible, adaptable grid system. Each unit contains a 50-pixel column with a 5-pixel gutter on either side. Principles adapted from Vinh, *Ordering Disorder*, 2010.



BREAKING IT DOWN The sixteen units easily regroup into two, four, or eight larger units.



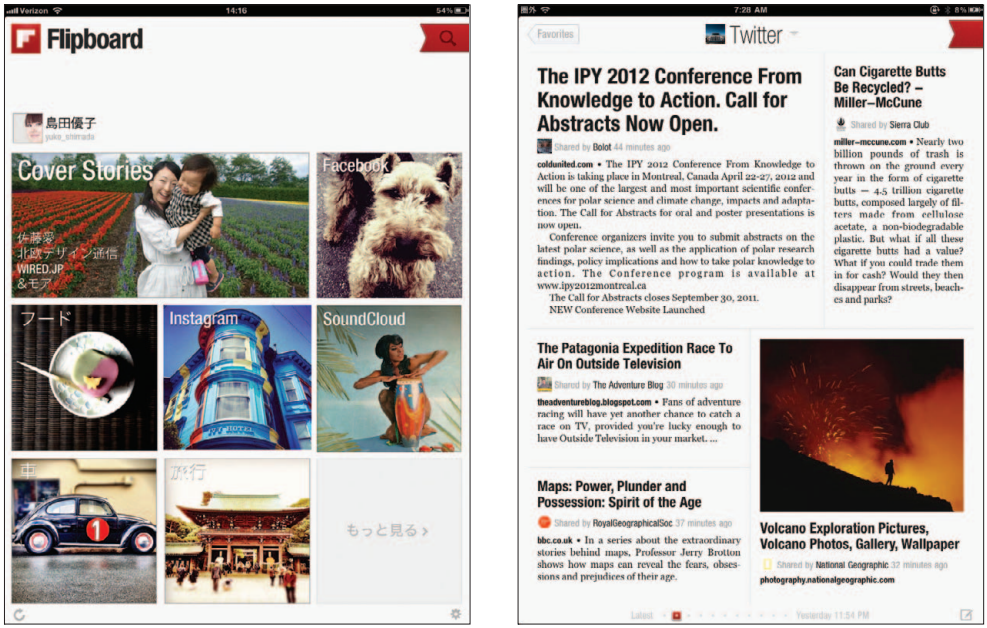
A well-defined grid offers a great deal of flexibility for laying out content.

VERTICAL AND HORIZONTAL FIELDS

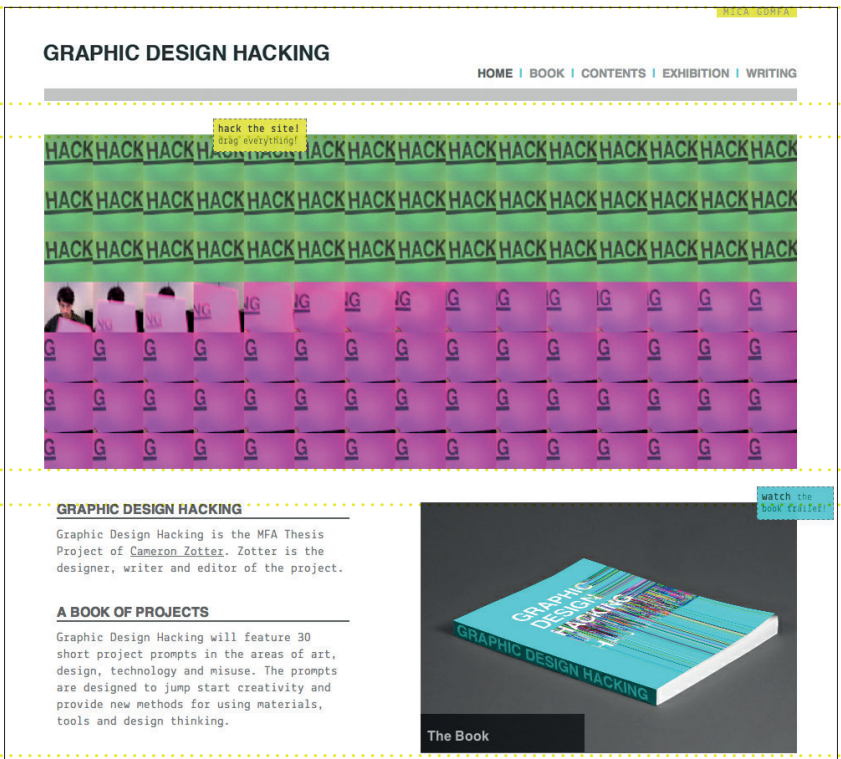
A typographic grid consists of text columns separated by gaps or gutters. Johannes Gutenberg used a two-column grid in the famous Bible that launched the typographic revolution in the fifteenth century. Today grids for complex websites or publications consist of multiple columns—sixteen is not unusual, as seen on the previous page.

The use of modular grids, made from vertical columns and horizontal fields, was pioneered by Swiss graphic designers in the 1950s. The modernist book designers of that period used grids of boxes to govern nearly every design decision, from the shape of pictures to the placement of text.

Vertical columns predominate in most grids today. A well-designed magazine layout or webpage typically has a strong up-and-down column structure anchored by a few horizontal hanging points.



FLIPBOARD Calling itself a social magazine, the Flipboard app uses a modular grid to organize content. The table of contents resembles a photo gallery, while the text pages present the first few lines of an article that can be selected and read in full. Design: Marcos Weskamp, 2011.



HORIZONTAL FIELDS
While vertical columns are relatively easy to maintain, websites often have varying lengths within a single site. Here the designer created horizontal fields to impose architecture on the page. Design: Cameron Zotter, 2012.

RESPONSIVE TYPOGRAPHY

Designers can mitigate the problem of differing screen sizes and resolutions by building websites that respond to those differences. Advocates of responsive design plan and develop webpages that display content differently depending on how the user is viewing the site instead of creating separate stand-alone versions of sites for different devices.

There are two approaches to responsive layout: liquid and adaptive. A liquid design will continually adjust and reflow to the user's browser width. In contrast, adaptive layouts respond in fixed steps based on the size or orientation of the user's browser or device; adaptive layouts typically provide configurations for desktop, tablet, and mobile display. In a liquid layout, the columns in a website get wider or narrower to reflow the content, while an adaptive design will typically switch to using fewer or more columns in a single grid without resizing them. Although the liquid feature isn't noticeable in mobile versions, it gives users fine-grained control over the width of their browser windows on a laptop or desktop device. Designers can combine these two methods. In addition to changing the number or width of columns, a responsive design might also adjust type size for a better fit.

@MEDIA QUERY Less Framework is a CSS grid system for making adaptive layouts. The style sheet uses an @media query tailored to various browsers and devices based on minimum and maximum widths. Shown here are measurements for a tablet held in portrait mode. Code: Less Framework 4 by Joni Korpi.

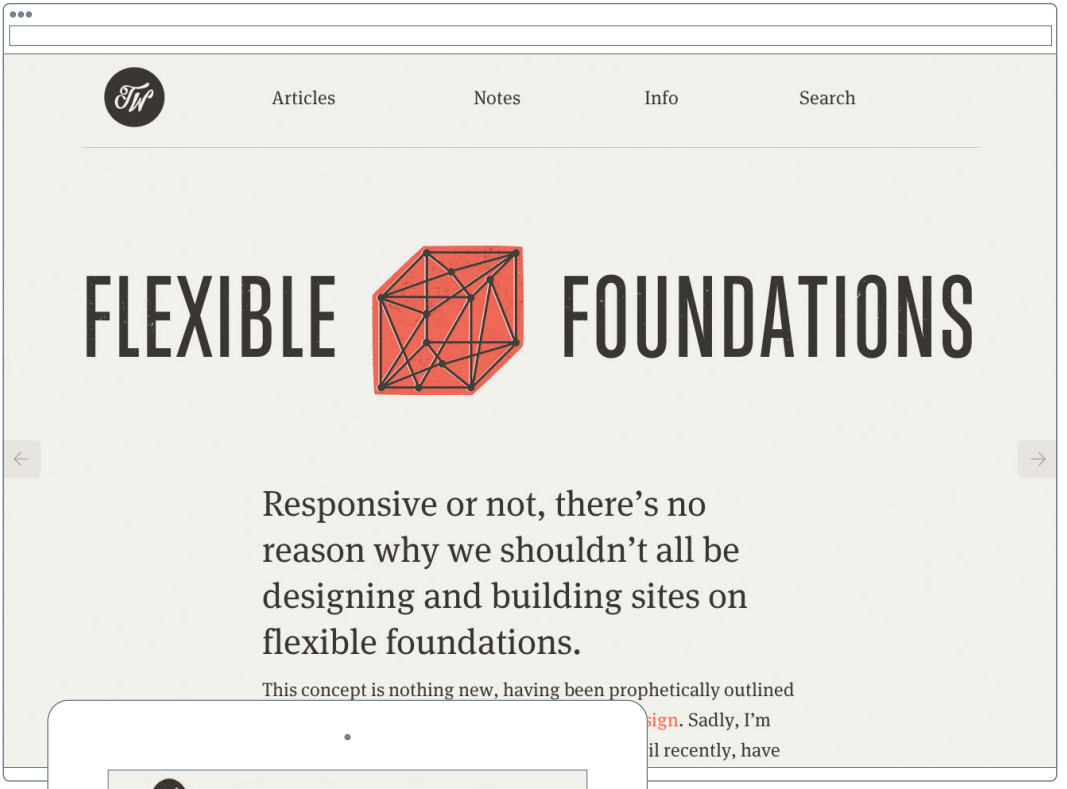
READ MORE >> Joni Korpi, "Less Framework 4," *Less Framework*, http://www.lessframework.com.

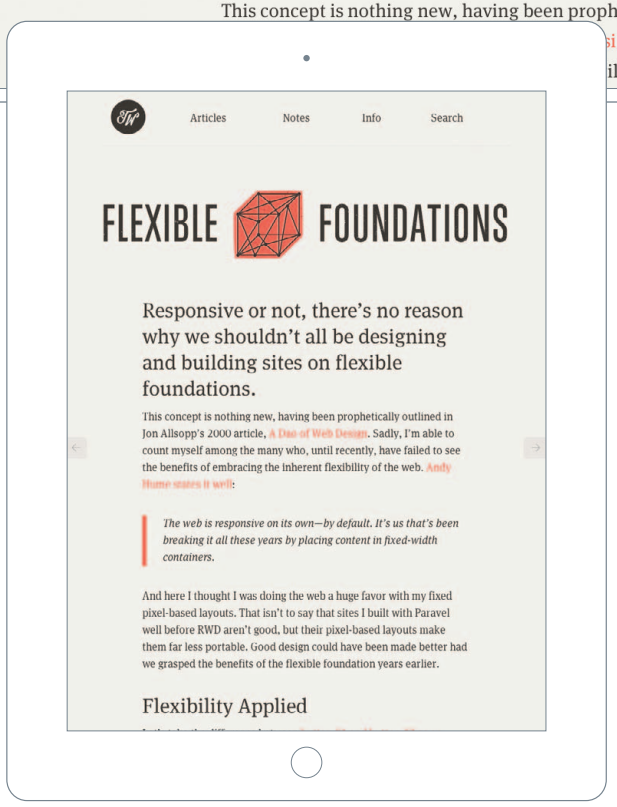
This is the @media query

This is its closing tag

```
/*      Tablet Layout: 768px.
        Gutters: 24px.
        Outer margins: 28px.
        Inherits styles from: Default Layout.
-------------------------------------------------------------------
cols    1     2     3     4     5     6     7     8
px      68    160   252   344   436   528   620   712   */

@media only screen and (min-width: 768px) and (max-width: 991px) {

    body {

        width: 712px;
        margin: auto;
        padding: 48px 28px 60px;

    }

    .about{

    padding-left: .25em;
    padding-right: .25em;
    line-height: 140%;
    width:70%;
    margin-left: auto;
    margin-right: auto;
}

}
```

A designer using this adaptive layout system doesn't need to create a separate, stand-alone website to be viewed on a tablet. Instead, a single website displays its content in different configurations for tablet, mobile, and desktop devices.





RESPONSIVE WEBSITES A site with large images typically forces the user to zoom in when the same content appears on a smaller screen. Here the designer used a combination of liquid and adaptive methods to enable pleasant reading across devices. The mobile version uses one column instead of two. Design: Trent Walton, "Flexible Foundations," 2012, http://trentwalton.com/2013/01/07/flexible-foundations/.

TYPE SIZE

Once you have a well-planned grid in hand, you are ready to place elements within it. Crafting a reading platform on the web begins with finding the right size for your primary type. A size that you love in print will likely look too small on a desktop or laptop screen. People tend to hold a book or magazine fairly close to their faces, while they sit farther away from computer screens. Comfortable reading on a desktop or laptop screen thus demands larger sizes than print. The fuzziness of anti-aliased and backlit characters also calls for larger sizes.

You might be surprised by just how big body text needs to be before it works well in a standard web browser. A good starting point for Georgia is 17pt, which is the default size of most browsers (i.e., 100 percent or 1em). From there you can go up or down, depending on what you are trying to do. This text size might seem extreme if you compare a book and screen side by side at the same distance from your face, but if you look at these type sizes in relation to the reading environment, they start to even out.

There are four units for measuring type on screen. Pixels and points are absolute elements set by the browser. Employing these units can override users' browser settings, which can have unintended outcomes when users alter their own preferences as well. Percentages and ems are scalable, nonfixed units, determined in relation to the browser's current point size; these units are preferable because they allow end users to adjust their own browser preferences without breaking the design of the site.

EM, PIXEL, POINT, OR PERCENT? Note that an intended scale shift can fail to render when the initial font size is set with absolute units (pixels or points).

EMS (em)

The em is a scalable unit that is equal to the browser's font size. If the font size is 14px, 1em is 14px.

PIXELS (px)

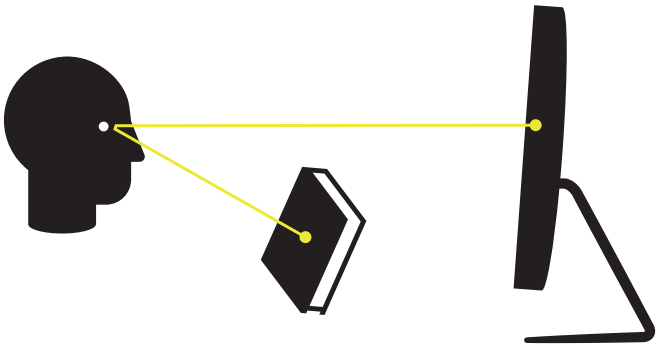
Pixels are fixed units used in screen media. One pixel is equal to one pixel unit on the screen.

POINTS (pt)

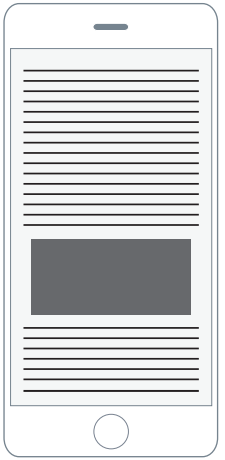
Points are traditionally used in print media. One point is equal to 1/72 of an inch.

PERCENT (%)

The percent unit functions similar to the em unit. If the current font size is 14px, then 100 percent is 14px (and 120 percent is 16.8px).



COMPARE IN PERSPECTIVE Computers generally sit farther from the user's face than handheld reading devices such as books or phones. Letterforms appear fuzzy because of low pixel densities and backlighting. Don't compound those issues by making the type too small.



SMALL SCREENS AFFORD SMALLER TYPE Type on mobile devices can be smaller than on a desktop, because users can adjust the distance between the screens and their faces to achieve the best type size for them.

21 PX

d is not a camera. S
see, or, as Anaïs N
re, we see them as

that our perceptior
of what we expect
Reason is based on

"Up to now it has
must conform to th
whether we do not

11 PX

nediately after the release of the new
dia rapidly reacted. "Great," "bold," "
ne of the initial glowing endorsements
set (EJ). However, what has been la
ch is a masterclass of ambiguity and
onsequential buzzwords and the stuc

he essay "On the Uselessness of D
kamura alerts readers to the naiveté
cription was no exception, with Walt
production" (1936) and Raymond Wil
g vaguely invoked and loosely synt
a quick prop to their argument.

kamura also points out the need for c
ciplines' discourses and especially fr
set has at least the ambition to situat
icality to their practice. But they stum
olete and of questionable relevance.

HOW SMALL IS TOO SMALL? The standard size for screen type used to hover around 12px, although even smaller type sizes were not unheard of. Now an increasing number of designers are using larger type, beginning at 14px on up to 18 or even 21px. These larger sizes make reading more pleasant and easy. The type on the right is too small (at 11px) for comfortable reading, a problem for a prominent design blog.

READ MORE >> Oliver Reichenstein, "Responsive Typography: The Basics," *Information Architects*, June 1, 2012, http://ia.net/blog/responsive-typography-the-basics/.

READ MORE >> Jan Constantin, "Typographic Design Patterns and Current Practices (2013 Edition)," *Smashing Magazine*, May 17, 2013, http://www.smashingmagazine.com/2013/05/17/typographic-design-patterns-practices-case-study-2013/.

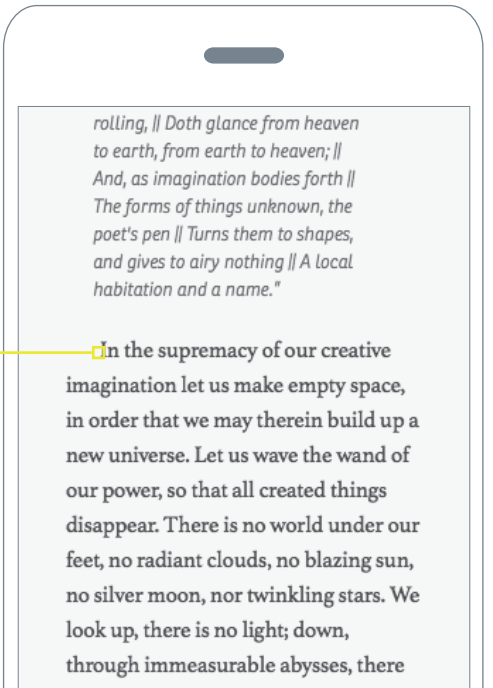
PARAGRAPH BLOCKS

In CSS the paragraph element contains the main text and should be the basis for the rest of the layout. Paragraph blocks are defined by their width, alignment, and spacing. Select an appropriate width based on such factors as content type, font choice, type size, the distance of the user from the screen, and the underlying column grid. It is widely accepted that forty-five to seventy-five characters per line makes for a comfortable measure. You don't want the user to get tired by the end of the line or have too little time before jumping down to the next one. Finding this golden width will require trial and error. It often helps to take a break, step back, and ask another set of eyes to test and evaluate your blocks of text.

Paragraphs that are meant to be read in succession should be treated as parts of a whole. Because paragraphs are block elements, HTML automatically inserts extra space after them. Therefore web texts tend to be chopped up with inter-paragraph spacing. Try indenting the first line and removing that pesky extra line space. Indented paragraphs have been classic fare in print typography since the seventeenth century; the efficient and elegant indent saves space and preserves the compact unity of running text.

PARAGRAPH INDENT Use the text-indent property in CSS to indent the first line of a paragraph. You will also need to remove extra line spacing by setting the top margin to 0. Note that the text-indent property will affect *all* paragraphs. Designers and editors generally prefer to avoid indenting the first paragraph in a document; you can achieve this with a sibling selector (+).

```
p + p {
text-indent:1.5em;
margin-top:0;
}
```



READ MORE >> Richard Rutter, Section 2.3.2. in *The Elements of Typographic Style Applied to the Web: A Practical Guide to Web Typography*, http://webtypography.net/Rhythm_and_Proportion/Blocks_and_Paragraphs/2.3.2/.

iA

3. APRIL 2012

Improving the Digital Reading Experience

BY OLIVER REICHENSTEIN

There is a difference between checking Google Maps on your iPhone and asking a stranger for directions. It matters whether you listened to Beethoven's 9th in a concert hall or in your living room, whether it plays from a vinyl LP or from your iPod. King Lear is not one and the same experience when seen at the theatre, studied on paper, or scanned on your Kindle.

It is not always easy to discern digital and analog experiences. A lot of seemingly analog devices have digital technology built in without us realizing it (tape decks, ovens, cars), and, as you might have noticed, more and more digital devices try to look and feel like analog tools.

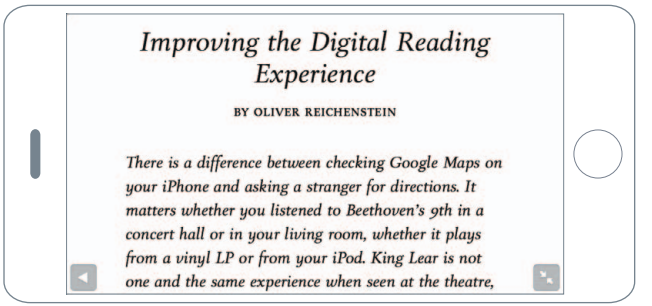
The technology below the surface — whether it is manual, mechanical, automatic or digital — is not what matters. What matters is not the schematic of a device, but what we think, do, and feel when using it. What makes a CD digital is that we do not need to turn it over half way through, that it can play single songs precisely, that it can play the songs in random order, that when it's scratched it sounds like a techno track and not like something that has a scratch, and that we do not know or care how it works. Whether we call something "digital" or "analog" depends more on the way we perceive, understand and use a device than the ghost in its shell.

Whether you read text on paper, a cathode ray tube monitor, an LCD screen, or e-ink, whether you read in indirect or direct light, high or low resolution, and whether the text is at arm's length or not is one side of the equation. The other side is defined by you as the reader: Where are you, what are your motivations and what are your goals?

To optimize the reading experience, no matter whether in print or on the screen, we need to understand the humane function of a computer, and examine the differences between digital and analog reading experiences. Then we can think about ways to improve the experience to get better results for the reader.

I will try to sketch out how to do this in the following 14 minutes of text.

FOR GOOD MEASURE The line lengths on the Information Architects website have been designed for comfortable reading. On a desktop browser, users see around sixty-five characters per line. The type size is reduced on the mobile version to fit roughly fifty-four characters per line. Both numbers fall within the desired range of forty-five to seventy-five characters. Design: Information Architects, 2012.



COLUMN ALIGNMENT

Aligning text in justified, centered, or ragged columns reflects the basic architecture of typography. Choose an alignment style that suits the structure of your website and the character of the individual content elements. Each mode of alignment comes with advantages and disadvantages. Centered type is graceful and elegant but can appear old-fashioned; in addition, it can be difficult to align with other elements. However, centered type can work well within the bounded, defined space of a button or menu bar. Justified type will have ugly gaps if it's not hyphenated correctly, and hyphenation can be hard to handle online.

Owing to the flexible, customizable character of web text, designers can't spend endless hours adjusting the rag along the edge of a column or creating a justified block with no rivers or holes. Flush-left alignment is therefore the most common text setting on the web (whereas justified remains the dominant setting for text in print). Flush-left text works well in most extended reading environments, especially where columns are quite narrow, as on a news site. The ragged edge opens up space between the columns because most lines fall short of the full measure, resulting in a more spacious overall composition.

ALIGNMENT Below are the four basic modes of alignment. The first two, left and justify, are the most common for long reading. Notice the awkward word spaces that occur with justified text in a narrow measure. Right- and center-aligned text should be used sparingly and with purpose.

```
p {
text-align:left
}
```

In left-aligned text, the left edge is hard while the right edge is soft. Word spaces do not fluctuate, so there are never big holes inside the lines of text. This format respects the flow of language rather than submitting to the law of the box. It creates a spacious and organic flow.

```
p {
text-align:justify
}
```

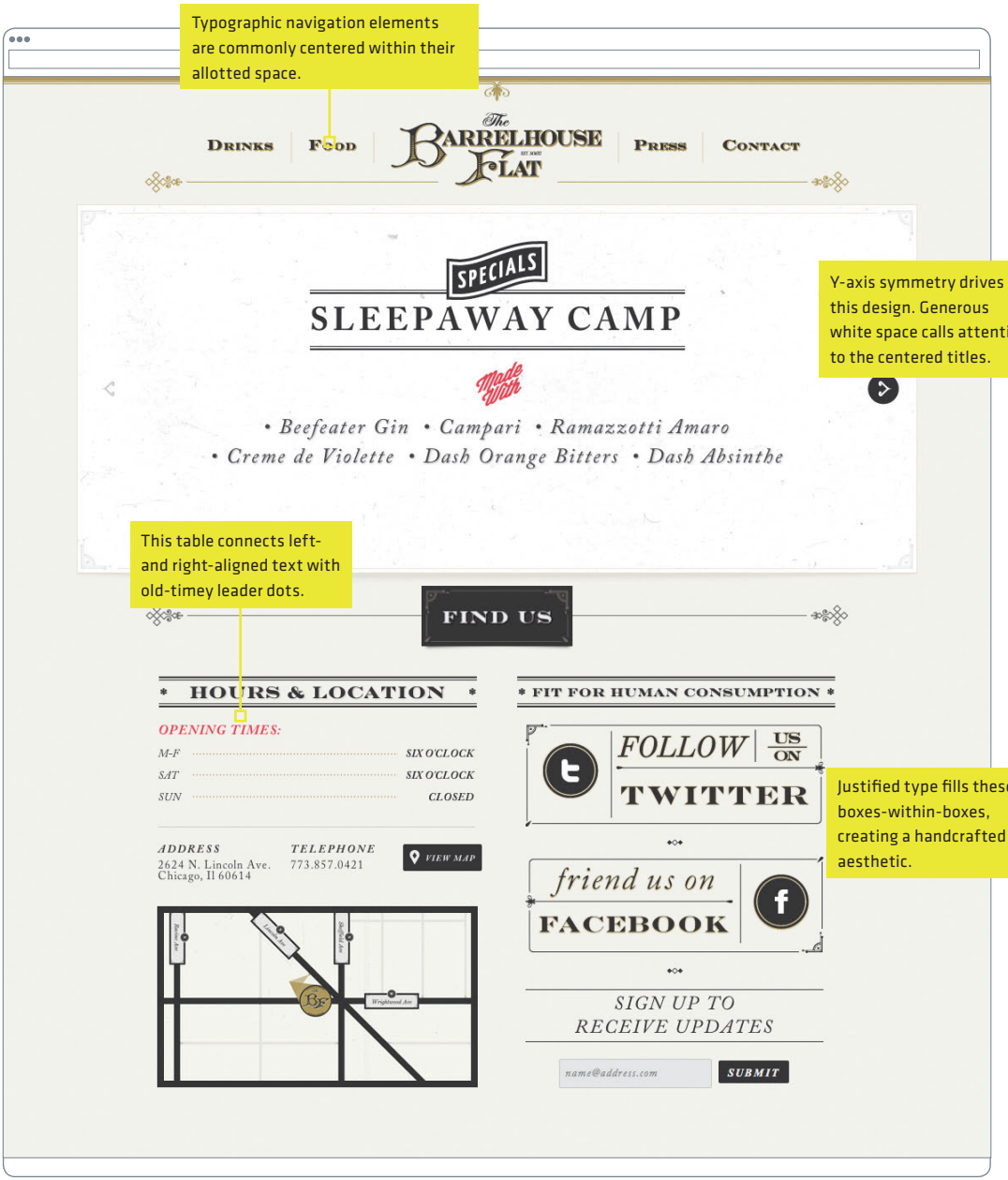
Justified text has even edges on both the left and right sides of the column. It makes efficient use of space and creates a clean, compact shape for your paragraphs. Ugly gaps can occur, however, when the line length is too short in relation to the size of the type used.

```
p {
text-align:right
}
```

Right-aligned text follows the logic of the more familiar left alignment. It's commonly believed that text set in this way is difficult to read. Its use can be quite successful in short pieces of text, such as captions or pull quotes, adding an element of motion and surprise to a composition.

```
p {
text-align:center
}
```

Centered text is symmetrical, like the facade of a classical building. Centered lines can be broken to emphasize a key phrase or a new thought. Breaking lines in this manner is called breaking for sense.



ALL AT ONCE You will not often find occasion to use all four alignment modes in one website, let alone on a single page. This designer has created a lavish typographic style by paying close attention to the balance of the whole as well as to individual elements. Design: We Can't Stop Thinking, 2012, http://wcst.com/.

SPACE BETWEEN LINES

Typically websites are built to scroll vertically; the length of each page varies depending on the amount of content on it. Line spacing, also called leading or line-height, shapes the look of individual paragraphs and the page's overall style and structure. Designers use looser text to create a relaxed and inviting texture; they use tighter spacing to convey a sense of urgency or abundance while maximizing available real estate.

Designers also use vertical spacing to create relationships among heads, subheads, block quotes, and paragraphs. Breaks between elements should be apparent without leaving ugly and wasteful holes. A well-designed webpage should show a balance between white space and denser fields of content. Just as with type size, leading should be set as a percentage, not as an absolute value. Thus, when users change the type size preference in their browsers, the line-height will change, too.

TYPOGRAPHIC COLOR The interplay between letterforms and the space around them creates what designers call the "color" of the text. While the default line spacing in print is 120 percent of the cap height, line spacing set at 150 percent or more is common on screen. Notice that at 100 percent the block is too crowded, while at 200 percent the lines of text drift apart.

```
p {
line-height: 100%
}
```

A typographic hierarchy expresses the organization of content, emphasizing some elements and subordinating others. A visual hierarchy helps readers scan a text, knowing where to enter and exit and how to pick and choose among its offerings. Each level of the hierarchy should be signaled by separate cues, applied consistently across the website. These can be spatial or graphic. Infinite variations are possible.

```
p {
line-height: 150%
}
```

A typographic hierarchy expresses the organization of content, emphasizing some elements and subordinating others. A visual hierarchy helps readers scan a text, knowing where to enter and exit and how to pick and choose among its offerings. Each level of the hierarchy should be signaled by separate cues, applied consistently across the website. These can be spatial or graphic. Infinite variations are possible.

```
p {
line-height: 200%
}
```

A typographic hierarchy expresses the organization of content, emphasizing some elements and subordinating others. A visual hierarchy helps readers scan a text, knowing where to enter and exit and how to pick and choose among its offerings. Each level of the hierarchy should be signaled by separate cues, applied consistently across the website.

Baselines determine the rhythm of a printed page; not so on the web.

Print-based typography is dominated by the baseline, an invisible ledge upon which the characters sit; in print, line spacing is measured from baseline to baseline. Print designers sometimes use a baseline grid to anchor elements such as body, heads, and captions along a common rhythm.

In web design, line-height is created by adding even space above and below the cap height. Web designers often select line-heights that have elegant mathematical relationships to one another, such as nine, eighteen, and twenty-four. Creating a strict baseline grid is daunting enough in print; in web design it is even more difficult. Many well-structured webpages have just a few strong horizontal hanging points.

Headline 24/36px

Subhead text 16/18px … Transition from head to body

Paragraph text 12/18px …

On the web, the paragraph is the basic building block of body text. The space between lines consists of space above and below lines of text.

HEADLINES IN ALL CAPS CAN BE SET WITH TIGHTER LINE SPACING

```
h1 {
font-size: 24px;
margin-bottom: 18px;
}

h2 {
font-size: 16px;
line-height: 18px;
margin-bottom: 18px;
}

p {
font-size: 12px;
line-height: 18px;
}
```

SPACE ABOVE AND BELOW In CSS, line-height is distributed equally above and below the cap height. Thus a 12px font with 18px line-height will have 3px above and below the characters.

SET IT SOLID Designers create compact, dramatic headlines by minimizing the space between lines. Since uppercase letters have no descenders, they don't require as much breathing space between lines. It is not uncommon to set all-caps headlines "solid" (22px font with 22px line-height). Even negative line spacing can be used for maximum density.

SPACE BETWEEN CHARACTERS

Designers adjust the spaces between characters through kerning, letter-spacing, and word spacing. Kerning deals with individual pairs of glyphs. Typeface designers create kerning tables to achieve visually consistent spacing between problematic letter pairs, such as *Ty* and *We*. Most digital fonts have built-in kerning tables, so they shouldn't need manual kerning. You might find exceptions when setting large headers, which magnify poor spacing. There is currently no direct kerning property in HTML or CSS, but its effects can be replicated by utilizing a neutral inline element such as a span.

Letter spacing (also called tracking) refers to the space between characters in a line or block of text. Designers often open up the letter-spacing in strings of caps or small caps, or when using knocked-out text. Conversely, text in larger sizes may benefit from negative spacing; as type gets bigger, the spaces between letters get larger, too, which can create an overly loose effect.

Word spacing refers to the blank character generated by the space bar; this rarely needs adjusting, but designers may fiddle with it at large sizes or with knocked-out text. CSS employs a default word space of .25 em; any additional value is added to that base and does not alter the encoded font file.

LETTER SPACING AND KERNING These two modes of inter-character spacing operate quite differently: Letter spacing is global ("well alright"), while kerning is local ("Web Type").

WELL ALRIGHT

```
h1 {
letter-spacing:0;
}
```

WELL ALRIGHT

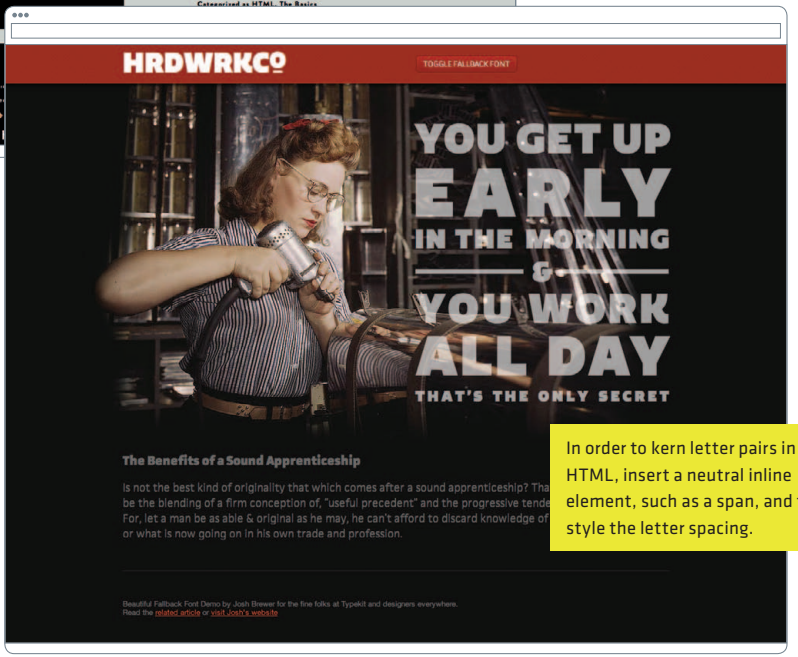
```
h2 {
letter-spacing:0.1em;
}
```

Well alright already
Well alright already

Web Type
Web Type

```
.kern {
letter-spacing:-0.1em
}
...
<span class="kern">W</span>eb
<span class="kern">T</span>ype
```

TRACKING CAPITALS
Spacing out capital letters can help them become the stoic forms they were meant to be. Try opening up the letter spacing on a line of capitals in head and subhead texts. Design: Jessica Hische and Russ Maschmeyer, 2012.



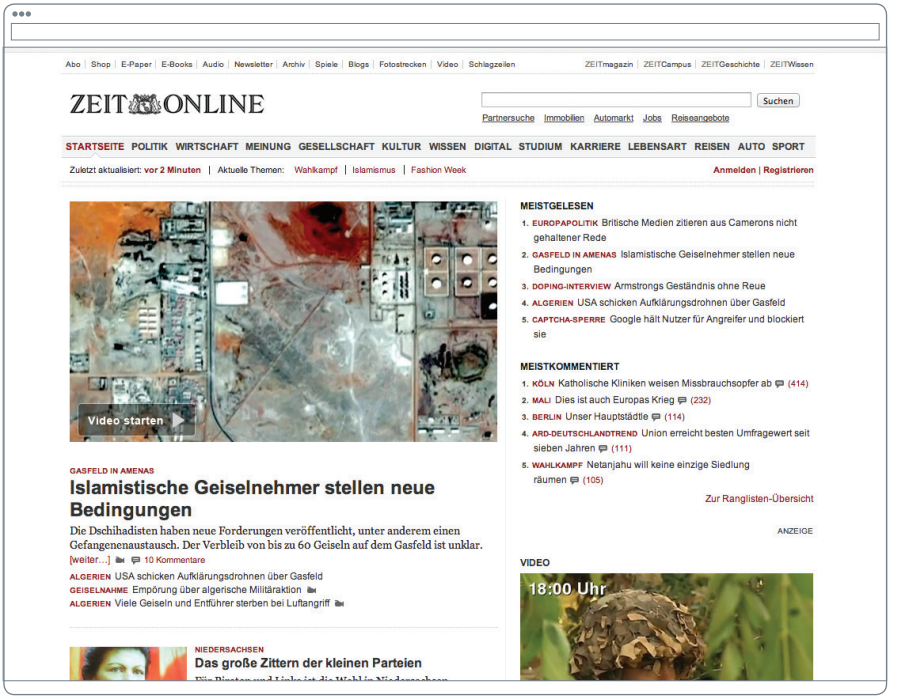
KERNING HEADLINES
Finesse headline text by kerning troublesome pairs. The space between *A* and *Y* improves with negative kerning. Design: Josh Brewer, 2011. Image: Library of Congress Prints and Photographs Division.

In order to kern letter pairs in HTML, insert a neutral inline element, such as a span, and then style the letter spacing.

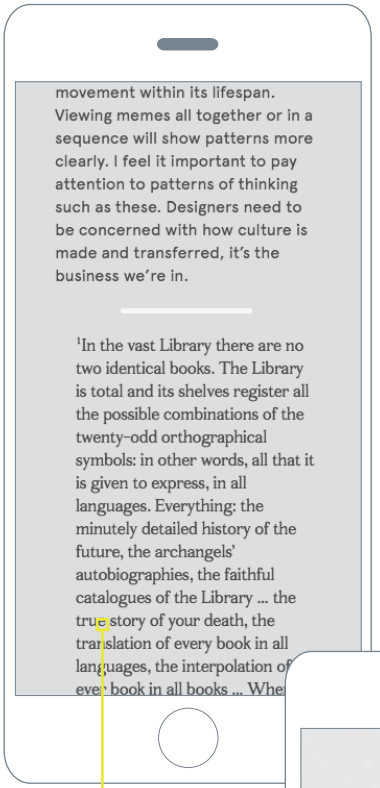
HIERARCHY

The plasticity of the web calls for a well-planned hierarchical system. Content is often created by multiple users, authors, and editors, making it even more important to emphasize key elements through typographic cues while subordinating others. Shifts in scale, weight, and color, or the use of a complementary font or icon, are ways to express a text's hierarchy, the ranked structure of parts within the whole. Each level should be signaled by one or more cues that are applied consistently throughout the site.

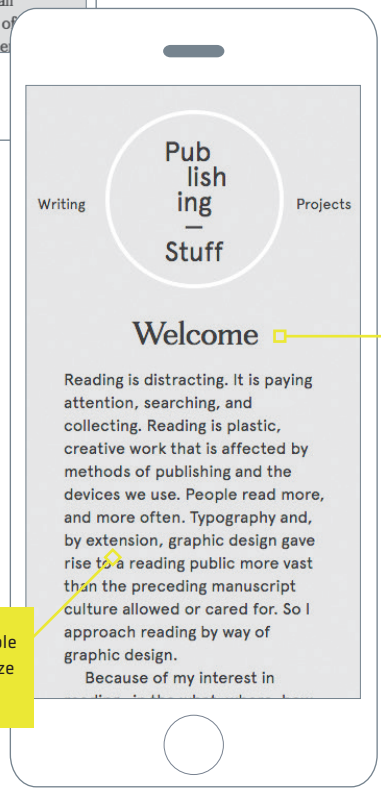
Any visual hierarchy should be built in a way that gives nontraditional users equal access. Choose structural elements instead of purely visual ones, using tags such as <aside>, <article>, and <caption> that have more semantic meaning than the generic , which describes a container without any structural relationship to the document.



HEADLINE NEWS The complex content of this news site is organized through weight, size, and color; it is framed with white space to allow pause and breathing room. Design: Information Architects, 2009.




```
body {
    font:125%/140% "Apercu Regular", sans-serif;
    font-style:normal;
    font-weight:normal;
    padding:1em;
}

h1 {
    font-size:150%;
    line-height:140%;
    font-family:"Fortescue Regular", serif;
    text-align:center;
}

blockquote {
    font-family:"Fortescue Regular", serif;
    font-size:100%;
    margin:1em 0 0 1em;
}
```



A different font sets block quotes apart from the main text.

The h1 header tag creates a simple scale change that sets a clear visual anchor for the text.

The body is set with a comfortable line-height and generous font size for reading.

HIERARCHY This system is based on just a few purposeful shifts. The designer uses two complementary typefaces, indents, and size changes to create a bookish layout for comfortable reading. Design: Young Sun Compton, 2012.

TYPOGRAPHIC HTML TAGS

After establishing an overall typographic system (typeface, grid, column width, vertical and horizontal spacing), designers use simple HTML tags to style text inline—marking differences inside a larger element such as a paragraph. These tags fall into two types: physical and logical. Physical tags simply tell the browser to make changes in the display of text, such as bold, italic, or underline. Logical tags may display similarly, but they are used to impart meaning to the text they enclose. Using the tag to italicize text (for emphasis) rather than the physical <i> tag (for style) will communicate a semantic difference that can be read by text-only, text-to-speech, or Braille output devices. Logical tags greatly improve the accessibility of a website, extending the reach of your content.

ONLINE RÉSUMÉ The complex hierarchical content of résumés and CVs makes them challenging to code. A smart use of HTML markup with CSS will yield good results. Design: Aviv Lichter, 2012.

READ MORE >> Stefan Mischook, "Logical vs. Inline Tags," *KillerSites*, accessed July 11, 2013. http://www.killersites.com/articles/articles_logicalvsInlinetags.htm.

LOGICAL/SEMANTIC TAGS By using logical tags you are communicating to the browser that the text has special meaning. Search engines use these tags to analyze content. Tags compiled by Aviv Lichter.

`<h1>Title</h1> <h2>Title</h2>`	h1 Title h2 Title
`<h3>Title</h3> <h4>Title</h4>`	h3 Title h4 Title
`<h5>Title</h5> <h6>Title</h6>`	h5 Title h6 Title
`<em>Emphasized text</em>`	*Emphasized text*
`This text is <cite>cited</cite>`	This text is cited
`<strong>Strong text</strong>`	**Strong text**
`<dfn>Definition term</dfn>`	*Definition term*
`This is <sup>superscript</sup> text`	This is Superscript text
`This is <sub>subscript</sub> text`	This is Subscript text
`<s>This text is no longer correct</s>`	~~This text is no longer correct~~
`This is <del>wrong</del>.`	This is ~~wrong~~.
`<ins>This is</ins> the correct text`	This is the correct text
`This <q>text</q> is a quote`	This “text” is a quote

PHYSICAL/PRESENTATIONAL TAGS Physical tags provide specific rendering instructions. These tags tell your browser to display text a certain way.

`<b>Bold text</b>`	**Bold Text**
`<big>Big text</big>`	Big Text
`<i>Italic text</i>`	*Italic text*
`<small>Small text</small>`	Small Text
`<hr>`	

SPECIAL CHARACTERS

A refined typographic system consists of more than a well-chosen palette of fonts and reader-friendly structural cues. Many professionally designed typefaces include glyphs that add nuance and refinement to the presentation of text. Browsers are increasingly able to support expanded features that for centuries have been markers of fine typography in print. Small caps, whose height matches the body of the lowercase *x*, look elegant and discreet within a paragraph of text; they are drawn with squarish proportions and a meaty line stroke, which makes them attractive for use as heads, subheads, bylines, and more. Old-style or nonlining numerals have ascenders and descenders, just like lowercase letters; they have a modest visual footprint within a body of text, whereas conventional lining numerals (which have the height of capitals) can sometimes tower over their surroundings. Elements such as small caps and old-style numerals as well as kerning pairs, ligatures, and alternate characters, when used properly, separate the typographer from the typist.

The OpenType font format packs all of these desirable features into a single font file. OpenType fonts often have the suffix Pro (Adobe Garamond Pro) or the prefix or suffix OT or OTF (Tisa OT). Access to these elements has been limited for web designers until recently. Now the CSS font variant or font-feature-settings properties allow designers to make use of the full range of features available with an OpenType font and style their text as carefully on the web as in print.

KERNING PAIRS AND LIGATURES Some modern browsers handle kerning pairs and ligatures by using the text-rendering declaration. NOTE: Applying this to large blocks of text can extend load times on slower devices.

first floor

```
text-rendering:normal;
```

first floor

```
text-rendering:optimizeLegibility;
```

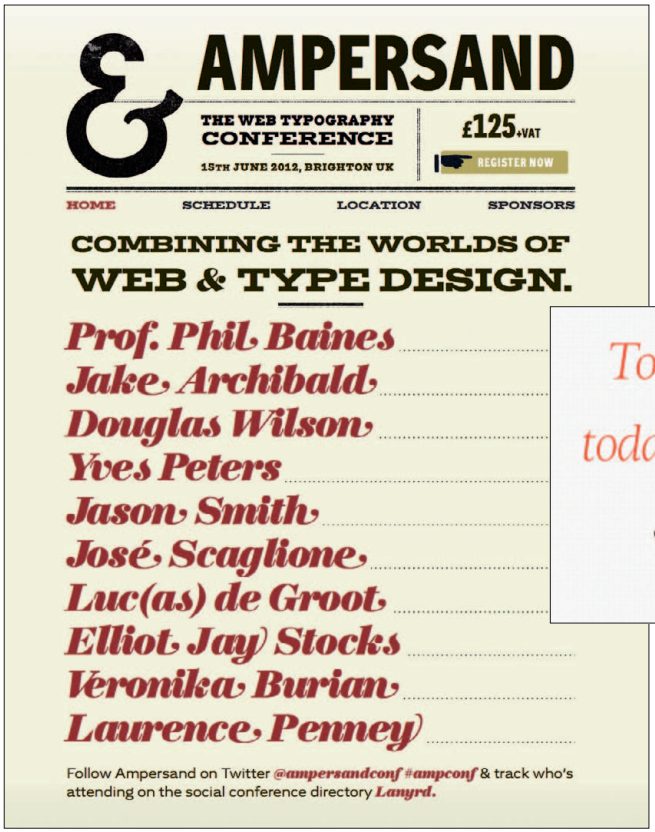
SMALL CAPS AND OLD-STYLE NUMERALS Using the font variant property allows designers to enrich web type with small caps and old-style numerals.

small CAPS

```
font-variant:small-caps;
```

123 456

```
font-variant-numeric:oldstyle-nums;
```



AN EVOLVING STANDARD CSS3 includes two new properties that give designers access to the full range of typographic detail available in OpenType fonts. The text above flaunts the bravado of the typographic swash, as seen in the letterforms at the end of each word in "Jason Smith" and "José Scaglione." Such alternate characters can now be used in web text with the help of the font-feature-settings CSS property. Design: Elliot Jay Stocks, 2012.

FINE TYPOGRAPHIC DETAILS Small caps, old-style numerals, and ligatures are no longer the exclusive domain of print design. Design: Elliot Jay Stocks, 2012. Headline typeface: Magneta, designed by Neil Summerour, 2009.

These SMALL CAPS are starving!

PSEUDO SMALL CAPS True small caps have the same stroke weight as the upper- and lowercase characters around them. Software creates pseudo small caps by shrinking down normal caps to the approximate x-height; the resulting letters look starved and sickly because their weights don't match that of their brethren.

COMMON OPENTYPE FEATURES Below are some OpenType features and their font-feature-settings values:

Common ligatures	`"liga"`
Discretionary ligatures	`"dlig"`
Small caps	`"smcp"`
Lining numerals	`"lnum"`
Old-style numerals	`"onum"`

READ MORE >> The World Wide Web Consortium, "CSS Fonts Module Level 3," *W3C*, http://dev.w3.org/csswg/css-fonts/.

affluent acting

```
font-feature-settings: normal;
```

affluent acting

```
font-feature-settings: "liga" 1, "dlig" 1;
```

SPECIAL CHARACTERS

For the typographic purist, HTML is a dangerous breeding ground of debauchery. This handy guide will help you keep your on-screen typographics up to snuff with the proper use of apostrophes, quotation marks, and dashes. Such characters are telltale signs of a well-considered composition, whether on screen or in print. Use these HTML entities or their Unicode equivalents in place of the offending characters in your HTML source code.

APOSTROPHES signal contraction or possession. To use the proper "curly" ones on a webpage, you need to insert the Unicode character *’* in place of the apostrophe.

It's a dog's life.

```
<p>It&#8217;s a dog&#8217;s life</p>
```

It's a dog's life.

```
<p>It's a dog's life</p>
```

DASHES OR HYPHENS? Em dashes (—), en dashes (–), and hyphens (-) each serve to connect or separate elements in different circumstances. Em dashes express a break in the flow of the sentence. En dashes connect two numbers as a range of information. Hyphens connect words or elements (run-of-the-mill).

Em Dash—A Love Affair

```
<p>Em Dash&mdash;A Love Affair</p>
```

En Dash, aged 5–10 years

```
<p>En Dash, aged 5&ndash;10 years</p>
```

HTML CHARACTER ENTITIES Use character entities to implement reserved characters or glyphs that cannot be entered with the keyboard. For example, the greater/less than signs cannot be used in text because they would be mistaken for markup.

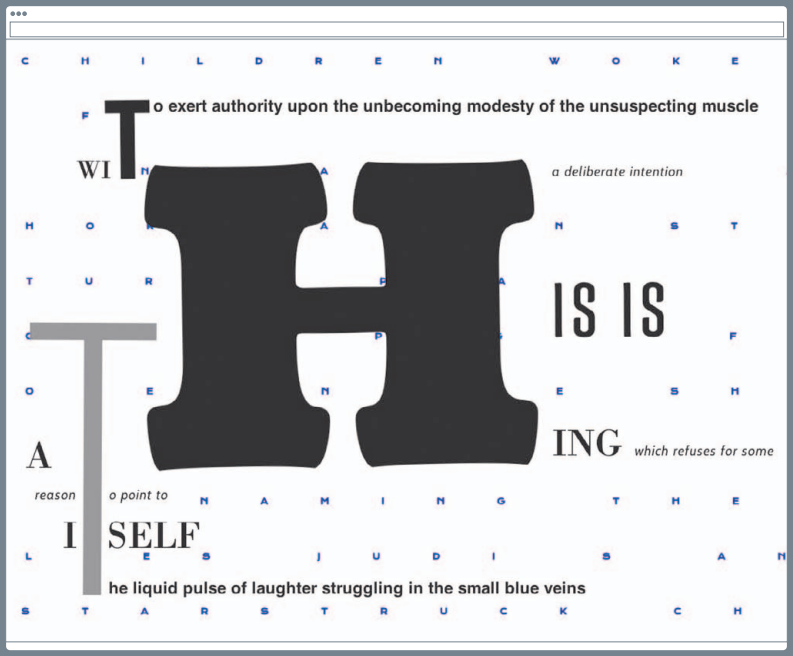
<	< less than	’	’ apostrophe
>	> greater than	‘	‘ left single quote
	nonbreaking space	’	’ right single quote
‑	‑ nonbreaking hyphen	“	“ left double quote
–	– en dash	”	” right double quote
—	— em dash	&	& ampersand
°	° degree	•	• bullet
§	§ section mark	…	… ellipsis
©	© copyright	¿	¿ inverted question
®	® registered copyright	&iecxl;	¡ inverted exclamation
™	™ trademark	¹	¹ superscript
€	€ euro	²	² superscript
¢	¢ cent	³	³ superscript
¶	¶ pilcrow	º	º masculine ordinal
†	† dagger	ª	ª feminine ordinal
‡	‡ double dagger	¼	¼ quarter fraction
	en space	½	½ half fraction
	em space	¾	¾ three-quarters fraction
	figure space	×	× multiplication
	punctuation space	−	− subtraction
	thin space	±	± plus-or-minus
	hair space	¬	¬ negation

IN THE CLASSROOM: THE HTML POSTER

WITH KRISTIAN BJØRNARD

A traditional print poster aims to attract the eye and promote a product, service, or event. Webpages can operate in the same way. Often the home page of a start-up or new institution functions as a digital poster that links users to other content. The designer Kristian Bjørnard asked the students in his Motion Typography course at MICA to design a poster using only HTML, CSS, and some JavaScript as needed. Students used the @font-face rule to bring in typefaces and built all graphic elements entirely with CSS3 transformations. Some students chose to make homages to design history, re-creating renowned compositions from the history of print within the constrained canvas of the web. They also sought to incorporate motion and interactivity into their digital posters. Bjørnard's project helps designers become more comfortable with the process of turning static designs created in Photoshop or Illustrator into code or to construct compositions solely in the browser, with no assistance from design software.

CALL AND RESPONSE This digital poster starts by confronting the viewer with a description of social change and the question, "Why?" The user clicks to reveal the answer, which appears in a bold teal overlay. Design: Amanda Allen, 2013.



A CODIFIED PRINT This HTML poster is based on a letterpress print by Johanna Drucker (*The Word Made Flesh*, Druckwerk, 1989). The small background letters cycle through a series of colors while the large letters subtly rotate in the foreground. Design: Jackie Littman, 2013.

AT AN ANGLE This dramatic composition for a fictional design exhibition references the angular compositions of designer Tarek Atrissi's *Chess, the Musical*, 2003. HTML design: Nour Tabet, 2013.

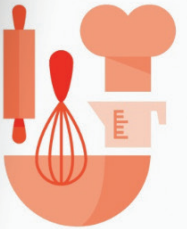
back and side profile. We get updates on the sculpt and weig
from there. Honestly, Super7's sculptors are so good, we ra
knock it out of the park each time.

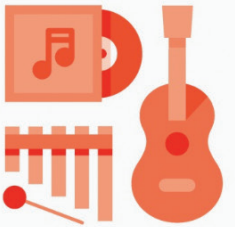
**Are you interested in creating design products ou
toys provide a secondary income?**
Absolutely. Personal projects allow us to experimer
client work. It's cyclical in that way, and we value
posters, prints and toys usually goes right back i
That's just part of the fun.

**The Sasquatch festival posters and toys
partnership with Live Nation came to b**
Thanks! The partnership is actually with
He's a good friend and tends to place a
We're very thankful for our relationsh
each year. We had talked about creat
collector, throughout the years. So
We started working on character
for toy production.

**What is the biggest risk yo
favorite failure?**
I think the biggest risk — a
heels of a successful one.
our faces? When we had
hungry and ready to t
if the company failed
a regular paycheck
are interested in o

My favorite fa
door for fear w
too much wor





03 DIGITAL PUBLISHING

YOUNG SUN COMPTON

Digital publishing has transformed readers into users who *interact* with content, responding to it in nonlinear, sometimes unsanctioned ways. Reading has never been a singular experience. It can be fast or slow, focused or distracted, public or private, print or digital. Today's readers seek control over not just what they read, but how, when, where, and in what medium.

The future of books is social. Designer Craig Mod, a leading commentator on digital reading, has described how books have changed from being fixed objects to open systems. Networked tools allow consumers to rate, review, and annotate texts and to search across diverse bodies of material. Today's emerging platforms allow writers to communicate with readers throughout the publishing process. Once a book is released, readers continue to influence its shape and content through sharing, excerpting, highlighting, and searching. Blogs are becoming books, and readers are "unlocking" authored texts by archiving and rearranging digital content.

Of course, books have always been unstable. The medieval monks created one-of-a-kind "copies" that were riddled with errors. Gutenberg's typographic revolution sought to manufacture the uniform, mass-produced text, yet even after the rise of the modern publishing industry, the book remained a fluid thing. Designer Ben Fry's project *The Complete Work of Charles Darwin Online* visualizes the many changes made to *The Origin of Species* during Darwin's lifetime; by comparing the gaps and additions from one text to another, Fry revealed, for example, that the infamous phrase "survival of the fittest" didn't appear until the fifth edition.

The mutable book—and its restless, rapacious reader—is here to stay. Designers of digital texts draw on many areas of expertise, from page layout, typography, and user experience to product design and software engineering, to create books that respond in different ways to the demands of new platforms and new desires.

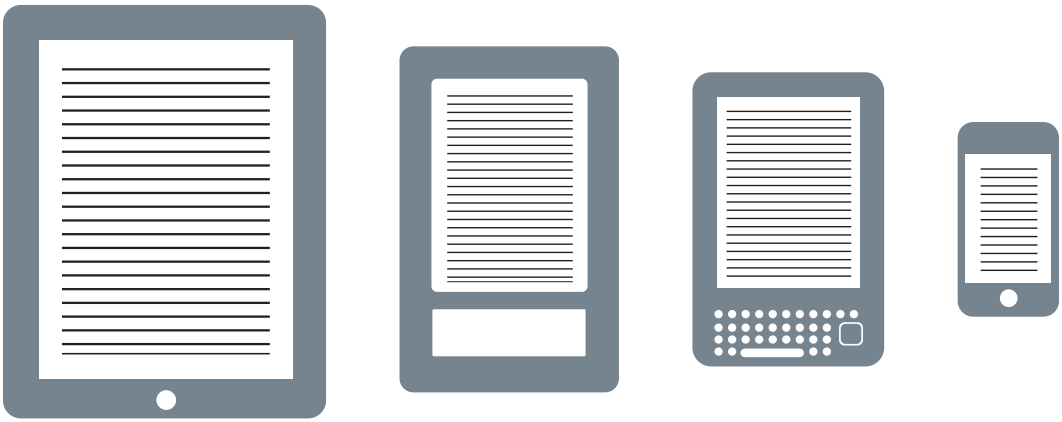
CONVERSATIONS WITH DESIGN ENTREPRENEURS Designers Jessica Karle Heltzel and Tim Hoover released their book *Kern and Burn*, which grew from writing online, as a PDF, EPUB, and MOBI in addition to the printed version.

READ MORE >> Craig Mod, "Post-Artifact Books & Publishing," June 2011, http://craigmod.com/journal/post_artifact/. Ben Fry, "On the Origin of Species: The Preservation of Favoured Traces," 2009, http://benfry.com/traces/.

LINEAR READING

An ePub is a standard format for representing and encoding digital content in a single packaged file that can be distributed and sold electronically. Although the popularity of ePubs is tied to the growing use of iPads, Kindles, and other devices, ePubs can be read with numerous reader apps created for desktops and mobile phones. In addition to ePubs, digital publications can take the form of webpages (viewable in any web browser), PDFs (viewable with Adobe's free Acrobat Reader software), and custom apps enriched with multimedia content (viewable on compatible tablets).

The linear structure of a basic ePub works well with long-form texts, such as fiction and in-depth journalism. Although digital bookmarks allow users, in principle, to jump back and forth through the content, the ePub medium overwhelmingly favors reading in a straight path from beginning to end. In most ePubs, the linear content is designed to reflow in response to the user's screen format and font size preference, giving the designer little control over layout. Some ePubs are fixed-format, allowing designers to construct tighter relationships between text, figures, images, captions, and other elements.



THE NEW NORMAL The increasingly familiar shapes of e-readers and smartphones helped usher in a renaissance of reading. While developers strive for standards in serving content to many different devices, publishers struggle with the digital rights management and how to interface with libraries and resale markets.

READ MORE >> On the ePub format, see International Digital Publishing Forum, "EPub 3 Overview," IDPF, October 2011, accessed August 25, 2013, http://www.idpf.org/epub/30/spec/epub30-overview.html.

MORE FUN Jacob Nielsen conducted a study in 2010 comparing ePubs with print books; respondents reported having more "fun" reading the e-book. The content they were asked to read was a collection of short stories by Ernest Hemingway; such narrative prose is ideally suited to linear consumption. Jacob Nielsen, "iPad and Kindle Reading Speeds," *Use It*, July 2, 2010, accessed May 27, 2011, http://www.useit.com/alertbox/ipad-kindle-reading.html.

TAKE IT WITH YOU As physical devices, Kindles and iPads further promote linear reading experiences by focusing the user's attention within the framework of a single application. In contrast, the multiple windows of the desktop environment encourage users to switch more frequently among activities. Here the book *Kern and Burn: Conversations with Design Entrepreneurs* is displayed on an iPad and Kindle Paperwhite. Design: Tim Hoover and Jessica Karle Heltzel, 2013.


READMILL


IBOOKS

KINDLE


NOOK


PLAYBOOKS

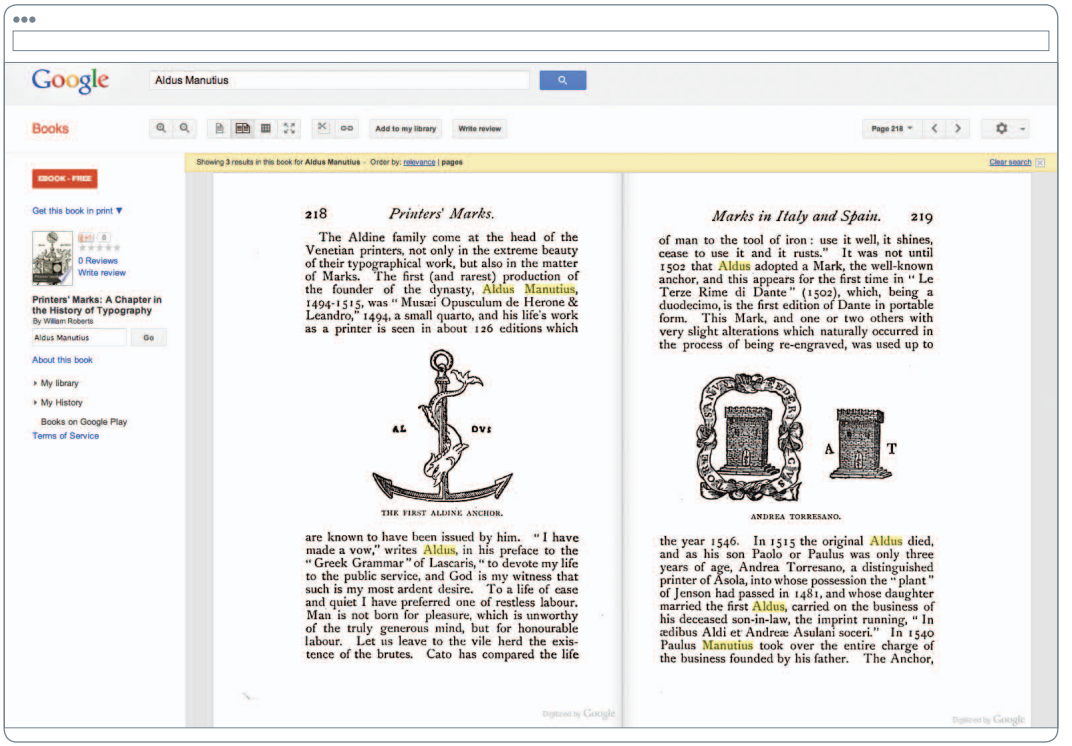
LIBRARY APPS Our libraries may have dwindled in the physical world, but not in the digital realm. Now books and magazines are neatly formatted to numerous devices and applications. Endless content is a press and swipe away, and these applications are inspiring more people than ever to read.

SELECTIVE READING

Not all reading experiences are linear. Google Books presents a wholly different landscape from a Kindle or other ePub-based device. In place of isolated, tightly framed pages of text, the Google Books interface surrounds its content with links to sellers, libraries, and reviews. Scanned from millions of printed volumes, Google's digital books retain the typographic texture and page layout of the physical works. But unlike printed volumes, these digitized books are fully searchable, providing scholars with a powerful research tool. Google Books supports an active, acquisitive, goal-oriented mode of reading, well suited to Google's focus on search as the founding core of its business.

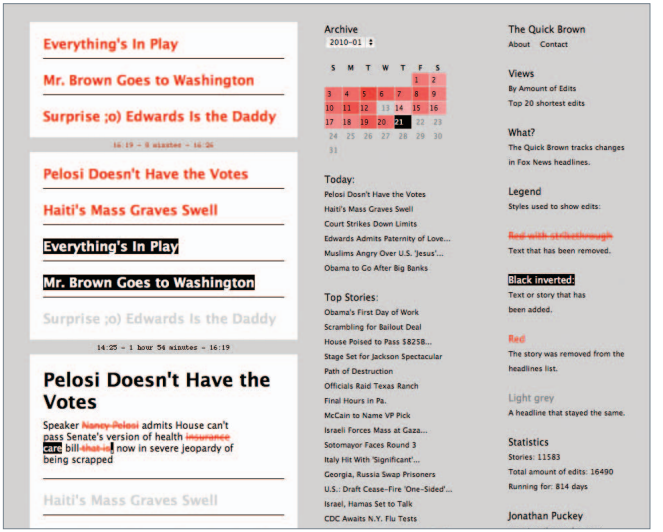
The process of reading—whether goal-oriented or recreational—involves more than the simple act of curling up with a book and absorbing its contents page by page. First you need to choose what you want to read and what you will ignore. Later—sometimes much later—you plunge into the act of reading proper, perhaps broadcasting your impressions as you go and skipping in and out of the text at will. Finally, you decide how to keep track of what you've read, saving the useful bits and flushing away the rest. From print to e-books to read-later apps, different media support the process of reading in different ways. Some tools, from Kindle's Public Notes feature to Jonathan Puckey's experimental *The Quick Brown* project, emphasize the fact that text changes and mutates in the hands of readers, writers, and editors.

LINES, NOT LINEARITY
To follow a thought doesn't necessarily require reading from beginning to end. Lines, a browser-based reading app, inverts the conventional hierarchy of the blog, list, or forum by putting readers' comments at the center of the action. Design: Astrom/Zimmer, 2011.



GOOGLE BOOKS Millions of printed works are searchable via Google Books. Here a user looking for the term "Aldus Manutius" has located a book that was first published in 1893. Google's scan preserves the book's original typography and layout while making the text searchable.

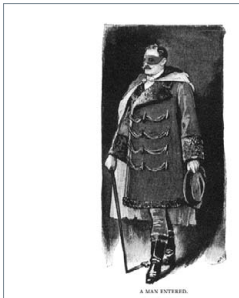
THE QUICK BROWN This experimental news aggregator gathered links to Fox News articles and used typography to note changes over time in the headline copy. Rather than presenting the news as a fixed and objective medium, The Quick Brown represented journalism as a process of ongoing change. Design: Jonathan Puckey, Moniker, 2007, http://thequickbrown.com.



THE FLOW OF CONTENT

Different modes of publishing afford different modes of reading. Linear, selective, consultative, or informative reading each thrive best within certain kinds of systems. A novel reads better within the linear flow of a Kindle app than in the busy framework of a web browser. Conversely, an in-depth news report relies on supporting articles and media to fill out its narrative. Slides work well for presentations and children's books because they usher the audience gently forward through a story.

By organizing the flow of reading, the designer can push users toward active searching, passive receiving, or spontaneous wandering. Designers understand that layout and structure play a role in how one reads; for readers the effect may be more subconscious. Shown here are various models for structuring the flow of content in different digital media.



A MAN ENTERED.

"You had my note?" he asked with a deep harsh voice and a strongly marked German accent. "I told you that I would call." He looked from one to the other of us, as if uncertain which to address.

"Pray take a seat," said Holmes. "This is my friend and colleague, Dr. Watson, who is occasionally good enough to help me in my cases. Whom have I the honour to address?"

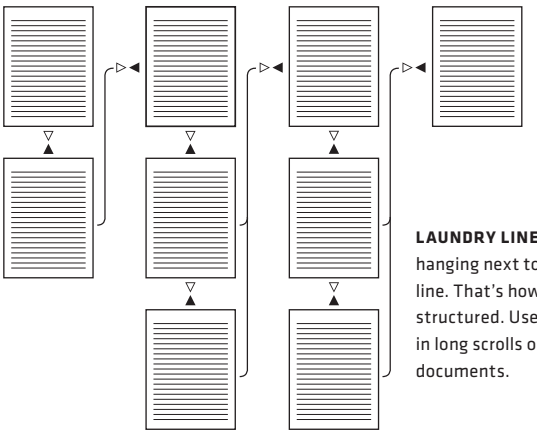
Loc 196 4%

PAGES Static digital pages, like those in a PDF or a fixed-layout ePub, provide an obvious analogue to the printed page. The hard frame of a Kindle or other reading device keeps readers immersed. A status bar showing the percentage of the book already read can help orient readers within the whole.

READ MORE >> Gerard Unger, *While You're Reading* (New York: Mark Batty Publisher, 2007).

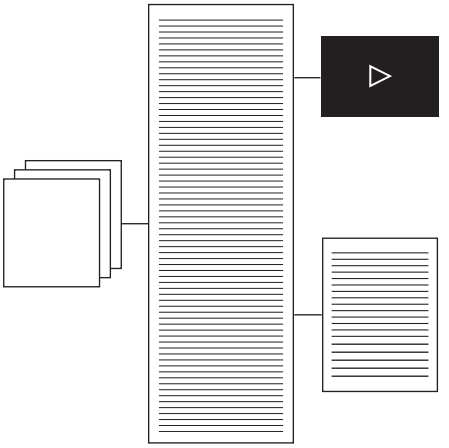
DPS Adobe's Digital Publishing Suite enables speedy production of applications for mobile and tablet devices. The resulting content is available as a downloadable app, either as a single unit or in a newsstand of sorts that allows publishers to release multiple issues over time. Individual apps can be as rich as a webpage and don't have to adhere to a standard template or look. A diversity of interesting applications is being created today with DPS. As Adobe continues to evolve the DPS tools and more stunning examples appear in app stores, the technology could gain real traction with designers and publishers.

BOOKS AS APPS In order to gain more control of the look and layout of their digital publications, designers can create books as stand-alone applications instead of ePubs. In this example, readers reach the next chapter or article by swiping side to side; swiping vertically reveals distinct pages within that stack. Design: Elena Carl, Unit Editions, 2012. Design assistant: Liam Hine.

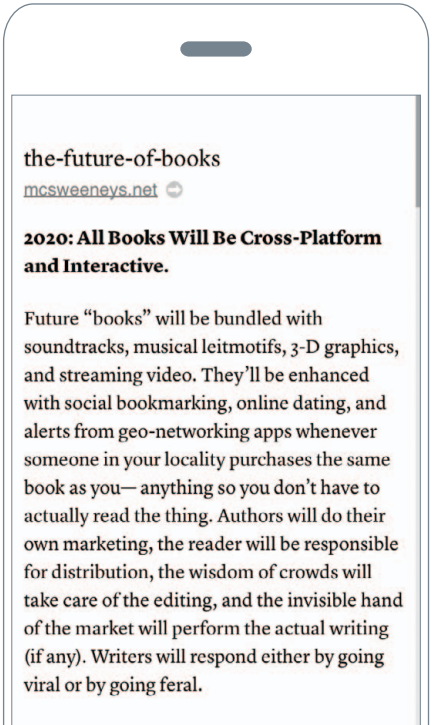


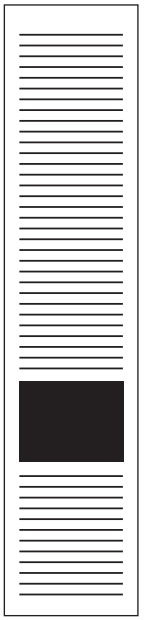
LAUNDRY LINE Picture a series of texts hanging next to each other from a common line. That's how a DPS publication is structured. Users can navigate up and down in long scrolls or side to side to move between documents.

THE FLOW OF CONTENT

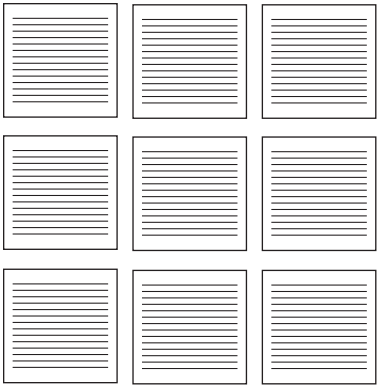


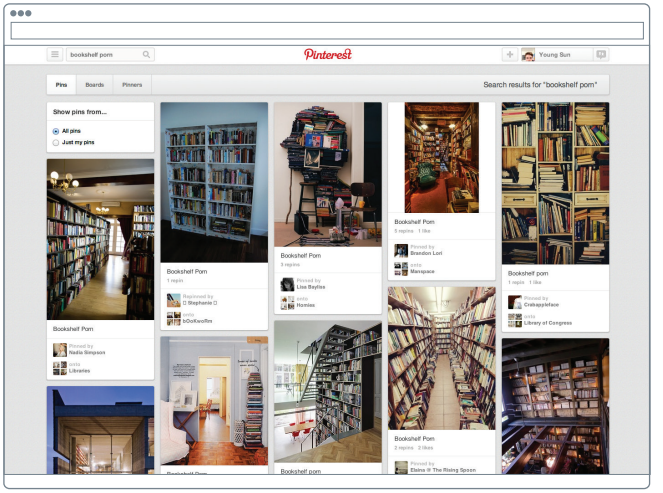
SPINE A common way of organizing online journalism is to group articles along a central spine. For example, this is how the *New York Times* organizes multimedia-supported articles. Side boxes might include a slideshow, video, or infographic.



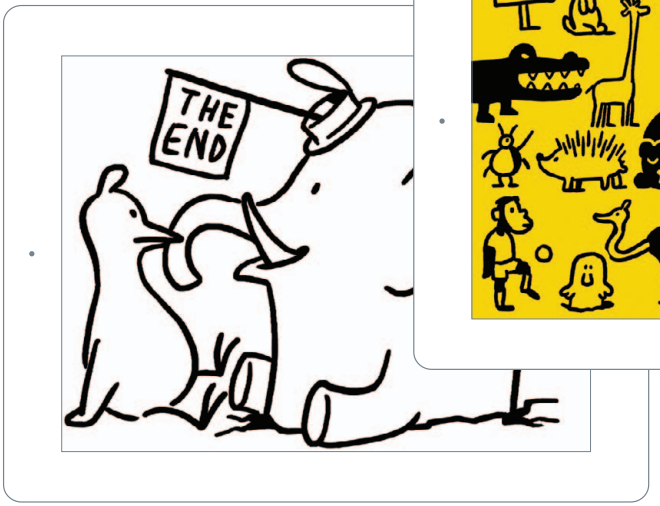


SCROLL The scroll is an ancient form of the book, preceding the bound codex by thousands of years. It is also the basic form of an HTML page. As a physical object, the scroll is the embodiment of linearity. Traditional scrolls, such as the Torah, are horizontal, but digital scrolls are typically vertical. The app Instapaper will turn multipage articles into a single scrolling page of text, making them easy to navigate.

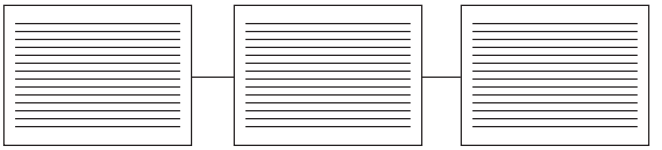




GRID A grid can be used to group elements in an equal but unconnected way. The social networks Flipboard and Pinterest are prominent examples.



SLIDES A slideshow is like a movie: One neatly composed frame comes after another. The sequence is linear, but the content is organized into uniformly sized chunks. A great example is Christoph Niemann's interactive picture book *Petting Zoo* (2013).

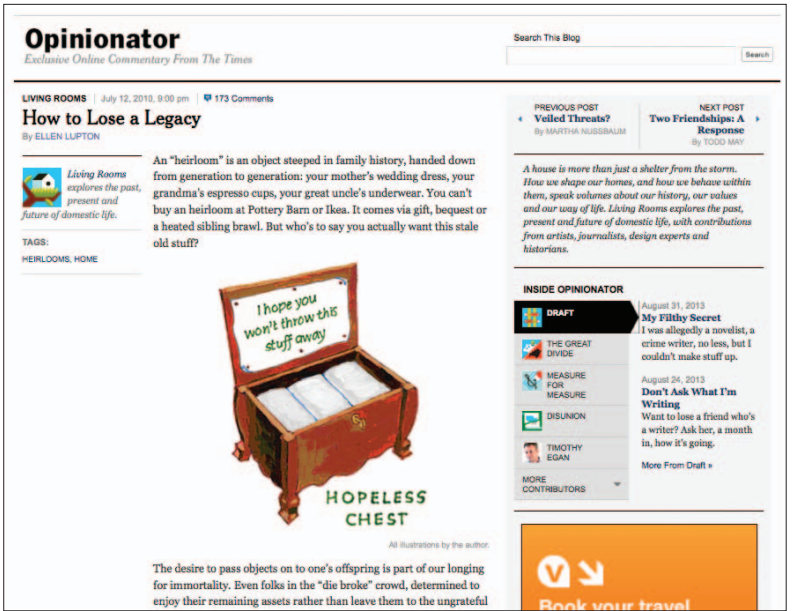


ORBITAL CONTENT

On the web, “readers” include not only human beings but also a host of digital devices and software applications. Numerous products seek to gather, filter, and file content for people and their machines. Bombarded with endless information, many users collect texts to consume at a future time. Popular read-later apps aspire to a serene and bookish sensibility, using traditional typography to liberate content from the context in which it was published and instill a readerly state of mind. Minimal navigation, quiet branding, and generously scaled text help clear away the commercial clutter that surrounds the typical online reading experience.

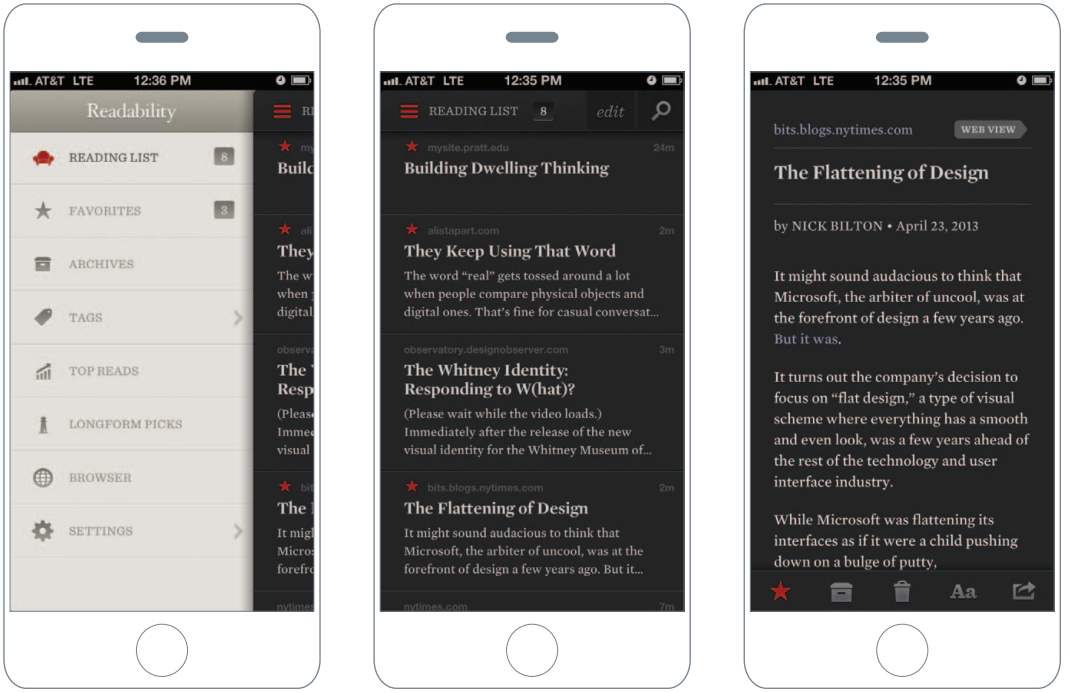
News aggregators allow users to access content from diverse sources. Some aggregators, such as Drudge Report and Huffington Post, employ strong visual identities in order to present themselves as unique, editorially driven publications, while others, such as Google News and Reddit, use minimally formatted typography to embrace the aesthetics of automation.

Designer Cameron Koczon has called these emerging modes of user-controlled reading experience orbital content. Instead of spending time reading text on different sites, readers hunt down the content they want and drag it back to their own personal domain, building collections of reading material with a self-made editorial through-line. Users can choose to access their orbital content via web browser, mobile device, or print-friendly PDF.



READ MORE >> Cameron Koczon, “Orbital Content,” *A List Apart*, no. 326, April 19, 2011, http://alistapart.com/article/orbital-content.

READING IS DISTRACTING
It becomes hard to read an article when you are constantly being prompted to share it or click away to a related article or post. These enticing features might keep a user on a site, but they don’t help the reading process.



READ LATER Readability and similar apps give readers a choice of when, where, and how they read. Content is pulled from its original source, styles are removed, and text is ordered much like an ePub with no-nonsense linearity. All content surrounding the main text is wiped away, and users are able to customize the styling, just like with an ePub. Design: Teehan+Lax for Readability, 2012.

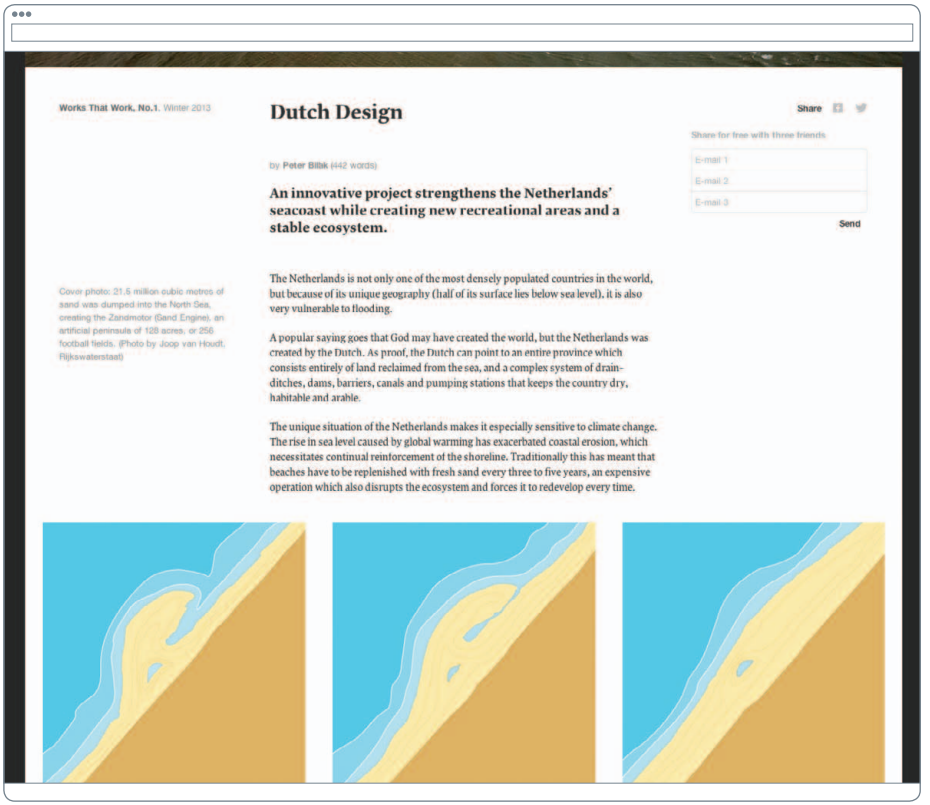
CASE STUDY

WORKS THAT WORK

The magazine *Works That Work*, whose main focus is "engaging storytelling," is truly a multiplatform publication. Page one of the inaugural issue contained a message from editor Peter Bil'ak, in which he explains, "We are not bound to traditional publishing technologies and offer you our stories in a form that suits you, whether you want to read us on paper, tablet, or phone." Readers can purchase a hard copy or a suite of digital files (PDF, ePub, Mobi, or HTML, depending on their preferences).

The creators of *Works That Work* have considered the user's experience across multiple platforms, creating layouts that exploit the available space and dynamic flow embodied by each publishing method. Decisions about fonts, formats, margins, navigation, and interaction affect the user's sense of pleasure, agency, and control.

HTML



EPUB

PDF/PRINT

MAGAZINE DISTRIBUTION THAT WORKS

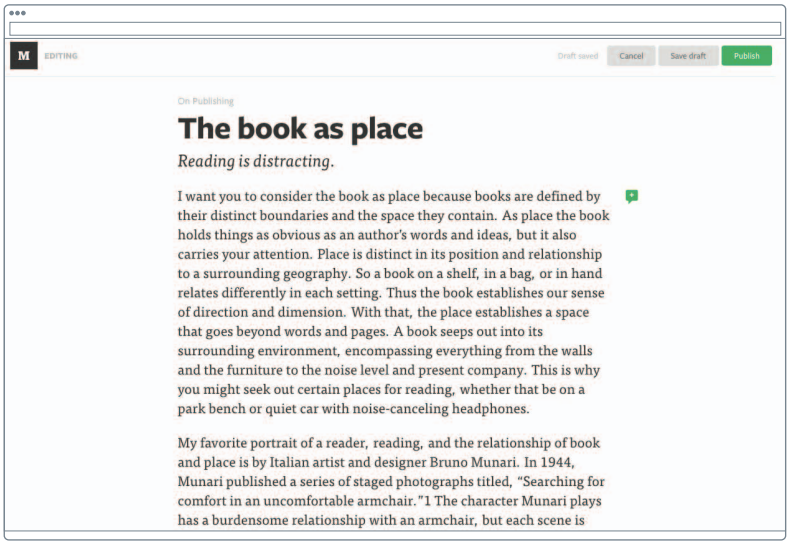
The layout is adapted to fit each format and appears differently on the website versus as an ePub or a PDF. The designers have taken into account the affordances of each publishing method and have organized the content accordingly. Design: Atelier Carvalho Bernau. Published by Typotheque, 2013.

Producing digital publications, such as ePub or Mobi, requires ordering all of a book's content in a strict, linear form. Captions and illustrations are inserted into the flow of the text.

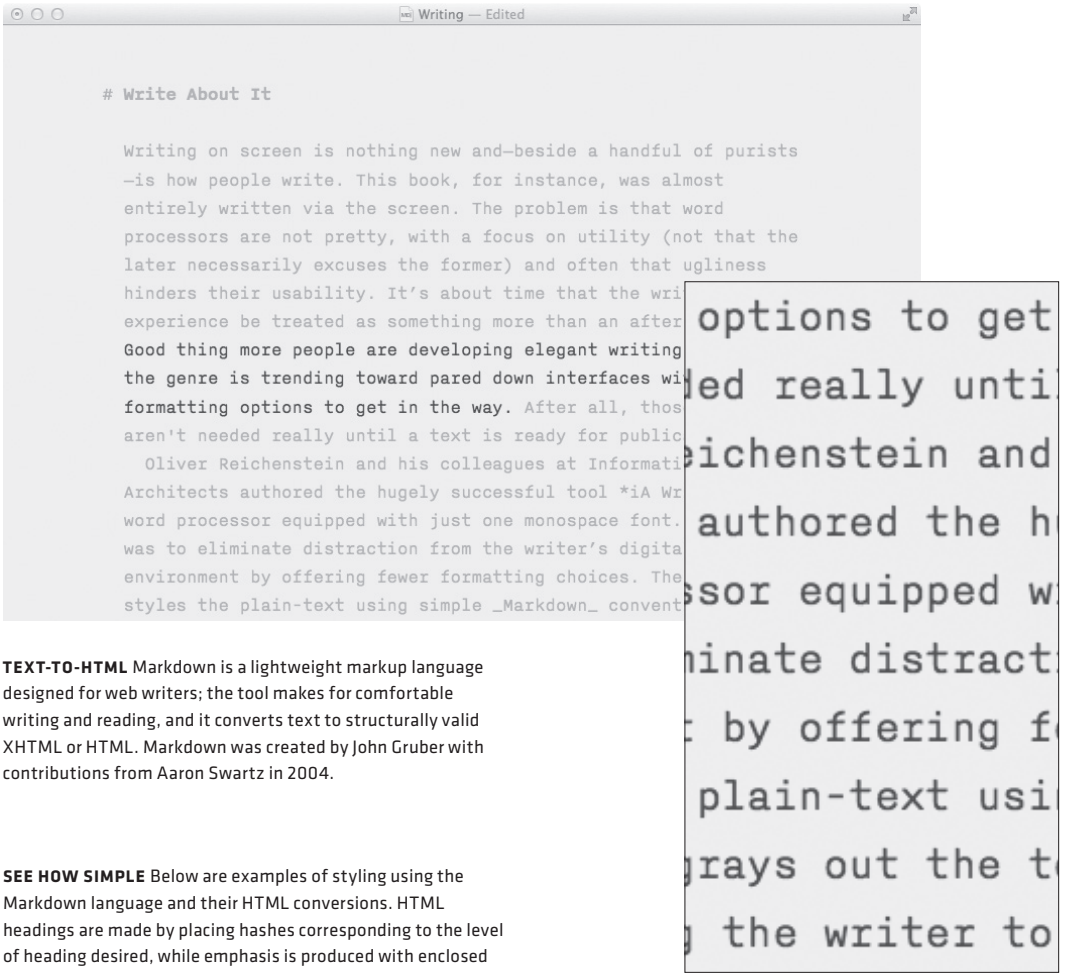
WRITE ABOUT IT

Writing on screen is nothing new and—apart from a handful of purists—it is the way people now write. This book, for instance, was almost entirely written with screen-based tools (namely, Adobe InDesign). Most word processors are not pretty, with their focus on utility and reluctance to innovate for fear of alienating legacy users. It's about time that the writing experience be treated as worthy of design consideration in its own right. Elegant digital writing tools are on the rise, and this emerging genre has moved toward pared-down interfaces with limited formatting options. After all, most formatting details aren't really needed until a text is ready for publication.

Oliver Reichenstein and his colleagues at Information Architects authored the successful tool iA Writer, a word processor equipped with just one monospace font. Their goal was to eliminate distraction from the writer's digital environment by offering fewer formatting choices. The writer styles the plain text using simple Markdown conventions. Focus Mode fades back the text surrounding a selected passage, encouraging the writer to concentrate on the highlighted content.



USER, READER, WRITER Medium is equal parts writing tool, publishing platform, and reading space. The elegance of the interface helps diminish barriers between person and text.



TEXT-TO-HTML Markdown is a lightweight markup language designed for web writers; the tool makes for comfortable writing and reading, and it converts text to structurally valid XHTML or HTML. Markdown was created by John Gruber with contributions from Aaron Swartz in 2004.

A BIT NOSTALGIC iA Writer references the focus and utility of the typewriter, the tool of the high-tech writer before word processors came along. Nitti is a monospaced type family designed by Pieter van Rosmalen for Bold Monday. iA Writer design: Information Architects, 2011.

SEE HOW SIMPLE Below are examples of styling using the Markdown language and their HTML conversions. HTML headings are made by placing hashes corresponding to the level of heading desired, while emphasis is produced with enclosed asterisks or underscores.

HEADINGS

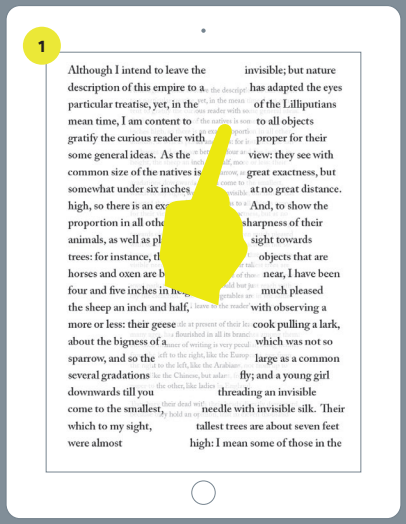
```
# First level heading = <h1>...</h1>
## Second level heading = <h2>...</h2>
### Third level heading = <h3>...</h3>
###### Sixth level heading = <h6>...</h6>
```

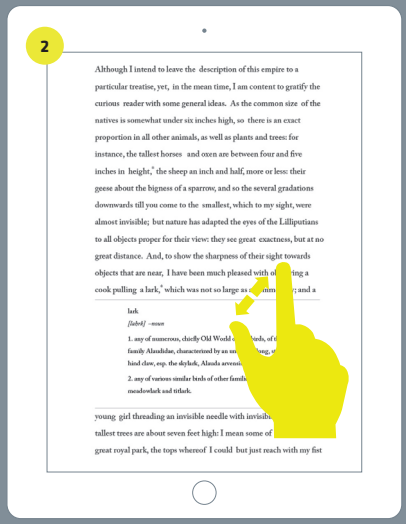
EMPHASIZING TEXT

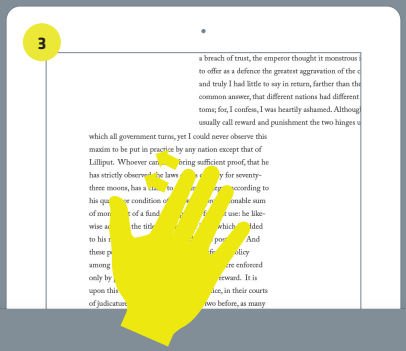
```
*Emphasis* or _Emphasis_ = <em>...</em>
**Strong** or __Strong__ = <strong>...</strong>
```

IN THE CLASSROOM: EXPERIMENTAL READERS
WITH ERIC GUNTHER

Interaction designer Eric Gunther, a partner in the Boston firm SoSo Ltd., led a workshop with graduate students at MICA in 2011 to create concepts for digital readers. The challenge was to conceive of new ways for users to interact with text on a device such as an iPad or Kindle. How might they navigate or customize the text of a book more intuitively? How might technologies such as natural language processing (used extensively in the work of SoSo Ltd.) create new approaches to filtering and transforming content? The ideas prototyped here include proposals for practical, user-centered features as well as a concept that critiques ideas of censorship and scientific rationality.







1

DRAW RIVERS Drag your finger to reveal new content or opportunities for transition.

2

OPEN LEADING Use the pinch and spread gestures to reveal extra content where indicated by symbols.

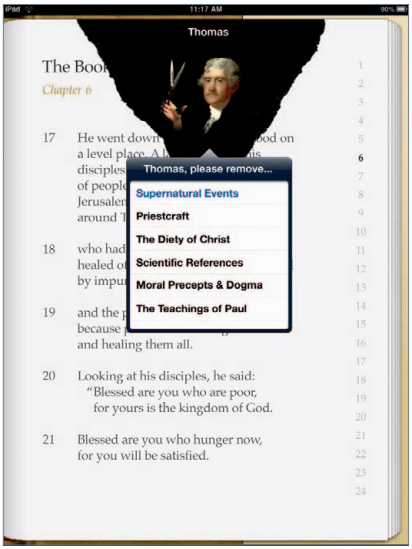
3

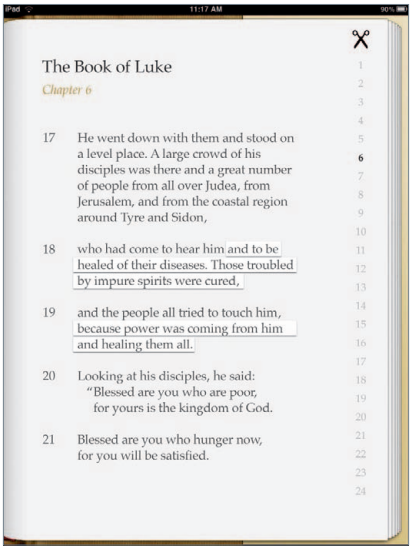
SPATIAL TEXT NAVIGATION Blocks of text that make up a chapter or subsection have a directionally specific layout, contrasting spatially with other chapters or sections.

4

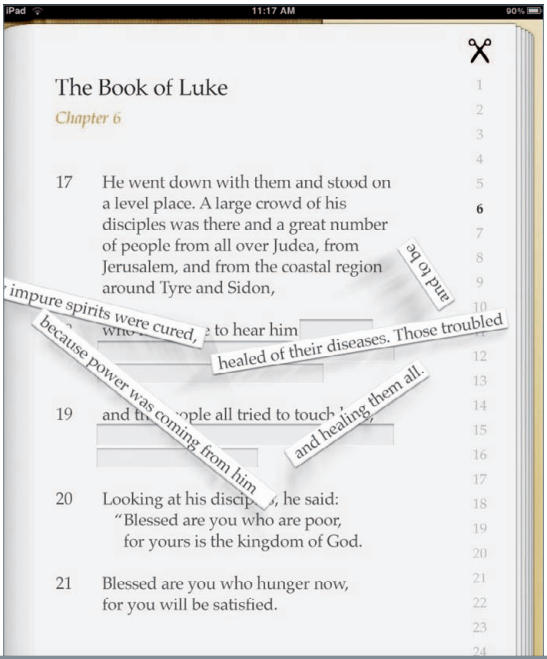
MICRO-MACRO TEXT NAVIGATION The view of the whole text becomes a scrollbar; the user swipes to change chapters.

Design: Alice Hom, 2011.





THOMAS This proposal for e-reader software is inspired by a publication proposed by Thomas Jefferson in the eighteenth century. Jefferson, a proponent of rational thinking and the Enlightenment, wanted to publish an edition of the New Testament that featured only the philosophical and political teachings of Jesus, eliminating the miracles and mystical events. The interface illustrated here would sort through the text and highlight nonscientific passages; an animation would dramatize the purge. Design: Eric Mortensen, 2011.



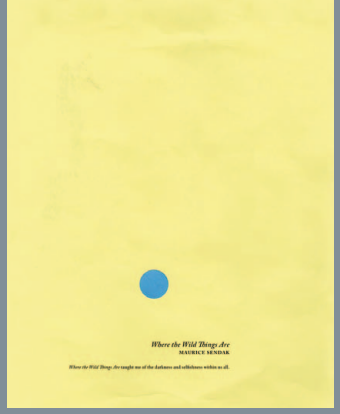
IN THE CLASSROOM: THE MUTANT LIBRARY

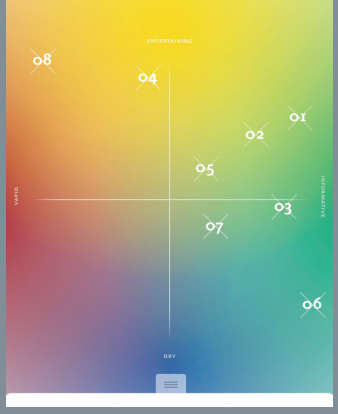
WITH ELLEN LUPTON AND KRISSI XENAKIS

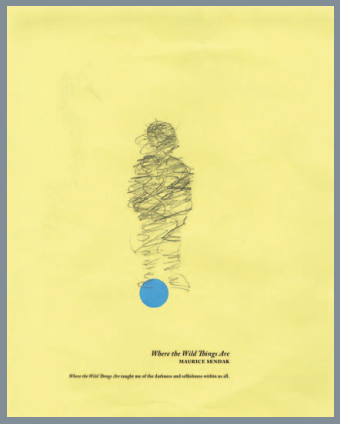
Today many publications exist across multiple formats. It would be a waste of pixels to simply translate print work into static content for digital devices. Interactive publications allow readers to discover visual surprises and access hidden information. By encouraging play, designers and editors can say more and leave a deeper impression.

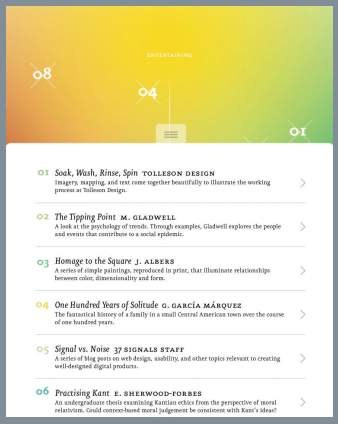
The examples shown here come from *The Mutant Library*, a digital anthology authored by designers in MICA's Graphic Design MFA program. Each designer began by creating a sixteen-page print booklet documenting their personal reading list. Visiting artist Krissi Xenakis, a senior interaction designer at Joe Zeff Design, led a workshop on Adobe DPS, exposing the team to this powerful tool with a familiar interface. Designs for print and screen evolved side by side, each medium taking leaps that later informed the other. The project yielded a twinned collection: a boxed set of handbound books and a digital portfolio for the iPad, available in Apple's App Store. *The Mutant Library* was published by MICA and Joe Zeff Design in 2013.

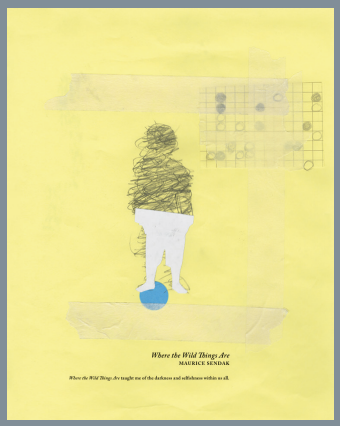
Color, composition, and tone are essential elements for both print and screen. A successful screen design, however, employs these formal elements to signal the potential for change and interaction.











ADDING INTERACTIVITY Creating a design for screen and print can be as simple as using imagery that calls out to be touched. In the print version, lush red dots spill past the edges of a photograph of an empty book. In the digital version, readers begin with the empty vessel and tap to watch the illustration appear. Design: Yingxi Zhou, 2013.

REVEALING PROCESS Interactivity can be used to reveal how things are made. A collage, static in print, is assembled on screen when the dot is tapped. Design: Gabriela Hernandez, 2013.

INFO AS NAVIGATION When readers tap the data point for each book in the map (top), they are sent to its detail page (bottom). The data key lives in a drawer that can be swiped and also acts as navigation (middle). Design: Emma Sherwood-Forbes, 2013.

04 TYPE AND INTERFACE

JAVIER LOPEZ
ALICE HOM

An interface expresses the internal structure of a document (its heads and subheads, tables and lists) as well as the framework of menus, buttons, and links that guides users through it. Whether they are sending text messages or reading news sites, people encounter screen-based text in countless circumstances. A well-designed interface helps shape the meaning and function of this constant stream of content.

Digital users have become familiar with a range of interactions, from click, tap, and drag to pull, pinch, and swipe. Mouseover states and subtle animations make clear that interaction is available, as do basic typographic cues such as an underline or a change in color. Reacting to subtle depictions of light and shadow, users learn to anticipate how media will behave. Edges and planes that glow, bevel, cast a shadow, shimmer with transparency, or fade into light or darkness indicate doors to new information or events.

Interactive media projects are built in layers, yielding a complex three-dimensional space that allows content to move in and out of visibility. Constructing this architecture is a major task for the interaction designer, who creates an expanded canvas for the user to travel through and across, deep into and beyond the frame. The principle of hide and reveal allows designers to display more data—at larger sizes—within the limited window of a browser or device.

Designing an interface for dynamic content demands considerable planning. Wireframes—diagrams of a project's basic elements—can help communicate the designer's intent to developers and clients. Wireframes are a form of prototype, an approximation of a product that explains its features and tests its functionality. Prototypes are crucial tools for designers in any field.

This chapter starts with a bird's-eye view of the overall structure of a site before taking a closer look at the details that invite human touch and agency.

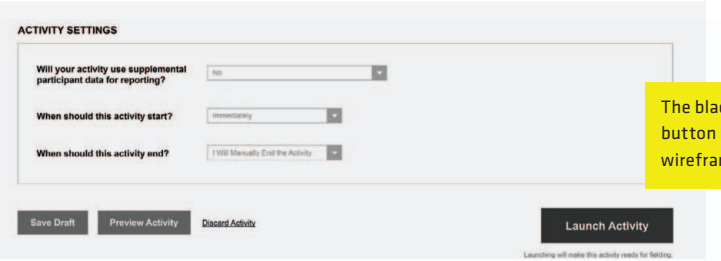
MAX PLANCK INSTITUTES MULTITOUCH INSTALLATION
Design: Moritz Stefaner and Christopher Warnow, 2011.

WIREFRAMES

A wireframe represents the skeletal structure of a website or application. Also referred to as a page schematic or a screen blueprint, a wireframe uses simplified elements to represent basic content areas and the elements of page navigation. Designers keep the design simple and abstract in order to avoid getting involved too early in conversations about colors, fonts, and image choices. Bars, blocks, and fields of gray serve to communicate the essential structure and functionality of the site.

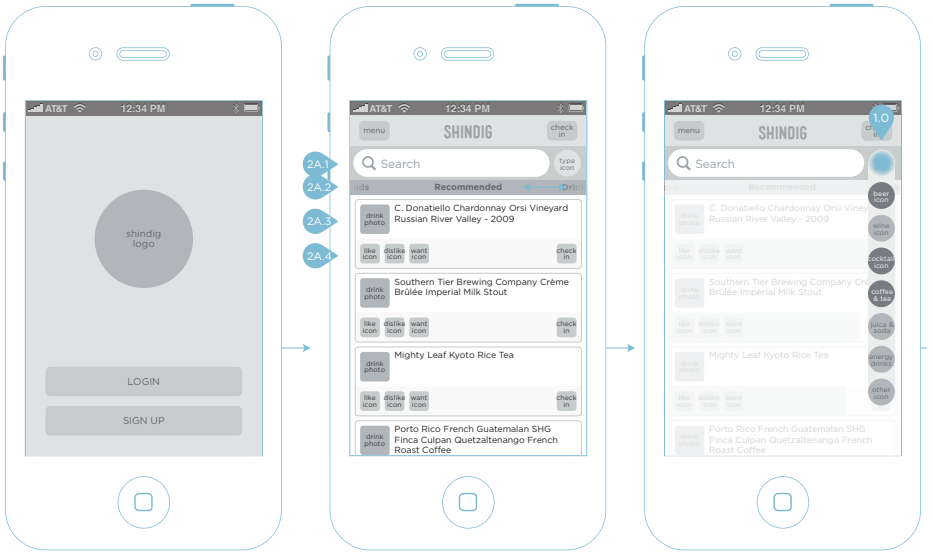
Initially, a team might work with pencil on paper, moving on to low-fidelity wireframes, which serve to quickly convey the different page types that might appear in a site. These simple diagrams explain the big differences and broad concepts. As work progresses, high-fidelity wireframes are produced, which provide more detail about specific content and the types of interactions that lead from one page to the next.

LOW-FIDELITY WIREFRAME In addition to showing where basic blocks of information will fall, a low-fidelity wireframe can be used in site maps, user flows, and other UX (user experience) documents as simple depictions of page layouts. Design: Yvonne Weng, Barrel, 2013.



The black "Launch Activity" button is the key action in the wireframe shown here.

GRAYSCALE Working primarily in grayscale allows the designer to clearly communicate hierarchy. Design: Yvonne Weng, Barrel, 2013.



1A SIGN IN/ SIGN UP

On launch
Sign up with Facebook/Twitter/email or log in

2A DRINK DISCOVERY

Main screen after successful sign in for users to:
1. Rate drinks they've had to hone the recommendation engine to their taste
2. Check-in to a drink they're enjoying now
3. Find out more about drinks

2A.1 Field for search and narrowing by drink category
2A.2 Scroll horizontally to change results list to show: drink recs, friends' drink feed, your likes, dislikes, wants
2A.3 List of drinks, sorted by level of recommendation
2A.4 Actions: rate drink (like/dislike), add to want list, check-in

2B DRINK DISCOVERY (DRINK TYPE)

On tap, drink category filters animates down.
Tap to select/deselect. User may choose multiple.
Tap outside icons to hide icons.

On first-time use, Shindig should ask user which categories they're interested in, and automatically select/deselect filter to their preference.

Each drink category is color-coded—same coloration used throughout app

HIGH-FIDELITY WIREFRAME As a project develops, designers create wireframes with greater degrees of accuracy, including flowing in real content. The flowchart excerpted here describes the architecture of the app and the path a user might use to travel through it. Design: Meng He, 2012.

READ MORE >> Yvonne Weng, "Wireframes the Barrel Way," *Barrel* (blog), July 3, 2013, http://www.barrelny.com/blog/wireframes-the-barrel-way/.

1C NAVIGATION

Slide navigation to preserve as much screen real estate as possible for browsing. Allows user to quickly get to the core functions of the app.
1C.1 First search for drink on 2C Drink Discovery to check-in.

INTERACTION ELEMENTS

To create wireframes efficiently, designers employ simple graphics to represent commonly encountered forms of interaction. Even these seemingly neutral components are designed with a certain sensibility, however, and express the designer's point of view.

USER INTERFACE SET Offered for free download (with attribution), these interface elements have a clean, flat style. Design: MediaLoot, 2010, http://medialoot.com/item/massive-web-button-and-ui-set/.

MOUSE CURSORS IN CSS The cursor property in CSS specifies the type of cursor to be displayed when pointing to an element. Each cursor represents a different interaction.

`cursor:auto`
AUTO (DEFAULT)

`cursor:crosshair`
PRECISE POINTING

`cursor:auto`
AUTO (DEFAULT)

`cursor:hand`
GRAB CANVAS

`cursor:e-resize`
WINDOW RESIZE

`cursor:help`
HELP

`cursor:draw`
FREE DRAW

`cursor:search`
SEARCH

`cursor:move`
ELEMENT MOVES

`cursor:pointer`
LINK

`cursor:move`
ELEMENT MOVES

`cursor:resize`
DIAGONALLY RESIZE

`cursor:progress`
WAIT

`cursor:text`
INPUT TEXT

`cursor:paint`
FILL WITH COLOR

`cursor:v-resize`
VERTICAL RESIZE

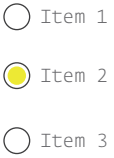
WIREFRAME ELEMENTS When creating a wireframe, designers employ standard elements to represent how a user is expected to interact with the material.

TEXT BOX A box in which to enter text or numbers.

BUTTON A virtual equivalent to a push button; the rounded corners imply dimension and have become associated with buttons.

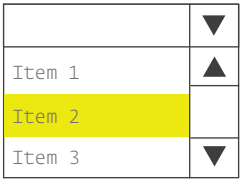
HYPERLINK Text marked with underlining and/or color indicates that clicking it will take the user to another screen, page, or targeted location.

DROP-DOWN LIST A menu of items from which the user can select one. The list normally only displays its content when a special button or indicator is clicked.

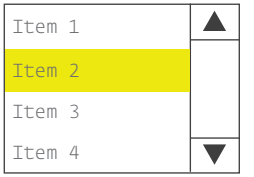


RADIO BUTTON A list of items that allows just one item to be selected. The name derives from the row of mechanical push buttons on a car radio receiver. Selecting a new button from the list triggers the deselection of any previously selected button.

CHECK BOX This box indicates an "on" or "off" condition. More than one box in the list can be selected simultaneously. Sometimes it appears shaded or dashed to indicate a mixed or intermediate state.



COMBO BOX A combination of a drop-down list and a single-line text box, which invites the user to either type a value directly into a box or choose from the list of existing options.



LIST BOX A list box allows the user to select one or more items from a list contained within a static, multiline text box.

MOUSE VS. FINGER During wireframing, designers must allow enough space for interaction to occur. A mouse pointer can accuratley interact with objects as small as 1px, while an average user's finger will need 50px in height to perform the same interaction when tapping a touch device.

OVER STATE Subtle changes when the mouse hovers over an object (over state) indicate that an element triggers an interaction on the web.

NO OVER STATE

MENUS

A menu is one of the most common navigation structures; it typically consists of an array of choices, each one serving as a link to different content. It can be vertical or horizontal, hidden or persistent. Type is an essential ingredient in the construction of a clear, concise, understandable menu, because most menus include lists of words. Images, icons, and design elements such as boxes, bubbles, and lines are also ubiquitous components of menus and other navigation structures. This language—both verbal and visual—must be edited for clarity and designed for readability. The styling, position, and behavior of navigation elements must make sense to users.

SHOWING INTERACTION
On screen, designers use underlines, color changes, and animation effects to indicate that a line of type is a navigation element.

click to begin

VERBAL CALL TO ACTION

link here

COLOR

link here

ANIMATION

ICONS AS WAYFINDING This app is designed like a set of cards arranged on a table. The icons serve as navigation. The user can swipe left, right, up, or down to move from one screen to the next. Design: AKQA, 2013.

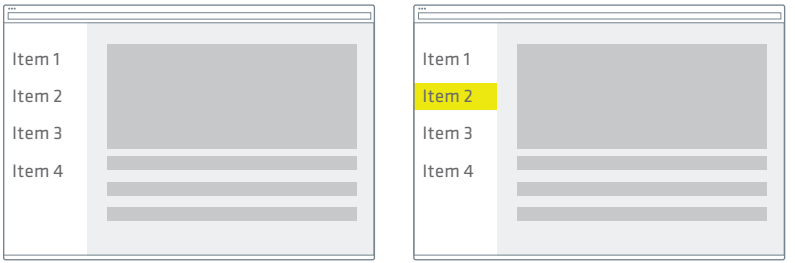
1

The persistent menu on the left displays a drop-down submenu that lets users pick an animal to explore.

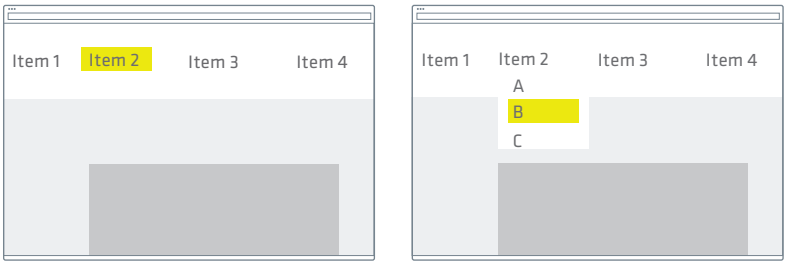
2

Each card can be accessed from the drop-down menu, with the exception of a few that are unlocked after the user has visited others.

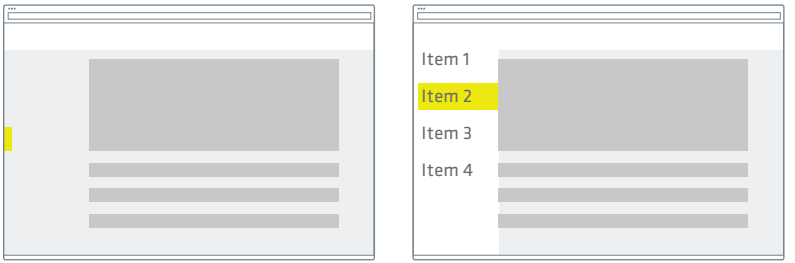
PERSISTENT This menu is always present, usually on the left side of a page. Typically exposing all options, its most common use is in a tabbed menu.



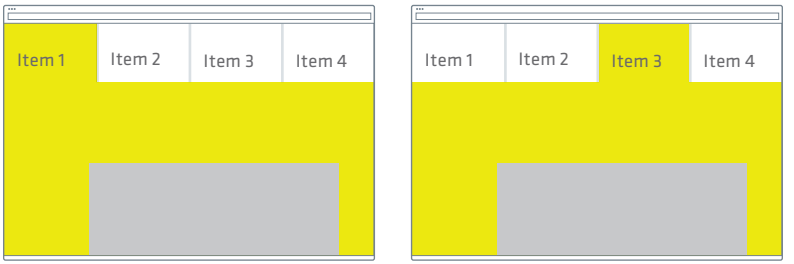
DROP-DOWN These menus commonly appear with horizontal navigation, providing deeper options beneath each section in the primary navigation.



SLIDER This device functions like a drawer, sliding in and out of a hidden space anytime it is needed. It could be considered a variation of a drop-down menu.



TABS Always present, tabs typically appear along the top edge of the screen. Usually exposing all options, tabs are based metaphorically on the stepped tabs of a series of file folders or tabs in a notebook.



TYPE AS NAVIGATION

In a website, a path is a consistent, predictable route that connects content. A path can emerge from the user's own habits or it can be created by a designer through explicit text-based navigation elements. A breadcrumb trail depicting a path is one form of type-based navigation, but typography can serve as navigation in numerous other ways as well, including text links, anchor links, and tags.

Text links

TEXT LINKS A word or phrase surrounded by <a href> tags creates a link to another location. These can be styled with color, underlines, mouseover states, and other means.

Category1/Article2

BREADCRUMB A string of text shows the user their position within a path or sequence.

Anchor link

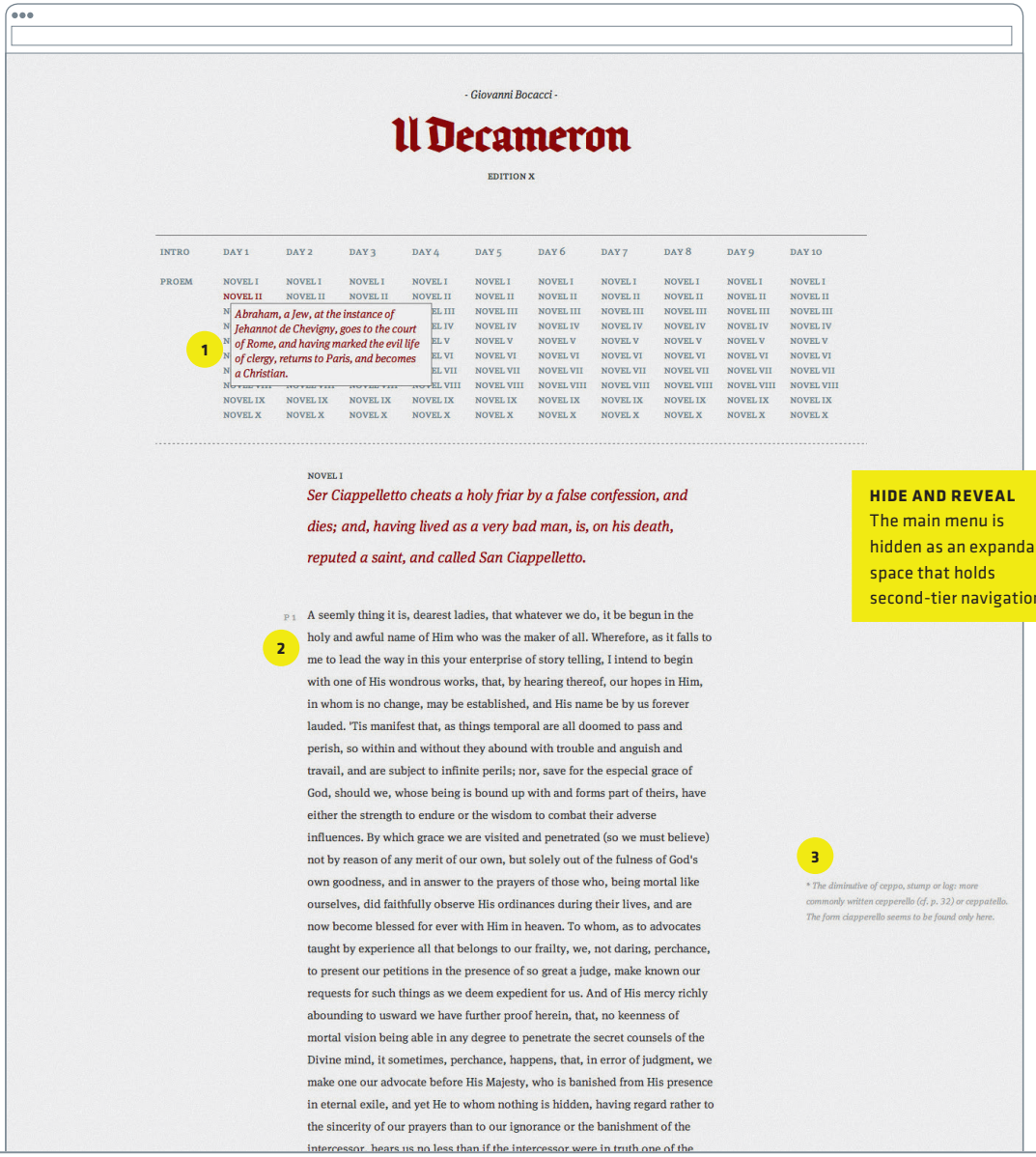
ANCHOR LINKS Named anchors take the user to a specific place on a page. These are usually styled like other text links.

Category 1, Category 2

TAGS Popular on blogs, tags apply categories to an article or entry, creating a kind of page-by-page index for the site. Tags are usually separated by commas and appear in simple lists.

A LIST APART uses tags to categorize articles under more than one category. Creative direction and design: Mike Pick, 2013.

READ MORE >> Patrick J. Lynch and Sarah Horton, *Web Style Guide*, 3rd ed. (New Haven: Yale University Press, 2009), http://webstyleguide.com/wsg3/4-interface-design/2-navigation.html.



IL DECAMERON Using public domain content from Project Gutenberg, ildecameron.com displays the entire text of this complex literary work. The book takes place over a period of ten days, and each day is comprised of ten stories (novels). Design: Javier Lopez, 2012.

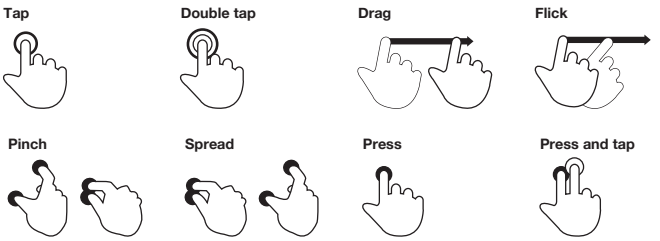
1 **MOUSEOVER STATE** As the user moves the cursor over the title of each novel, a brief introduction to it appears.

2 **VISUAL ANCHORS** Paragraphs are indicated with gray, outdented markers, allowing users to quickly track their progress as they read through the book.

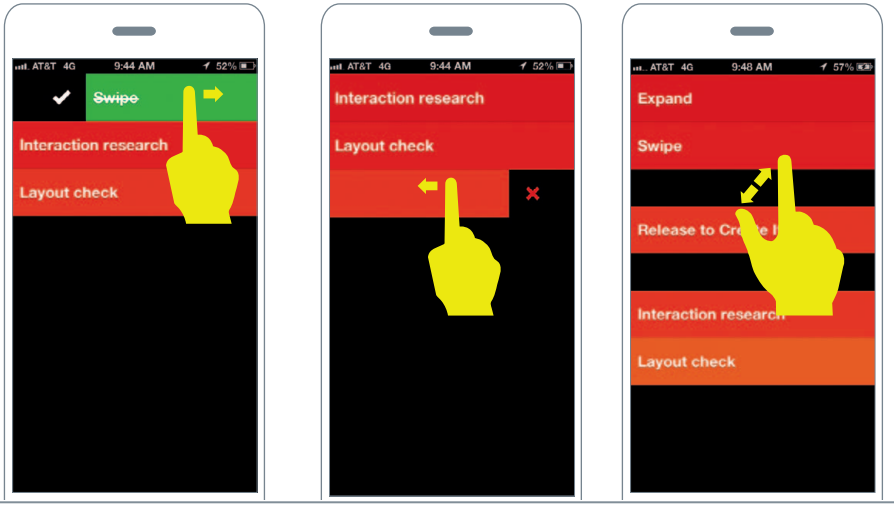
3 **IMMEDIATE BIBLIOGRAPHY** References in the margin allow readers to quickly view related links without having to jump to the bottom of the page.

EXPANDING THE VOCABULARY

As designers explore new approaches to interactivity, the standard language of navigation is growing. Touch-enabled screens present a different relationship between the user and the content, adding a rich vocabulary of gestures to the established lexicon of interactivity. The screen of a tablet or mobile device may be small, but it expands in this new world of touch and gesture.



TOUCH GESTURE These diagrams present some of the interactions that have become common on touch-enabled devices. Design: Craig Villamor, Dan Willis, and Luke Wroblewski, 2010.

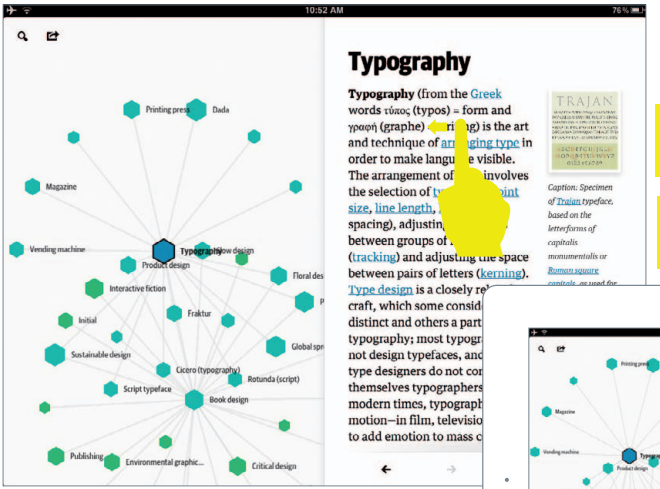


INCORPORATING GESTURE Clear is a to-do-list app. The user employs gestures such as pull down, pinch apart, swipe, and drag in order to cross out, expand, or delete items in a list. Design: Realmac Software, 2012, http://www.realmacsoftware.com/clear/.

SWIPE NAVIGATION Tapping on the NYTimes mobile app lets users know what article they will land on if they swipe left or right.

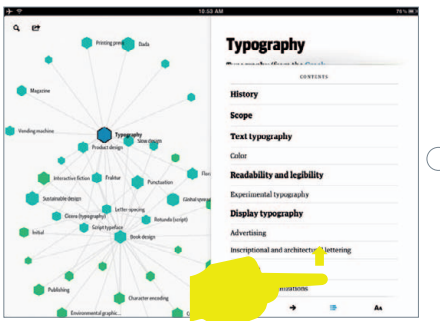
BOTTOM SCROLLING Interactive bars at the bottom give users an overview of related articles and additional news categories.

MOBILE NAVIGATION The mobile editions of the *New York Times* include navigation that is both innovative and intuitive.



The article slides out from the side like a drawer.

An alternative menu slides up from the bottom of the page.



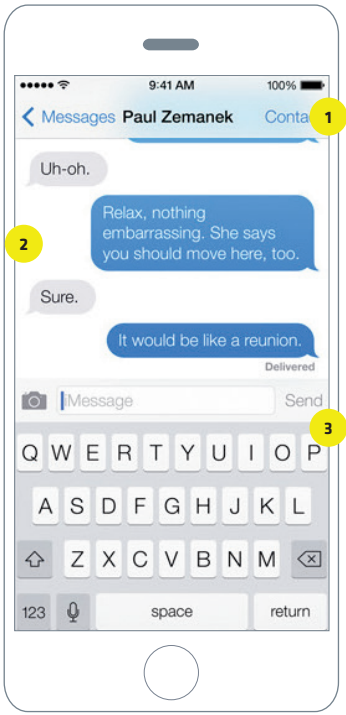
WIKIWEB This iPad app lets users reformat articles from Wikipedia. The weblike interface connects the selected article with related topics. Design: Friends of the Web, 2013.

DROP SHADOWS AND GRADIENTS

A drop shadow is a replica of a graphic object that has been offset behind it; the designer has powerful tools for adjusting the angle (light source) and transparency of the shadow. A gradient is a graduated mix of two or more colors; gradients can be adjusted to simulate the effects of light and shadow.

Interface designers use drop shadows and gradients to achieve an illusion of three-dimensionality on screen, calling attention to objects that the user can interact with and suggesting the layering of elements in depth. As screen conventions become increasingly familiar to users, not every button or speech bubble has to pop off the surface like a glowing jelly bean. The careful and subtle use of shadows and gradients can successfully communicate the potential for interaction while indicating relationships and emphasizing specific elements.

BEFORE



AFTER

IOS 7 Created under the art direction of Jonathan Ives in 2013, iOS 7 helped Apple move away from its long tradition of illusionistic design toward a flatter, simpler aesthetic.

1

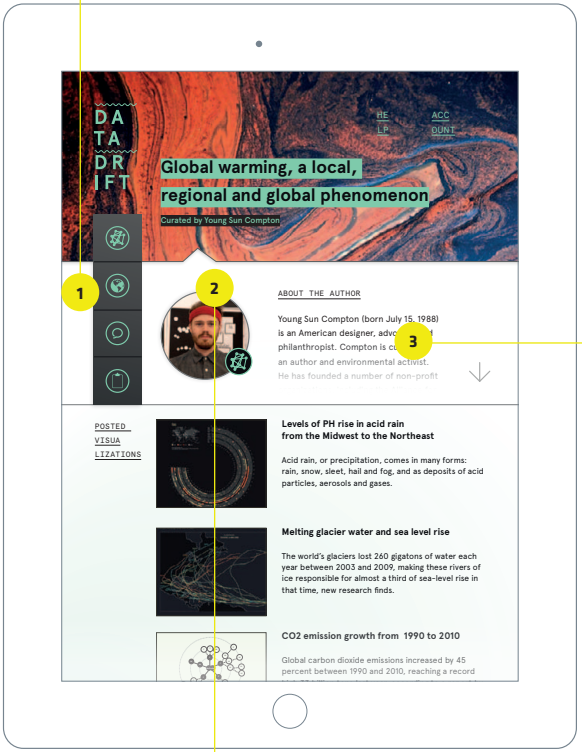
The semi-transparent background of the top bar lets users see text messages slide underneath it.

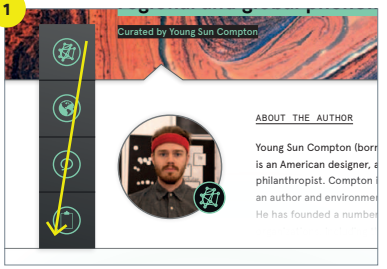
2

The white background and flat speech bubbles display text more clearly.

3

The dimensionality of the keyboard has become more subtle. Light gray shadows define each key, and a lighter typeface identifies the letters.



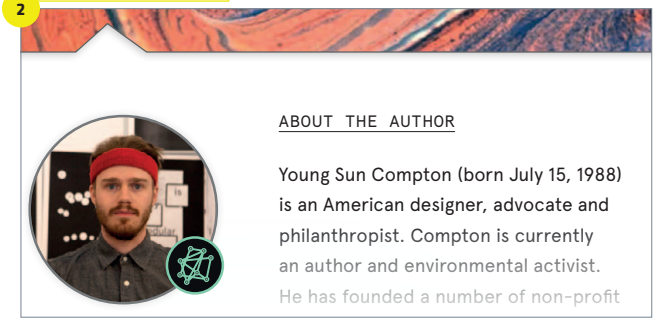


SHADES OF GRAY The icon bar employs a subtle gradient, changing from light gray on the top to a darker gray on the bottom.

rgb(50,50,50) rgb(100,100,100)

CONSISTENT LIGHT SOURCE It is important to be aware of the sources of light and shadow to maintain a consistent and logical illusion. All shadows in a project should follow the same directionality, adjusted according to context. Below is the same shadow appearing over both a light and a colored background. Notice the harder separation when the object appears against a lighter background.

45° light source;
15% black;
0.2px Offset
Multiply



45° light source;
15% black;
1px Offset
Multiply

45° light source;
15% black;
0px Offset
Multiply

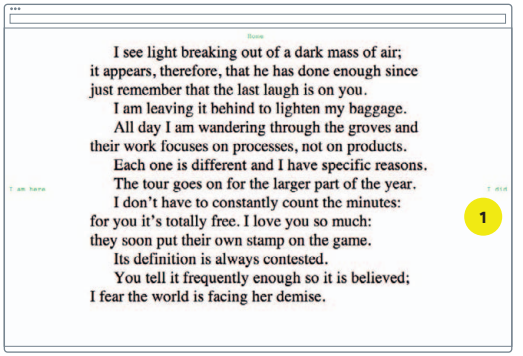
LINES AND SHADOWS Subtle line strokes can give dimensionality to an interface. The drop shadow along the top of the box uses a dispersed (offset) light source to keep the black tonality consistent. The circle that holds the picture, however, has a varied offset setting, creating a uniform shadow around the whole circle. The image is not an interactive element.

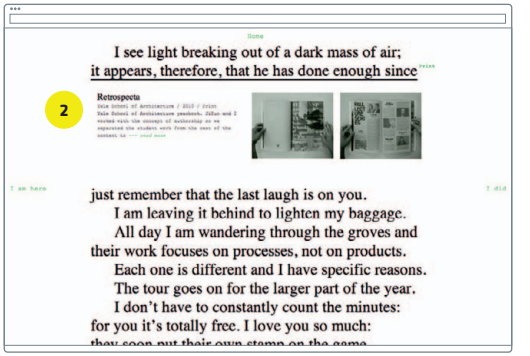
Design: Javier Lopez, 2013.

MORE TO COME Here, increasing transparency reinforces the idea that there is more text to read. This setting does the opposite of what a shadow does: It hides what is in white and shows what is in black. The stroke along the bottom of the element indicates a break in the space.

HIDE AND REVEAL

The principle of hide and reveal is at work in numerous contexts within interface design. The ability to display massive amounts of data in a small space by burying information and then bringing it to the surface is a fundamental feature of interactive media. Layering information and allowing the user to choose what content appears gives designers the opportunity to work with larger type than is possible on a static surface.

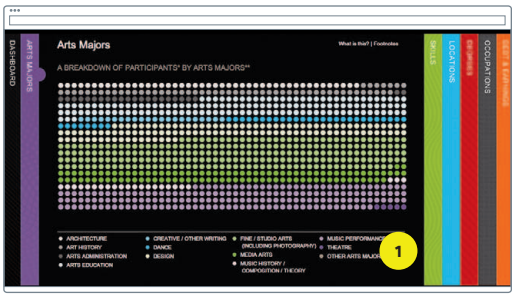


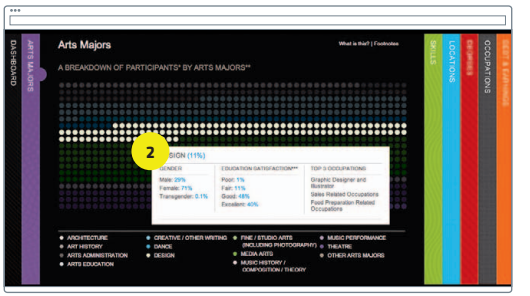


WRITING AS NAVIGATION This innovative portfolio website greets the user with a set of sentences that serve as navigation. Each line of text can be clicked and leads to a preview of a piece in the designer's portfolio that can be viewed in its own page after the jump. Design: Juan Astasio, 2011, http://www.astasiototal.com/astasiototal_2011/.

1 The green text on either side of the page creates two areas of navigation, leaving the center of the page open for reading.

2 Mouseover underlines the sentence and reveals a category for each portfolio piece. On clicking, the line spacing opens up to show an image and a description.

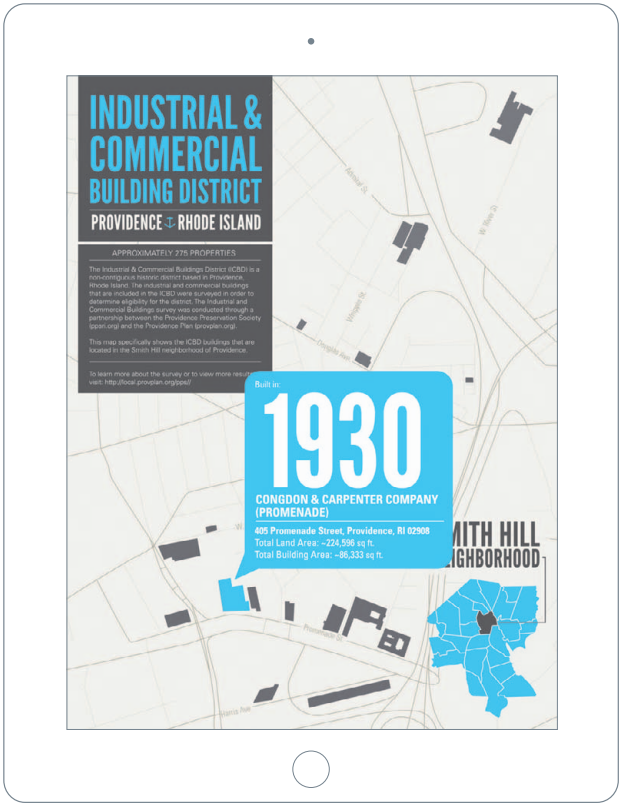




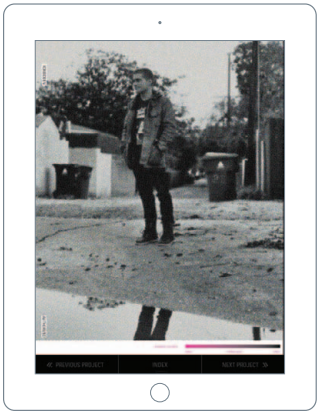
SNAAP The Strategic National Arts Alumni Project (SNAAP) looks at what art students do after graduation. These visual representations of the data are displayed in a compact space; information is revealed as certain areas are moused over. Indiana University, "SnaapShot 2011," 2012, http://snaap.indiana.edu/snaapshot_2011/.

1 The starting page shows 100 percent of the participants in the study, divided into color-coded percentages.

2 Mousing over a specific segment reveals a box with more information. Mouseover also darkens the other segments, which are not highlighted.



TOO MUCH INFORMATION If all of the content contained in this interactive map was displayed at once (above), the map would be impossible to read. Through the principle of hide and reveal, the designer is able to tell a story about every historic building on the map. Data source: The Providence Preservation Society and The Providence Plan, "Providence Preservation Society Industrial Sites and Commercial Buildings Survey 2001–2002," http://local.provplan.org/pps/. Design: Sarah Robertson, 2012.

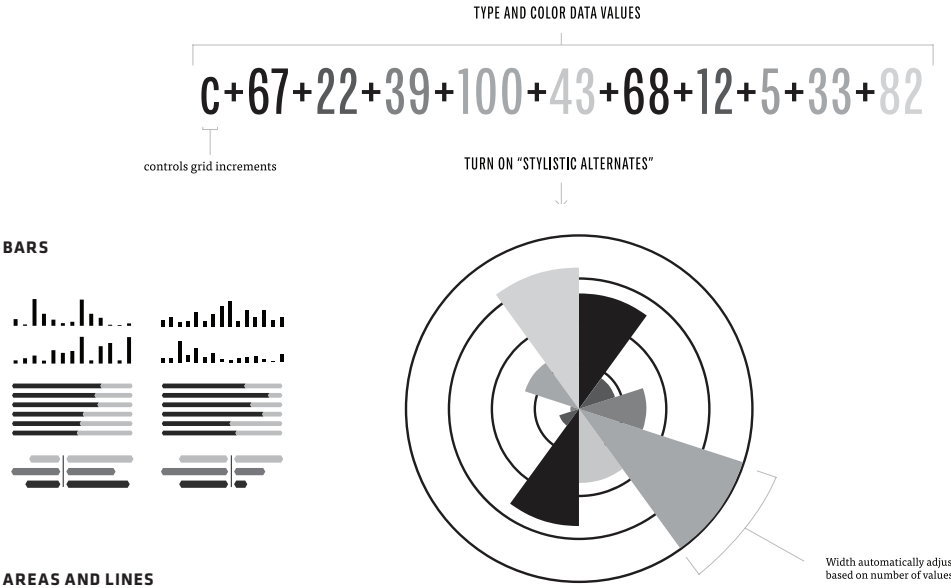


BEHIND THE FENCE Chapter titles are revealed by tapping the chain-link fence in this iPad app about an adolescent's list of forbidden books. Produced with Adobe DPS. Design: Richard Blake, 2013.

NOW YOU SEE IT Text is revealed when the user taps a title in this iPad app. Produced with Adobe DPS. Design: Amy Lee Walton, 2013.

TYPOGRAPHY AND DATA DISPLAY

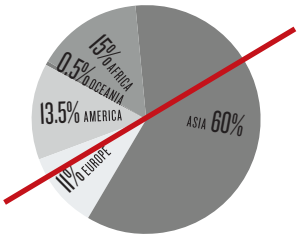
Visual representations of numerical data can communicate complex information in a clear, expressive, and illuminating manner, revealing patterns and relationships that would otherwise remain hidden in lists of numbers. Data visualization is a tool for both research and storytelling. Researchers use simple graphs and charts to rapidly compare data sets, while visual journalists employ similar means to narrate a story. Charts, graphs, and tables have countless uses in the worlds of finance and commerce as well. Whether employed for scientific research or public communication, nearly every instance of information design relies on typography to label visual elements.



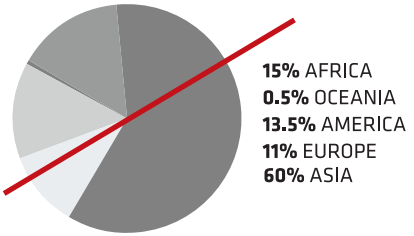
FF CHARTWELL Distributed as a typeface, FF Chartwell is a set of tools for constructing graphs. Chartwell employs OpenType features to interpret and visualize the data keyed in by the designer in simple numerical statements. The data remains editable text, making it easy to update the graphics. Design: Travis Kochel, 2012.

SOME BAD PIES

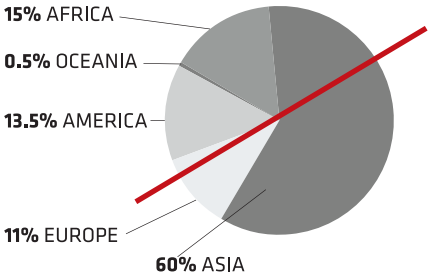
NUMBERS TOO BIG Since the percentage values are represented visually by the slices, there is no need to restate them so prominently.



TEXT TOO FAR AWAY The reader won't know which label goes with which slice.

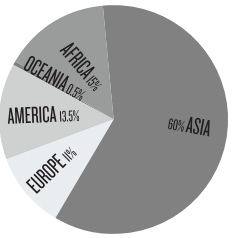


BUSY WORK Using lines to connect the text with the slices creates visual noise.

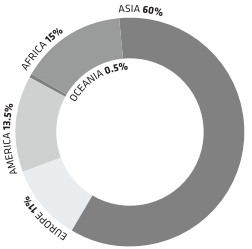


SOME GOOD PIES

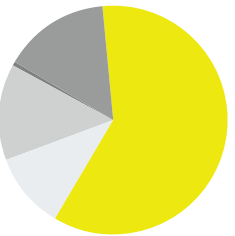
EMPHASIZE THE NAME, not the number.



RING INSTEAD OF PIE The open circle makes space for a label to fit inside.



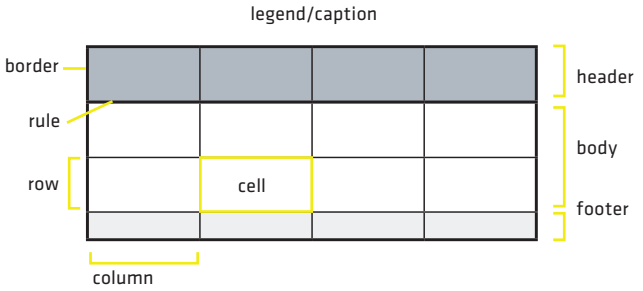
INTERACTIVE PIE Clicking on a label illuminates that slice, connecting written and visual representation.



ASIA **60%**
AFRICA **15%**
AMERICA **13.5%**
EUROPE **11%**
OCEANIA **0.5%**

DESIGNING DATA TABLES

Ordering information into lists is the foundation of designing data tables. A table is a bundle of horizontal and vertical lists, which can be read both from top to bottom in columns and from left to right in rows. The relationship between columns and rows expresses the meaning of a data set. A well-formatted table can be read easily in both directions. Creating a basic table is the first step in converting raw data into valuable visual information. The structure you give to a list can convey its purpose. Factors such as alignment, indents, symbols, and nesting should work with the content to establish hierarchical values. Clear, consistent typography will help users understand your tables.



ANATOMY OF A DATA TABLE Tables are constructed of rows and columns. Each cell, or data field, in a table contains one fact. A row represents one record of related data. Columns contain attribute values related to each row. Each column is reserved for one type of information. Diagram: Alice Hom, 2012.

THE ORDER OF THINGS There are three kinds of lists in HTML: ordered <ol>, unordered <ul>, and definition <dl>. Ordered lists are marked with numbers; unordered lists are marked with a graphic symbol or "bullet"; definition lists contain descriptive text.

```
<ol>
  <li> Apples </li>
  <li> Oranges </li>
  <li> Kiwis </li>
  <li> Pears </li>
</ol>
```

ORDERED LIST

1. Apples
2. Oranges
3. Kiwis
4. Pears

```
<ul>
  <li> Apples </li>
  <li> Oranges </li>
  <li> Kiwis </li>
  <li> Pears </li>
</ul>
```

UNORDERED LIST

- Apples
- Oranges
- Kiwis
- Pears

```
<dl>
  <dt>Apple</dt>
  <dd>A California computer maker.</dd>
  <dt>Orange</dt>
  <dd>A round fruit of a tree.</dd>
</dl>
```

DEFINITION LIST

Apple
A California computer maker.
Orange
The round fruit of a tree.

	Print	Web	PDF	TV	Embedding	Third parties
Basic Print & Web Licence (EULA)	✓	✓[1]	✓	✗	✗	✗
Multiple-User Licence[2]	✓	✓[1]	✓	✗	✗	✗
Webfont Licence	✗	✓	✗	✗	✗	✗
Self-Hosting Webfont Licence	✗	✓	✗	✗	✗	✗
Server Licence	✓	✓	✓	✗	✗	✓
Broadcasting Licence[2]	✓	✗	✓	✓	✗	✗
Service licence[3]	✓	✗	✓	✗	✗	✓
Apps and eBooks Embedding Licence (OEM)	✓	✗	✓	✗	✓	✗
Corporate licence	✓	✓	✓	✗	✗	✓[4]

MANAGING OPTIONS
This table is a list of available type formats listed in columns and coordinated with various licensing options set in rows. The table structure and colored icons make comparison shopping easier. Design: Typotheque, 2013.

TEXT ALIGNMENT In this table, the text alignment varies by data type to support the ease of browsing across columns and rows. Design: Alice Hom, 2012.

TYPE		ORIGIN	COUNT	UNIT	PRICE
APPLES		LOCAL	3	POUND	2.00
ORANGES		IMPORT	5	POUND	6.00
KIWIS		IMPORT	4	EACH	0.50
PEARS		LOCAL	1	POUND	2.00

1 Left-aligned text provides a familiar entry point into the content.

2 Lists of icons or single glyphs are centered in order to avoid a lopsided appearance.

3 Right- or decimal-aligned lists of numbers help users scan columns of numbers.

DATA TABLES: DO'S AND DON'TS

The tables shown here use alignment, rules, color, column width, and line spacing to structure information. Text that is aligned left, right, or centered immediately creates vertical structure; often no additional dividing lines are needed. Begin with clearly aligned text, and add vertical and horizontal rules or bands of color to emphasize relationships or draw attention to key data.

ROW & COLUMN SPACING Consider how row height and column width affect the overall readability of the table. Table design: Alice Hom, 2012.

Narrow row heights may overemphasize columns.

TYPE	ORIGIN	COUNT	UNIT	PRICE
APPLES	LOCAL	3	POUND	2.00
ORANGES	IMPORT	5	POUND	6.00
KIWIS	IMPORT	4	EACH	0.50
PEARS	LOCAL	1	POUND	2.00

Horizontal rules compete for tight line spacing.

TYPE	ORIGIN	COUNT	UNIT	PRICE
APPLES	LOCAL	3	POUND	2.00
ORANGES	IMPORT	5	POUND	6.00
KIWIS	IMPORT	4	EACH	0.50
PEARS	LOCAL	1	POUND	2.00

Uneven cell dimensions are distracting.

TYPE	ORIGIN	COUNT	UNIT	PRICE
APPLES	LOCAL	3	POUND	2.00
ORANGES	IMPORT	5	POUND	6.00
KIWIS	IMPORT	4	EACH	0.50
PEARS	LOCAL	1	POUND	2.00

Varying horizontal alignment is confusing.

TYPE	ORIGIN	COUNT	UNIT	PRICE
APPLES	LOCAL	3	POUND	2.00
ORANGES	IMPORT	5	POUND	6.00
KIWIS	IMPORT	4	EACH	0.50
PEARS	LOCAL	1	POUND	2.00

A fixed cell width based on the longest line can create an uneven rhythm overall.

FRUIT	COUNT	UNIT	PRICE
APPLES	3	POUND	2.00
BLOOD ORANGES	5	POUND	6.00
KIWIS	4	EACH	0.50
PEARS	1	POUND	2.00

TYPE	ORIGIN	COUNT	UNIT	PRICE
APPLES	LOCAL	3	POUND	2.00
ORANGES	IMPORT	5	POUND	6.00
KIWIS	IMPORT	4	EACH	0.50
PEARS	LOCAL	1	POUND	2.00

DATA PRISON Too many gridlines separate the cells, creating what Edward Tufte has called a "data prison."

TYPE	ORIGIN	COUNT	UNIT	PRICE
APPLES	LOCAL	3	POUND	2.00
ORANGES	IMPORT	5	POUND	6.00
KIWIS	IMPORT	4	EACH	0.50
PEARS	LOCAL	1	POUND	2.00

DOUBLE BORDERS are clunky and add no useful information.

TYPE	ORIGIN	COUNT	UNIT	PRICE
APPLES	LOCAL	3	POUND	2.00
ORANGES	IMPORT	5	POUND	6.00
KIWIS	IMPORT	4	EACH	0.50
PEARS	LOCAL	1	POUND	2.00

VERTICAL LINES disrupt the reading of rows.

TYPE	ORIGIN	COUNT	UNIT	PRICE
APPLES	LOCAL	3	POUND	2.00
ORANGES	IMPORT	5	POUND	6.00
KIWIS	IMPORT	4	EACH	0.50
PEARS	LOCAL	1	POUND	2.00

HEAVY HORIZONTAL RULES overshadow the content.

TYPE	ORIGIN	COUNT	UNIT	PRICE
APPLES	LOCAL	3	POUND	2.00
ORANGES	IMPORT	5	POUND	6.00
KIWIS	IMPORT	4	EACH	0.50
PEARS	LOCAL	1	POUND	2.00

VIBRATING COLORS, or colors that are very close in value, fail to create visual separation.

TYPE	ORIGIN	COUNT	UNIT	PRICE
APPLES	LOCAL	3	POUND	2.00
ORANGES	IMPORT	5	POUND	6.00
KIWIS	IMPORT	4	EACH	0.50
PEARS	LOCAL	1	POUND	2.00

THE HEADER LINE is the only row divided with a horizontal rule.

TYPE	ORIGIN	COUNT	UNIT	PRICE
APPLES	LOCAL	3	POUND	2.00
ORANGES	IMPORT	5	POUND	6.00
KIWIS	IMPORT	4	EACH	0.50
PEARS	LOCAL	1	POUND	2.00

VARIED HEADER AND ROW LINES express quiet hierarchy.

TYPE	ORIGIN	COUNT	UNIT	PRICE
APPLES	LOCAL	3	POUND	2.00
ORANGES	IMPORT	5	POUND	6.00
KIWIS	IMPORT	4	EACH	0.50
PEARS	LOCAL	1	POUND	2.00

SHADED HEADER AND ROW LINES further define hierarchy.

TYPE	ORIGIN	COUNT	UNIT	PRICE
APPLES	LOCAL	3	POUND	2.00
ORANGES	IMPORT	5	POUND	6.00
KIWIS	IMPORT	4	EACH	0.50
PEARS	LOCAL	1	POUND	2.00

A COLOR BAR emphasizes the price column as key information.

TYPE	ORIGIN	COUNT	UNIT	PRICE
APPLES	LOCAL	3	POUND	2.00
ORANGES	IMPORT	5	POUND	6.00
KIWIS	IMPORT	4	EACH	0.50
PEARS	LOCAL	1	POUND	2.00

SUBTLE SHADES of a single color let the text stand out.

YIKES! STRIPES! Alternate row fills, often called zebra stripes or row stripes, should be a subtle enhancement that guides readers along wide rows.

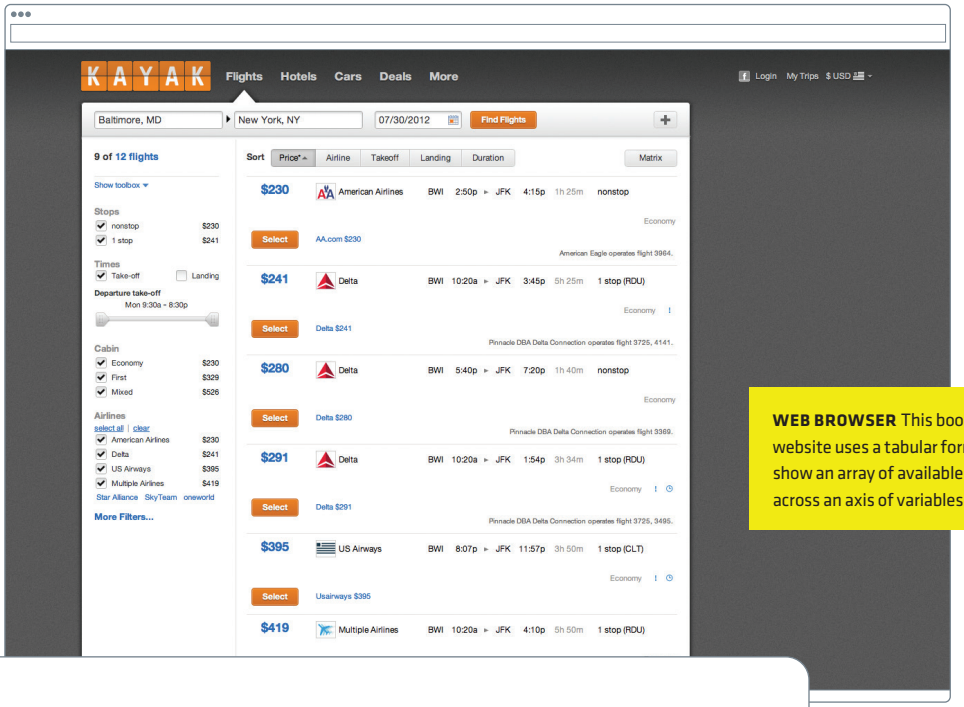
CASE STUDY

TRAVEL INTERFACES

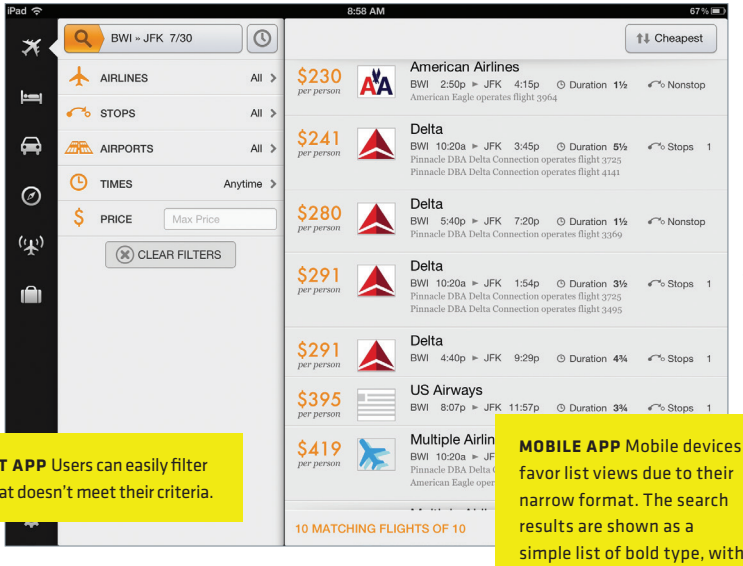
Travel booking sites depend on timetables to communicate available flights, hotel rooms, and rental cars to consumers. Itinerary selection is a prime example of data formatted into lists and tables. Presenting the available information in a tabular format helps users navigate on their own terms. Whether they are making decisions based on airline, price, duration, or number of stops, users can isolate variables easily by looking at these columns.

Customers of the travel-booking site Kayak will encounter multiple display layouts depending on their device and screen format.

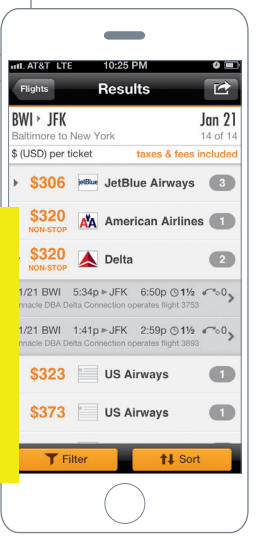
ZURICH AIRPORT The departure screens display condensed rows of type, which rotate to make room for additional flight information at this busy international airport. Photo: Javier Ortega Figueiral.



WEB BROWSER This booking website uses a tabular format to show an array of available choices across an axis of variables.



TABLET APP Users can easily filter data that doesn't meet their criteria.



MOBILE APP Mobile devices favor list views due to their narrow format. The search results are shown as a simple list of bold type, with emphasis on the departure and arrival times. This booking interface uses price as its main grouping heading.

IN THE CLASSROOM: WEATHER APPS

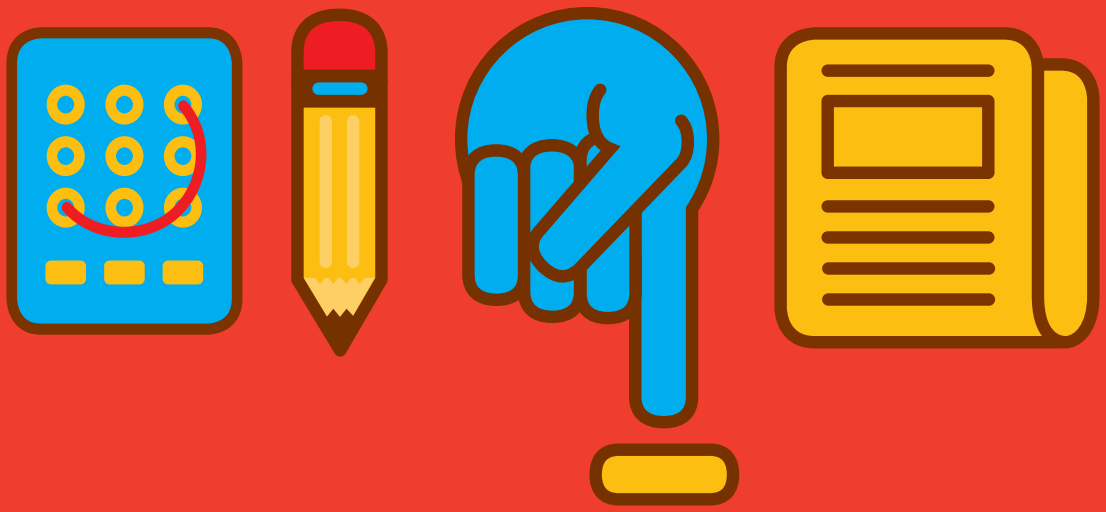
WITH JAVIER LOPEZ

During this project led by Javier Lopez in a Typography II course at MICA, students designed prototypes for a weather app. In addition to establishing a systematic family of icons representing weather conditions, students created compelling and readable information layouts, including page views for a single day's weather and a weeklong forecast. Combining text with icons in a meaningful hierarchy was key to success. Color could be used as part of a consistent brand identity or to convey information about weather or temperature conditions.

Design: Sara Shahabi, 2013.

EVERYDAY ELEMENTS Design: Nicolas Kubail Kalousdian, 2013.

SKYGLIMPSE Design: Kim Meistrell, 2013.



05 ICONS AND LOGOTYPES

NOEL CUNNINGHAM
ABE GARCIA
BRIAN PELSOH

Designers have long used icons to communicate information across linguistic and cultural barriers, creating signage and information graphics directed at global audiences. With the advent of modern computing and the graphical user interface (GUI), web designers have employed icons to help cross the language barrier between computers and humans. In the 1980s the new ethos of user-friendly design democratized the computing environment—one no longer had to be a computer scientist to access this powerful new technology. Stark depictions of trashcans, folders, and exploding bombs signaled a new age of personal computing.

The acceleration of technology has created a world that our ancestors could not have imagined, yet the use of pictograms and ideograms far precedes the invention of formal writing systems. Icons depict objects and concepts rather than spoken words, aiming to convey ideas quickly and universally. The design of icons is governed by tacit rules and guidelines as well as by shifting trends and constraints. Digital icons have evolved from simple bitmapped marks plotted on graph paper into colorful images shimmering with detail and depth. The profusion of lavish and elaborate icons has dissolved the divide between icons as functional interfaces and icons as linchpins in commercial brands.

Such commercial icons are akin to logotypes, another ubiquitous feature of the digital landscape. A logotype communicates the name of an organization, product, or brand through a distinctive typographic treatment. Although the word *logo* means "word," many logos use pictorial representations and abstract symbols to supplement or replace written text. Contemporary logo design has evolved from an ethos and ideology grounded in the constraints of print reproduction to a full-fledged multimedia endeavor.

Like type designers, creators of icons and logos seek to generate images that function at sizes large and small. And, like type designers, they seek to balance the desire for originality against the need to communicate through familiar references.

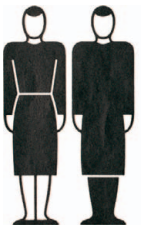
ICONS: SWITCHBOARD, PENCIL, PRESS, AND DOCUMENT Design: Abe Garcia, 2012.

WRITING WITH PICTURES

Contemporary interface icons are rooted in the pioneering work of Otto Neurath, who worked in Vienna in the 1920s and later in the Netherlands and the United Kingdom. Neurath, trained as a philosopher and social scientist, was the inventor of Isotype, a picture-based approach to education. The term Isotype stands for International System of Typographic Picture Education. Together with Marie Reidemeister (whom he married in 1941), Neurath produced innovative exhibitions, public information posters, and illustrations for books and magazines. He and a team of draftsmen, illustrators, and "transformers" employed simple, direct imagery to communicate complex ideas to a broad public. (The "transformer," who functioned like today's information designer or visual journalist, compiled data from scientific sources, constructed a meaningful story or focus, and created conceptual sketches that became the basis of production-ready graphics.) They were joined in 1928 by graphic artist Gerd Arntz, whose four thousand symbols form the core of the Isotype system.

While Isotype is best remembered for its stark silhouettes of babies, factories, and stalwart citizens, the icons served a higher purpose: to translate complex information into charts, maps, and diagrams that could be understood primarily through visual perception, with minimal reliance on written words and numbers. Isotype aspired to achieve scientific neutrality, leaving the interpretation of the naked facts open to the viewer. The system's visual style eliminated unnecessary details, combining the objectivity of a photograph with the schematic simplicity of a letterform. The Isotype Institute deployed its vast dictionary of icons in diverse ways over decades of publishing.

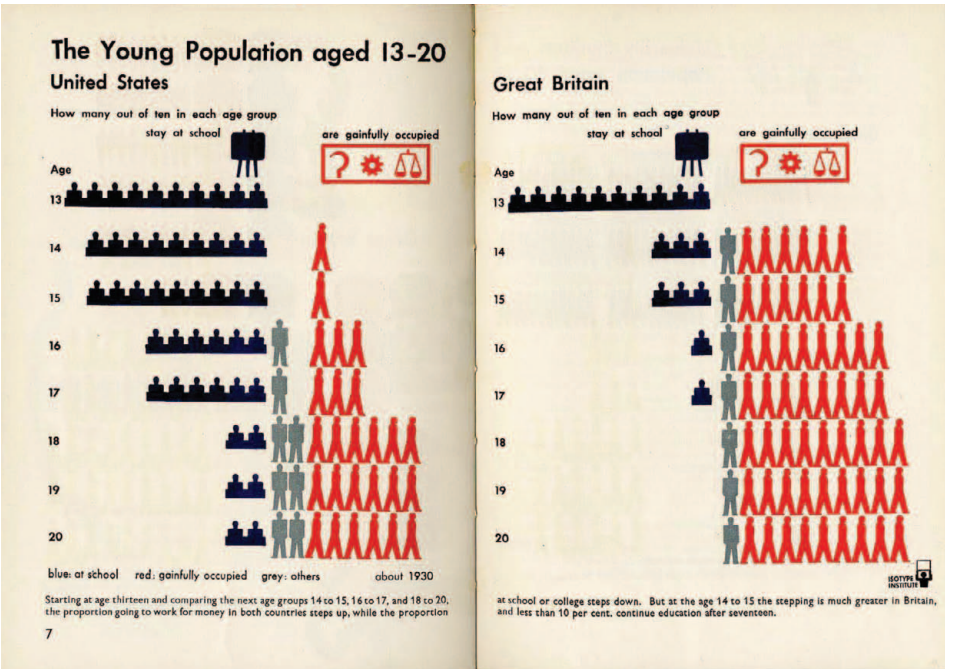
By the time the Isotype Institute closed in 1971, global pictograms were a worldwide phenomenon, applied to wayfinding, news graphics, instructional literature, Olympic Games branding systems, and more. Today icons are an integral part of user interface design, where they represent actions and ideas while conserving space and minimizing linguistic barriers.

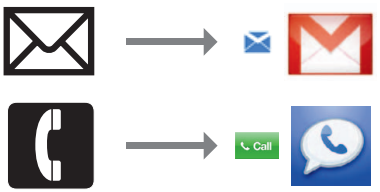


WORDS DIVIDE, IMAGES UNITE Believing in the power of visual images as a global language, Otto and Marie Neurath aimed to help average citizens grasp socioeconomic concepts. Working with Gerd Arntz (1900–1988), the Neuraths developed the idea of the "typographic picture," creating icon systems that resemble alphabets. Isotype icons designed by Arntz. *Gerd Arntz Web Archive*, http://www.gerdarntz.org. Courtesy the Gerd Arntz Estate. © 2013 Artists Rights Society (ARS), New York / Pictoright Amsterdam.

READ MORE >> Marie Neurath and Robin Kinross, *The Transformer: Principles of Making Isotype Charts* (London: Hyphen Press, 2009); Otto Neurath, *From Hieroglyphics to Isotype: A Visual Autobiography* (London: Hyphen Press, 2010).

OUR PRIVATE LIVES This book of charts was designed by the Isotype Institute in 1944. The editor noted in the preface, "Some people, among them most intellectuals, have been conditioned to learn from texts and even tables of figures. But this is certainly not true of the majority of mankind and perhaps not even true of the majority of readers, who may still take things in more easily by sightseeing."





U.S. DEPARTMENT OF TRANSPORTATION SYMBOL SIGNS These standard icons, endorsed by the AIGA and the United States Department of Transportation, adorn signs and public spaces across America. Their blunt iconography continues to influence on-screen icons today. Although email applications make no use of paper envelopes and mobile voice functions have little in common with the phone receivers of the 1950s, icons of these familiar objects remain enduring players in our visual lexicon. Design: Roger Cook and Don Shanosky, 1974.

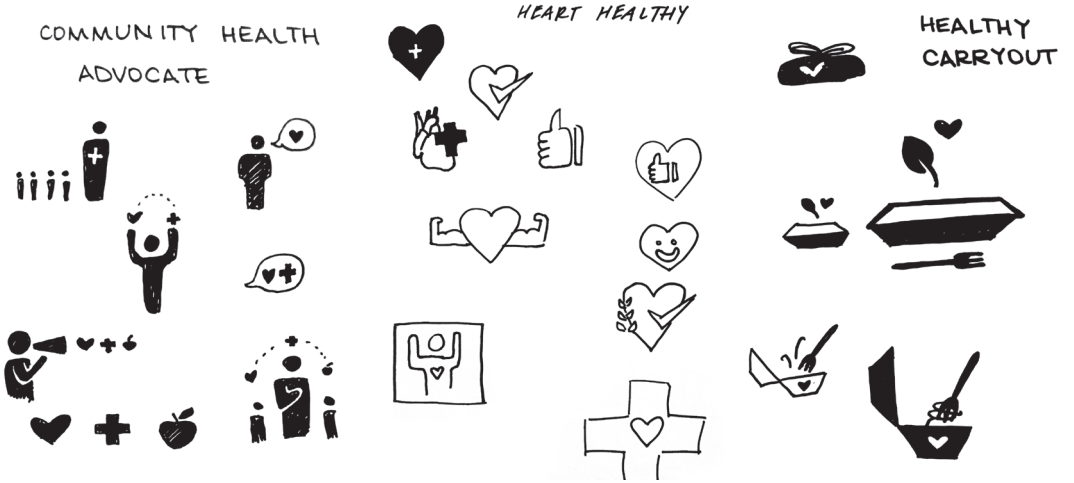
CASE STUDY

NOUN PROJECT

Launched in 2011 by designer/architect Edward Boatman and designer Scott Thomas, the Noun Project is a library of icons available for free on the website NounProject.org. The site is also a platform that accepts submissions from users. The project builds on the spirit of international cooperation and communication embodied by Isotype in the twentieth century.

EXPANDING THE LANGUAGE The icon at left was submitted by an Argentinean designer for *maté*, a traditional South American drink. The icon was initially denied because the moderators were not familiar with the drink. The icon for Cheburashka, the Russian animated character and Olympic mascot (right), was submitted by a Russian designer. Design: Xavier Via and Alexey Bondarenko, 2011 and 2012.

ICONATHON AND ICON CAMPS In 2011 Code for America partnered with the Noun Project to offer Iconathons. Traveling through six U.S. cities, Noun Project founder Boatman conducted daylong workshops bringing together designers, civic leaders, and city staffers to design new urban symbols. In Baltimore a team of designers from MICA paired up with city leaders to create icons focusing on food, health, and community.

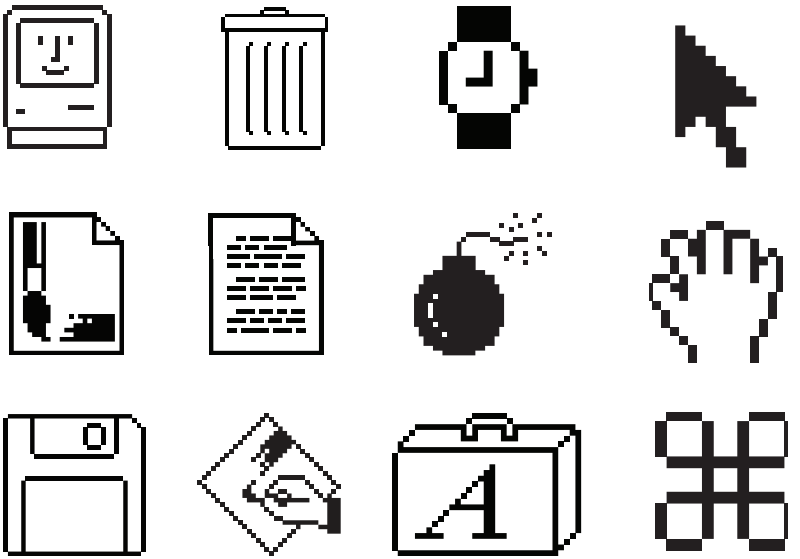


LEFT TO RIGHT: Community Health Advocate, Heart Healthy, Healthy Carry-Out, Community Health Activities, Virtual Supermarket/Pick-Up Site. Design: Edward Boatman, 2012. Sketches by Lauren Adams, Kacie Mills, and Briony Evans Hynson, 2012.

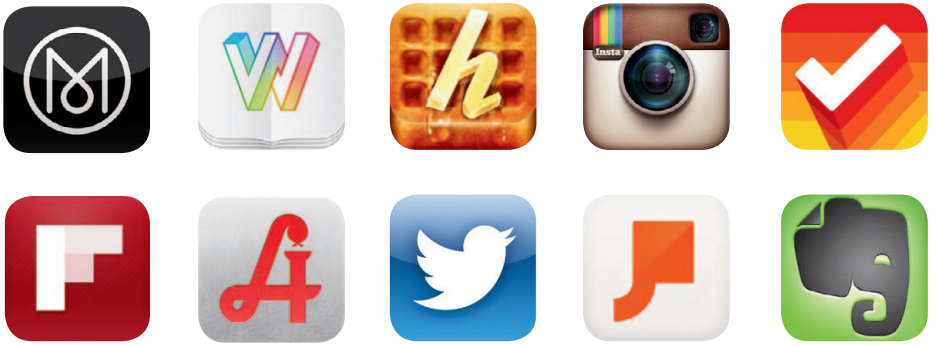
WAYFINDING FOR SCREEN

Screen icons fall under two broad categories: user interface icons and application icons. User interface icons represent the tools and processes embodied in a device or software product, while application icons depict a piece of software that is for sale in an app store or installed on a user's device. Application icons are similar to logos, constrained in the rounded square shield that has become a brand beacon of its own.

User interface icons symbolize actions, such as go forward, go back, refresh, search, comment, and so on. Some symbols communicate intuitively, such as an arrow that relies on its innate graphic form to convey directionality. Most interface icons have tougher jobs to do, however, and many employ obscure metaphors and abstractions. You may ask yourself how a pattern resembling a cloverleaf highway became synonymous with "command," or how a suitcase came to represent a bundle of fonts. Repeated over time, such connections become an entrenched digital slang.



8-BIT MASTERPIECES Designer Susan Kare created the simple black-and-white icons that appeared on the earliest Macs in the 1980s. Kare developed her first icons by filling in squares on sheets of finely gridded graph paper. With the introduction of the OSX operating system in 2001, Apple shifted to a glossy, jellybean aesthetic, causing many designers to look back fondly at those simpler, 8-bit times. Design: Susan Kare, 1983. *Susan Kare Interface Graphics*, http://kare.com; *Susan Kare Limited Edition Prints*, http://kareprints.com.



IOS APPLICATION ICONS TOP: Monocle; WikiWeb by Friends of the Web; Hngry by Michael Flarup, concept by Shiftedfrequency; Instagram by Cole Rise; Clear by RealMac Software Limited. BOTTOM: Flipboard by Marcos Weskamp; Apotheken by Stephane Reverdy; Twitter by Doug Bowman; Piictu; and Evernote by Gabe Campodonico.

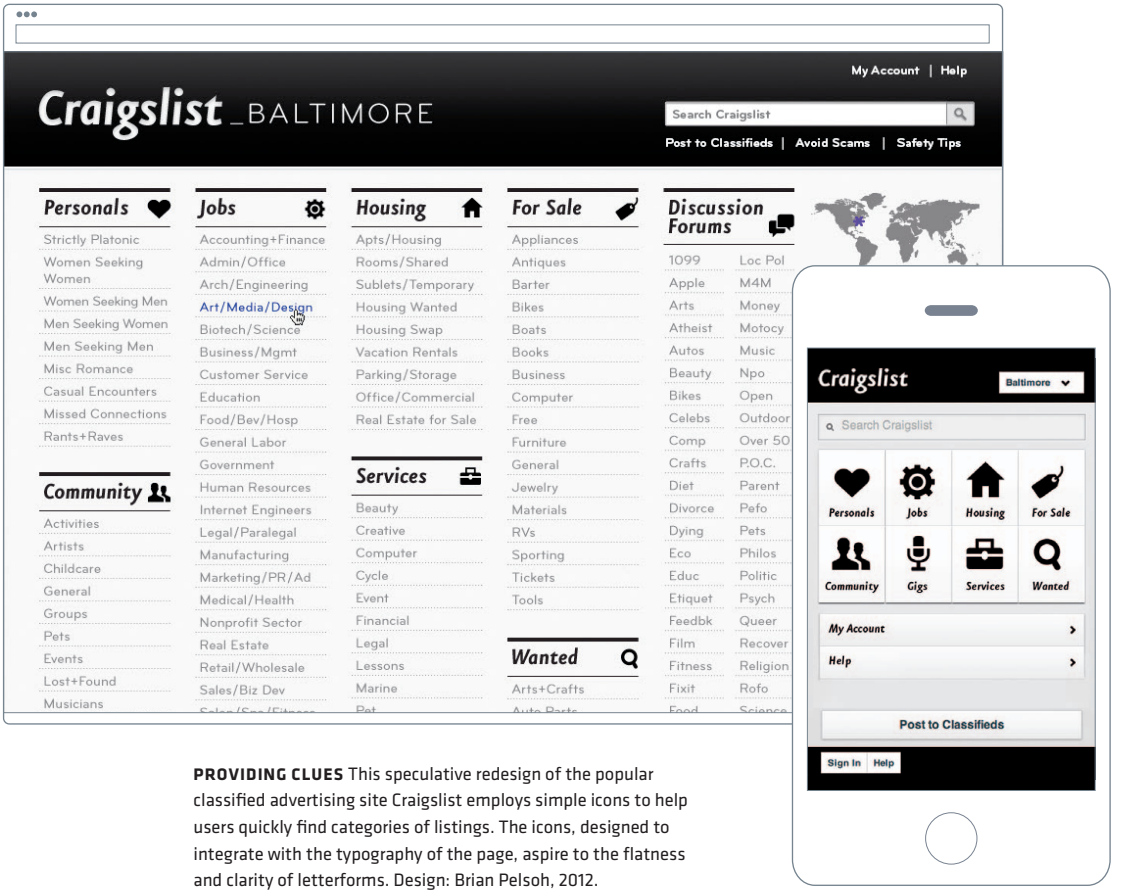
MAC OS APPLICATION ICONS TOP: Adobe InDesign CS6 by Tolleson Design; OSCulator by Wildora; Miro by Participatory Culture Foundation; Coda; Kaleidescope by Sofa. BOTTOM: Google Chrome; Firefox by Mozilla; Apple Safari; Spotify; Apple Launchpad.

SIMILAR BUT DIFFERENT When designing an app for use on both iOS and Mac OS, it is best practice to design a related but distinct icon for use on each platform, as in these icons for the app Silkscreen: iOS on the left, Mac OS on the right. Design: Stephane Reverdy, 2012.

READ MORE >> Jon Hicks, *The Icon Handbook* (Penarth, U.K.: Five Simple Steps, 2012).

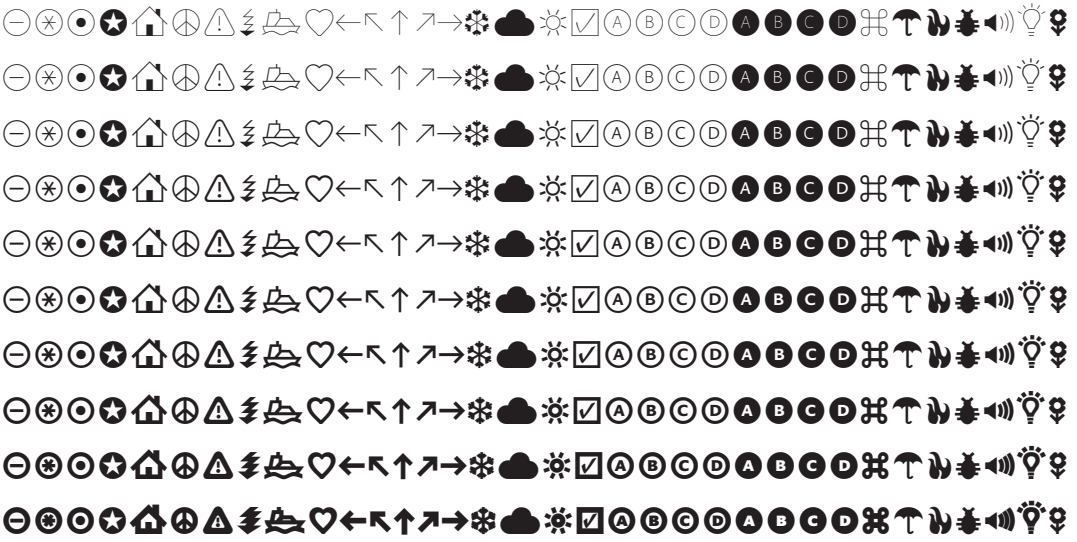
ICONS AS TYPOGRAPHY

Screen-based icons are delivered in several formats, including bitmaps, vectors, and fonts. Daggers, dingbats, and pointing hands have been part of the typographic vocabulary for centuries. Today symbol families resemble characters in a typeface, punctuating lines of text or enlivening a table, appearing side by side with letterforms. Although today's display technologies have made colorful, detailed imagery commonplace, there remains strong support among designers and users for icons that are as flat and legible as letterforms, functioning as "typographic pictures" in the tradition of Isotype.



PROVIDING CLUES This speculative redesign of the popular classified advertising site Craigslist employs simple icons to help users quickly find categories of listings. The icons, designed to integrate with the typography of the page, aspire to the flatness and clarity of letterforms. Design: Brian Pelsoh, 2012.

HOT OR COLD The icons in this prototype for a weather app resemble simple hieroglyphs. Design: Estelle Kline, 2013.



ICONS AS FONTS The Greta Symbol font family contains more than twelve hundred characters, including arrows, pictograms, weather indicators, chess figurines, and more. While symbol fonts have a long history, Greta Symbol makes a new contribution by including most of its icons in ten weights, allowing them to integrate with text. Design: Peter Bil'ak, Typotheque, 2012.

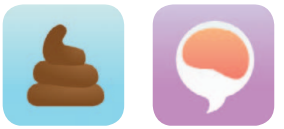
Greta Symbol has ten different weights. This chart demonstrates that the width of each symbol remains consistent across the whole family.

TUTORIAL

CREATING AN APP ICON

A bitten apple has no obvious link to computer equipment, yet this historic symbol of knowledge has become synonymous with digital innovation. Whether its imagery is literal or oblique, an app's icon is an essential communication tool. The form of a well-designed icon should reflect the app's function, convey an attitude about the product, and reflect what impression you want to give your users when they first encounter it.

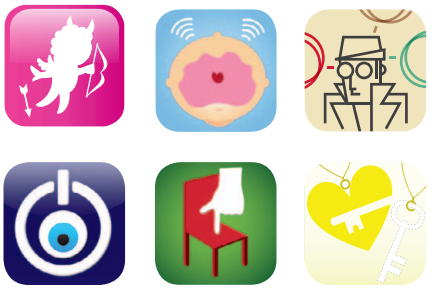
KEEP IT SIMPLE A spare, direct app icon is easier for users to understand and remember than a highly detailed image. Represent your app with an image that directly or metaphorically represents the app's function, or choose a memorable image that conveys the spirit of your product more obliquely. It is better to add detail and dimensionality to a simple image than to start with a dense design.



TELL A STORY Just like a logo, an app icon can tell a story. Some icons must incorporate an existing logo or build on an established brand identity. When developing a new brand, you can let the app icon establish the tone for the entire program—indeed, the app icon may be the brand's most frequently seen application.

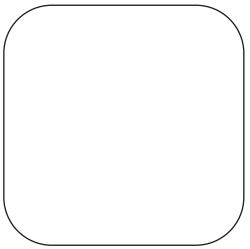
Icon Design: Emma Sherwood-Forbes, 2012.

AVOID LONG WORDS Typically, icons stand in place of words, objects, ideas, or operations. Sometimes words offer the simplest way to represent a complex function or product, but generally, icon designers look for imagery with more concrete points of reference. Long words are especially cumbersome.

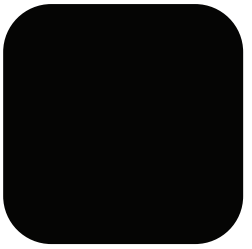


GRAB SOME ATTENTION Which app icons attract your interest? Designs that maximize an icon's tiny real estate with bold graphic elements are especially memorable. Icons created in workshop led by Ellen Lupton for Grupo A, São Paulo. Design (from top left): Bruno Mello, Louise Novais, Marcos Zaidowicz, Raquel Castedo, Aline Maruyama, and Adriana Leao, 2012.

CUSTOM GLOSS Developers can add Apple's standard gloss effect to their icons when submitting their product to the app store, but why use Apple's factory finish when you can give your icon its own custom shine? Follow these easy steps to add an alluring shimmer to your app icon. Play with the shapes and opacity of elements to control the outcome.



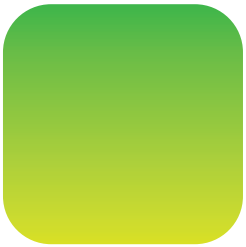
STEP 1
Draw a 100 × 100px box with a corner radius of 20px.



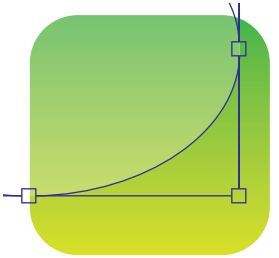
STEP 2
Reverse the stroke and fill.

STEP 3
Fill with a gradient and set the angle to 90˚.

STEP 4
Choose two colors or more for your gradient.



STEP 5
Copy and paste in place; set an inner glow on the top layer. Opacity: 75%; Blur: 25px.



STEP 6
Draw a white ellipse over the design.

STEP 7
Drop the opacity to an appropriate level.

STEP 8
Add your logo, icon, monogram, or design and add a drop shadow to it.

Tutorial: Noel Cunningham.

READ MORE >> Michael Flarup, "iPhone App Icon Design: Best Practises," *Pixel Resort*, http://www.pixelresort.com/blog/iphone-app-icon-design-best-practises/; Kate McInnes, "Quick Tip: Creating Simple Icons with Adobe Illustrator, a Beginners Guide," *Vector Tuts+*, http://vector.tutsplus.com/tutorials/tools-tips/quick-tip-creating-simple-icons-with-adobe-illustrator-a-beginners-guide/; "App Icons on iPad and iPhone," *iOS Developer Library*, http://developer.apple.com/library/ios/#qa/qa1686/_index.html.

YOUR ICON SHOULD FUNCTION AT THESE SIZES:

1024 × 1024px
512 × 512px
256 × 256px
128 × 128px
32 × 32px
16 × 16px

SCALABILITY

A desktop icon for Mac OS may be viewed as small as 16×16px in a sidebar or as large as 1024×1024px in Apple's flip-through "cover flow" interface. Creating scalable application icons thus demands attention to pixel-perfect detail. Doing it well requires making at least six different versions of the same icon for various display purposes. A Mac OS icon file (ICNS) consists of multiple image files at different sizes, each simplified according to its scale, with more detail possible at larger sizes. The ICNS format supports the following sizes: 16×16, 32×32, 48×48, 128×128, 256×256, 512×512, and 1024×1024px. Begin drawing the icon at the largest size and work your way down to the smaller sizes, redrawing elements as needed. For the sidebar icon, you can eliminate the reference to a folder, as seen in the tiny 16px camera icon below.

RIGHT Draw each size individually, simplifying and adjusting as needed for legibility.

128px

64px
Scaled down from 128px

32px
Redrawn and simplified

16px
Redrawn for use in sidebar

WRONG Simply scaling an icon down creates illegible forms that lack detail and refinement.

WRONG Likewise, scaling an icon up from the smallest size yields odd-looking icons at larger sizes.

Icon demonstration diagrams by Neven Mrgn, 2010

512 × 512px
iTunes artwork

114 × 114px
Home screen icon for iPhone Retina Display

72 × 72px
Home screen icon for iPad

58 × 58px
Spotlight and settings icon for iPhone Retina Display

57 × 57px
App store and home screen icon for iPhone/iPod Touch

50 × 50px
iPad Spotlight search results

29 × 29px
Settings icon on iPad and iPhone, and spotlight icon on iPhone

PRESTO CHANGE-O The logo for Presto draws inspiration from the instant connections it allows. It uses simple, rounded forms to reflect the friendly feeling of sharing content in a social network. Apple's iOS requires icons in a multitude of sizes for various devices and presentation situations. Design: Rik Bracho, Face, "Presto," 2012, http://www.designbyface.com/project/presto.

CASE STUDY

IMAGINARY APPS

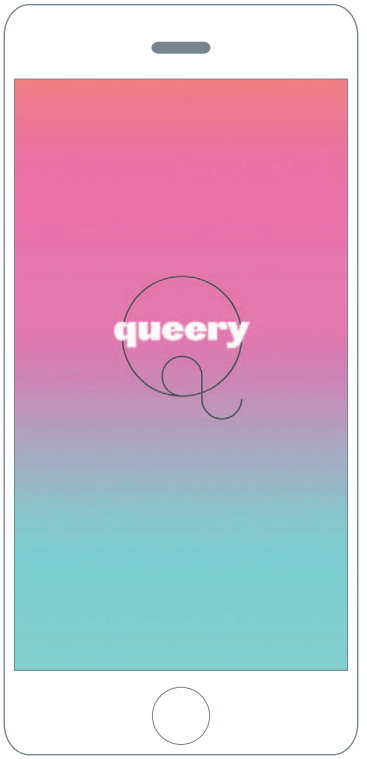
While creating a poster for an imaginary event has long been a staple project in design education, its twenty-first-century replacement may well be the imaginary app. Designing an app icon can be the starting point for imagining new and improbable uses of our digital devices. There are innumerable ways that apps could make our lives easier, more enjoyable, or simply more absurd.

Creators of new apps often start by brainstorming novel ways to use the smartphone. A useful next step is to design icons to represent key ideas and then sketch out interfaces that explain how the apps would work. Such a process enables designers to begin building user experiences, develop branding in the digital environment, and present product concepts before constructing a fully functional prototype.

Designer Brian Pelsoh explored cultural assumptions about gender and sexuality by designing a series of imaginary apps that can do everything from make things queer to tell you if someone is queer. As Pelsoh explains, "Cultural stereotypes serve to construct fixed, narrow categories of gender and sexuality. This project celebrates a more fluid understanding of identity." Pelsoh's abstract icons below synthesize these ideas.

A QUEERIFIED IPHONE (Left to right) Gender Bender, Queerify, Nomophobe, Trans-L8R, HomoVision, GayDar, InstaQueer, and Queery. Developed for the exhibition *The Imaginary App*, curated by Svitlana Matvlyenko and Paul D. Miller. Design: Brian Pelsoh, 2013.

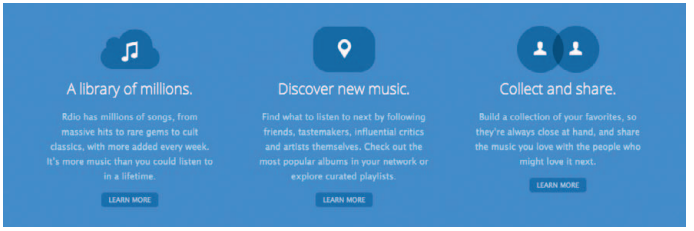
IMAGINING THE IMPOSSIBLE These two imaginary iPhone apps push the limit of reality and absurdity. With Gender Bender (above) a user is able to transform the gender of anyone they photograph. With Queery (right), the user is able to get answers to any question from a queer perspective. Design: Brian Pelsoh, 2013.



ICONS FOR INTERACTION

Icons play a key role in making a digital experience rich and guiding users through a complex web of screens and information. Tiny web favicons help us see what websites await in a seemingly endless array of open browser tabs. Simple pictograms can summarize information, making it faster and easier for users to anticipate what will happen when we click on something. They also help us scan navigation menus and decide where we want to go. Icons can save space and communicate broadly when written language is not universal. They can also draw attention to recent changes or important notifications. In the case of the infamous emoticons, they convey moods and intentions with just a few characters.

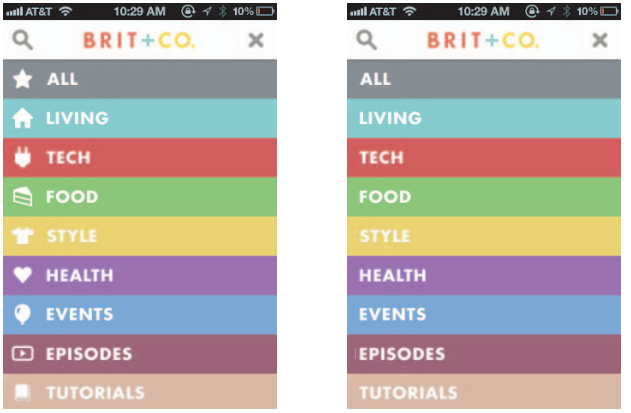
SUMMARIZE AND HIGHLIGHT Icons can summarize features and help break apart blocks of text.



Design: Rdio Design & Engineering Team, 2010

EXPLAIN ACTIONS Icons tell a user what will happen if they click on an element.

AID NAVIGATION Icons make it easy to scan navigation categories quickly.



Design: Brit + Co., 2012

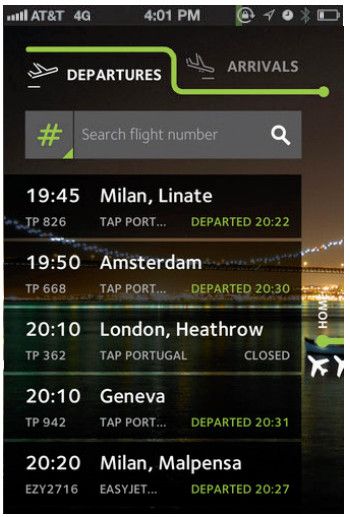
ICONS COME IN THREE FLAVORS

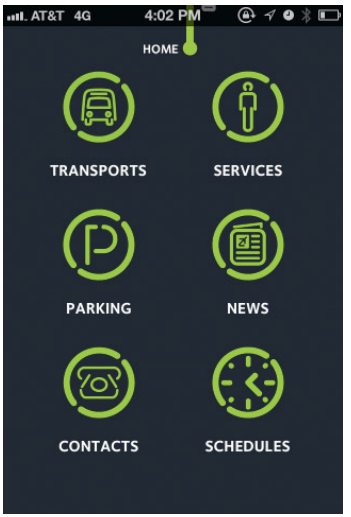
Design: Alexander Kahlkopf, *Iconmonstr*, http://iconmonstr.com, 2012.

PICTORIAL Some icons depict an object and its intended function, such as a camera for taking pictures.

METAPHORICAL Examples of metaphors include using a lock for online security or a cloud for remote data storage.

ABSTRACT Some icons have an indirect meaning, but they become familiar with repetition and use over time.





PREPARE FOR TAKEOFF The dramatic use of icons helps make this app for Portuguese airports enjoyable and memorable. Design: João Oliveira Simões, Innovagency, 2012.

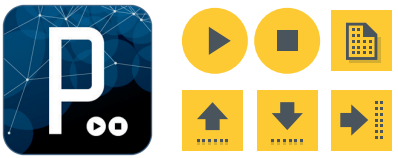
NO NEED FOR WORDS The home page for this British design studio uses icons to create a simple navigation system that reveals explanations of the icons only on mouseover. Design: Carbon Studio Ltd., 2012. *Carbon Studio*, http://www.carbonstudio.co.uk.

CASE STUDY

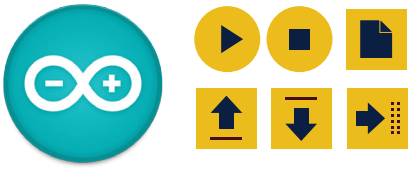
NOT SO DISTANT RELATIVES

Processing and Arduino are two related programming environments built with designers, artists, and makers in mind. The user interfaces for both are almost identical, and, until recently, the apps' icons were similar as well.

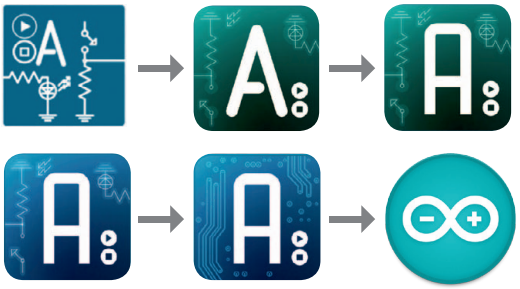
Processing is an open-source programming language; Arduino is a prototyping platform that enables artists and designers to build interactive objects and environments. In 2011 Arduino undertook a rebranding campaign to make its overall identity more distinct from Processing, while maintaining the functional familiarity of its core interface.



PROCESSING: APPLICATION AND INTERFACE ICONS Processing is a programming language based on Java, designed for artists, designers, and other creatives. Its simple, direct icons have influenced the design of other platforms, including Arduino. The app icon incorporates the commonly used "play" and "stop" symbols.



ARDUINO: APPLICATION AND INTERFACE ICONS Arduino's design was influenced by the Processing platform that came before it. After the rebranding campaign, its application icon has become a full-blown logo, printed directly on products and packaging.



BIOGRAPHY OF AN ICON Evolving from an overly complicated design to an almost identical look with Processing, Arduino's icon was redesigned in 2011 to emphasize the platform's own idenity. The current version of the logo uses the mathematical infinity symbol in place of a letterform, resulting in a more global mark.

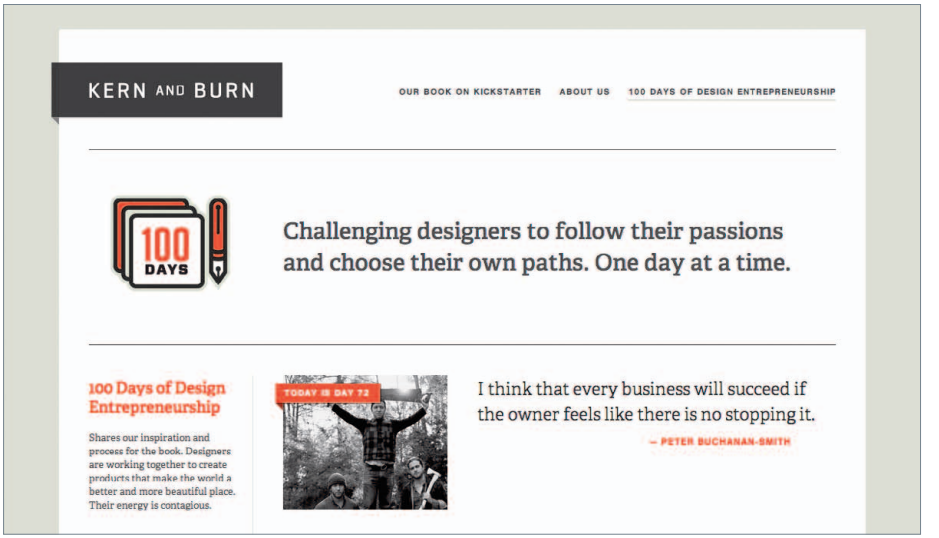
CASE STUDY

LOGO, MEET NAVIGATION

Kern and Burn is a cross-platform publication that presents the personal stories and perspectives of design entrepreneurs. The project began with the blog "100 Days of Design Entrepreneurship," a series of articles, interviews, and stories about self-driven design practices. *Kern and Burn* was published as a book in 2013. The site employs thematic icons for content areas (passion, hustle, perspective) as well as simpler interface icons (comment, bookmark, home). The logo badges and navigation icons form a visually coherent family.

CONTENT BADGES

INTERFACE ICONS



KERN AND BURN Website design: Tim Hoover and Jessica Karle Heltzel.
Logo badges and navigation icon set: Eric Mortensen, 2012.

TUTORIAL

DRAWING INTERFACE ICONS

Icons have become a major aspect of digital product design, branding, and user experience. Whether you are adding to or modifying an existing icon set or creating an entirely new family, drawing at such a small scale can be challenging. Start with clear metaphors or representational concepts for your icon and determine how much detail is achievable at each size of output. Set clear parameters to work with, such as stroke width, size, and color palette. Make use of modular elements when possible.

DEFINE THE FUNCTION What is your icon for? Does it lead users to find their personal settings? Or does it help them broadcast a photo to the rest of the world? Is your icon an attention grabber, design detail, or visual guidepost? Decide where it will be displayed, and thus what size it should be. Is it a tiny favicon or part of a series of navigational elements? Think about your primary users and the languages they use. Design: Eric Mortensen, 2012.

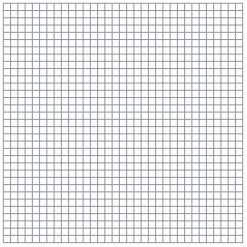
FIND A METAPHOR Often the hardest part of designing an icon is finding an appropriate metaphor to communicate its idea. Start by searching for existing conventions. A simple Google image search is a good place to begin, as are icon repositories like the Noun Project and Icon Finder. Usually, it doesn't make sense to reinvent the wheel when it comes to interface icons; the more ubiquitous the metaphor, the easier it is for users to grasp. Add your touch through the representation of the metaphor. Design: Eric Mortensen, 2012.

MIND MAP If a convention does not already exist, make a mind map. Put the action you are trying to represent in the middle, then branch out with every idea you can think of to visually represent it; use words and doodles to get all your ideas out. Mind map: Brian Pelsoh, 2012.

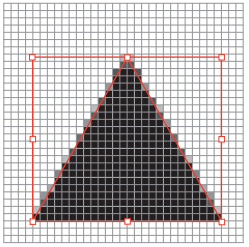
EVALUATE YOUR IDEAS With a critical lens, look at all of your ideas. Ask yourself the following questions about each concept: Is it easily recognizable? Does it have appropriate detail? Is there a risk of negative connotations? Is it visually appealing? Choose your best direction.

CONSISTENCY IS KEY Notice how complementary colors and consistent line weights are used in the two icon sets above.

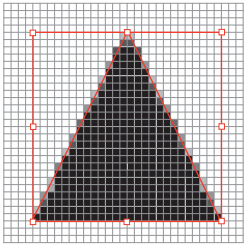
CUSTOM PIXELS While there are many existing icon sets for designers to choose from, making your own is the only way to have complete control over what your icons are and how they look. Follow these easy steps to get started making a simple paper airplane icon. Tutorial: Brian Pelsoh.



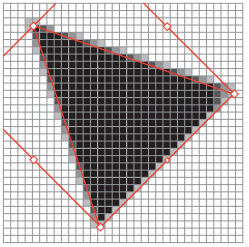
STEP 1
Make a 32 × 32px Illustrator document, RGB, 72ppi, with pixel preview on.



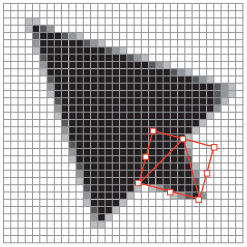
STEP 2
Draw a polygon with three sides and a radius of 15px (a triangle).



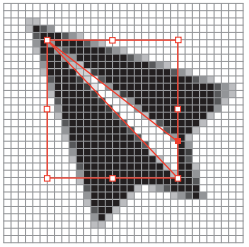
STEP 3
Increase the height of your triangle by a few pixels.



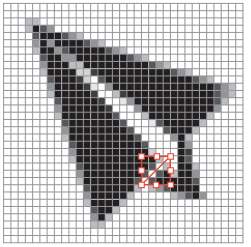
STEP 4
Rotate the triangle forty-five degrees and center it.



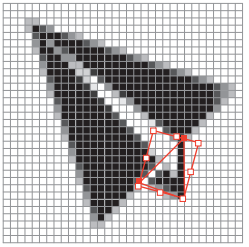
STEP 5
Draw a triangle with a radius of 5px, rotate it fifteen degrees, and line it up with the center of the main triangle.



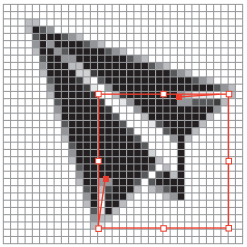
STEP 6
Draw a white sliver in the center of the shape.



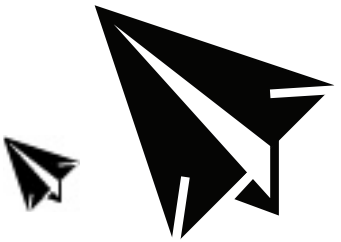
STEP 7
Add a white line on the top edge of the smaller triangle.



STEP 8
Straighten out the right edge of the smaller triangle so that it makes a solid black line.



STEP 8
Add two diagonal white lines from the outer points of the large triangle.



FINISHED!
On the left is how the icon will appear on screen; the crisp vectors on the right show its origin.

DRAWING WITH PIXELS Drawing with pixel precision takes some practice; it's much harder to control pixels than vectors. Be sure to turn on pixel preview.

LOGOTYPES

A logotype seeks to express the name of a company or product in a memorable way. Although people broadly use the term "logotype" and the shortened form "logo" to include nonverbal brand marks, the Greek word *logos* means "word."

The rise of screen media has changed the way we think about visual branding, opening doors for a multiplicity of ways a logo can look, live, and behave. For most of the twentieth century, graphic designers focused primarily on print. Offset lithography, which required a separate plate for each of the colors in the CMYK printing process, often limited the designer to one or two colors because multicolor designs were expensive to reproduce. An aesthetic of simplicity and flatness influenced the form of modern logos for decades. Indeed, using special effects such as gradients and transparencies in logos used to be frowned upon and considered a telltale sign of weak and ineffectual design.

In the early 1990s, new digital tools and processes made it easier to design and reproduce drop shadows, fine lines, transparency, and multiple colors, and the proliferation of screen devices overturned some of design's most sacred truths. While a logo still needs to be readable, direct, and translatable across diverse media, it now occupies a visual world replete with color, dimensionality, detail, motion, and even sound. Designers now find themselves struggling to be clear, purposeful, and original while using a visual vocabulary that has shed its print-based constraints.

THE DIMENSIONAL LOGO Logos that used to underscore the flatness of the page now shimmer with a strangely synthetic materiality.

1940 2000 1976 2001

MULTICOLOR

NBC by Chermayeff & Geismar, 1986

MOHAWK by Michael Bierut, Pentagram, 2012

MOST by Mind Design, 2012. Client: Tom Dixon.

AOL by Wolff Olins, 2010

SHADOWS, GRADIENTS, AND TRANSPARENCY

ALZHEIMER NEDERLAND by Studio Dumbar, 2012

OBAMA '08 by Sender LLC, 2007. Creative Director: Sol Sender. Designers: Andy Keene and Amanda Gentry.

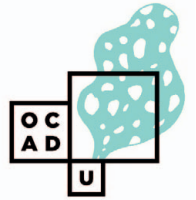
EDP by Sagmeister and Walsh, 2011

EXPO MILANO by Andrea Puppa, 2013

FLEXIBLE

DESIGN ACADEMY EINDHOVEN by the Stone Twins, 2010

SECCA by Luke Hayman, Pentagram, 2010



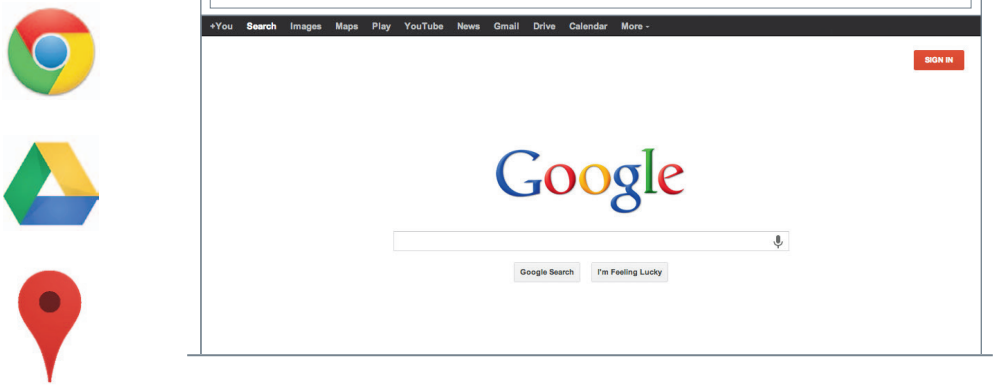
OCAD by Bruce Mau Design, 2012

NYC by Wolff Olins, 2011

WORKING WITH COLOR

There are several systems for identifying color accurately on screen, including hexadecimal, RGB, and RGBA, defined on the facing page. Designers choose and combine colors into attractive palettes based on the qualities of colors. Color harmonies are particular relationships among colors grouped around the color wheel; color palettes built around these common constellations generally feel balanced and complete.

For decades, logos were reproduced primarily in black and white; even one additional color was a luxury. Today, however, color is dominant. Contemporary logos function primarily on screen, and full-color printing has become commonplace. While making sure a logo functions well in black and white is still an excellent test of the mark's basic physical fitness, designers must consider every logo within the context of the company or organization it will represent and the range of uses it will have. A television station or an online business might find little need for a black-and-white logo.



GOOGLE PRODUCT SUITE
Google employs consistent colors across its vast empire of products. Design: UXA Google Design Team. Google and the Google logo are registered trademarks of Google Inc., used with permission.

#0140CA	#DD1812	#FCCA03	#16A61E
rgb(1,64,202)	rgb(221,24,18)	rgb(252,202,3)	rgb(22,166,33)
rgba(1,64,202,1)	rgba(221,24,18,1)	rgba(252,202,3,1)	rgba(22,166,33,1)

COLOR HARMONIES

COMPLEMENT
Two colors located opposite one another on the color wheel

SPLIT COMPLEMENT
One base color plus two colors that sit on either side of its complement

ANALOGOUS
Two or more colors that sit next to each other on the color wheel

TRIADIC
Three colors spaced evenly around the color wheel

SQUARE
Four colors spaced evenly around the color wheel

TETRADIC
Four colors in two complementary pairs

Color diagrams: Jessie Dickey

DIGITAL COLOR SYSTEMS

HEXADECIMAL Specifying colors in HTML, the hexadecimal color system represents the percentages of R (red), G (green), and B (blue) that make up a color on screen with six digits. A hexidecimal color tag always starts with a pound (#) sign in HTML and CSS. Hexadecimal values can be generated in the Color Picker for Photoshop and Illustrator.

RGB All colors on screen are rendered in mixtures of red, green, and blue light (R, G, and B). RGB is an additive system, meaning that these three colors combine in different ratios to create a broad range of colors. The value for each color is measured on a scale from 0 to 255.

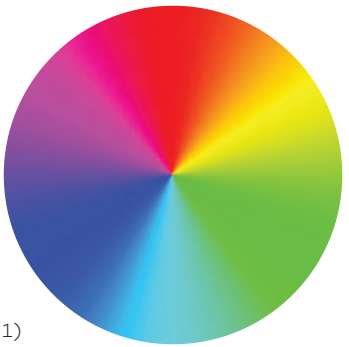
RGBA uses the same color system as RGB with the addition of alpha (Red Green Blue Alpha). Alpha values, measured on a scale of 0 to 1, determine the transparency of a color. A color with 0 percent in its alpha channel is completely transparent (invisible), while a color with an alpha value of 100 percent is totally opaque. PNG images employ the alpha channel, allowing white to be transparent.

RED

HEXADECIMAL `#ff0000`

RGB `rgb(255,0,0)`

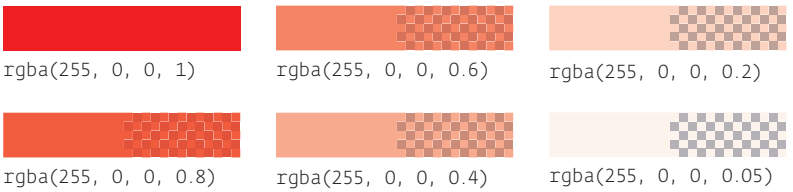
RGBA `rgba(255,0,0,1)`



BLUE
`#0000ff`
`rgb(0,0,255)`
`rgba(0,0,255,1)`

GREEN
`#00ff00`
`rgb(0,255,0)`
`rgba(0,255,0,1)`

COMPARING ALPHA VALUES

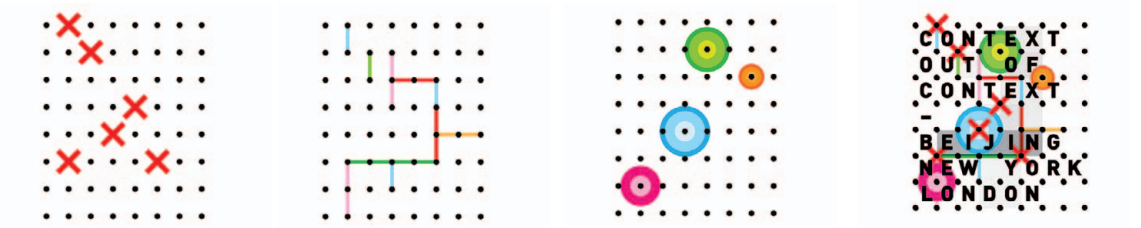


`rgba(255, 0, 0, 1)`
`rgba(255, 0, 0, 0.6)`
`rgba(255, 0, 0, 0.2)`
`rgba(255, 0, 0, 0.8)`
`rgba(255, 0, 0, 0.4)`
`rgba(255, 0, 0, 0.05)`

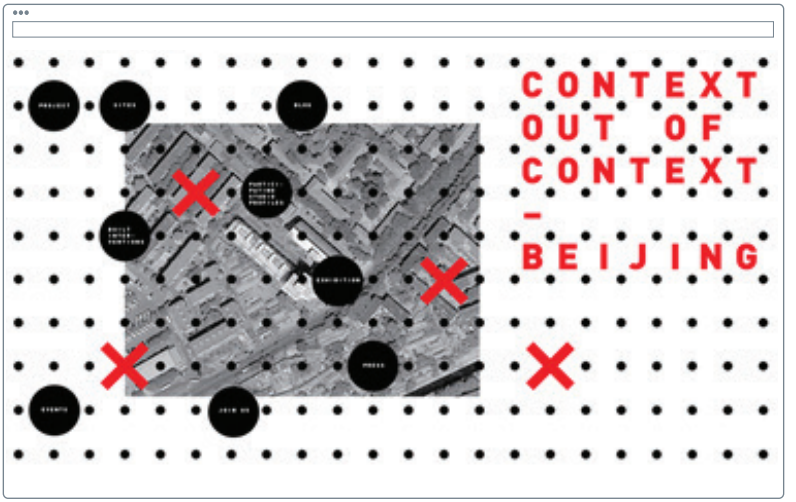
ANIMATED LOGOTYPES

Animated logos have appeared on television for decades, where they dramatize the identity of networks, local stations, and individual programs. Often appearing in short clips between commercials, animated logos for television can become stories in their own right, occupying center stage and accompanied by distinctive music and sound.

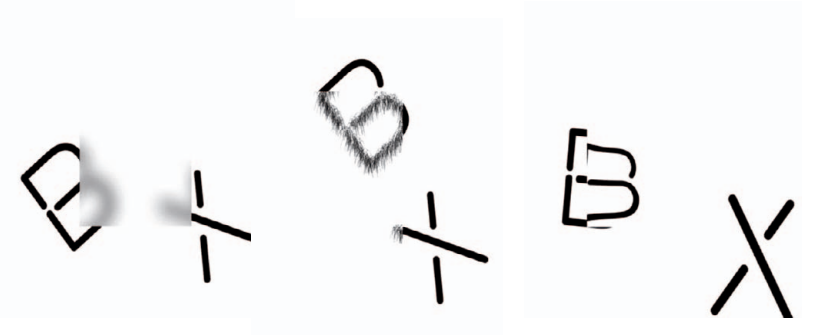
Logos that move and change also play a role on websites. The animated identity system proposed by Natasha Jen for the cultural event Context/Out of Context, pictured below, conveys its own narrative and occupies considerable screen real estate. Most animated logos on the web require less space and use motion in quiet ways. A logo might cycle through one or two transformations and then come to rest, or it might change only on rollover, or when the screen is refreshed. Designers seek to balance the desire to attract the eye with the need to respect the reader's focus on the site's content.



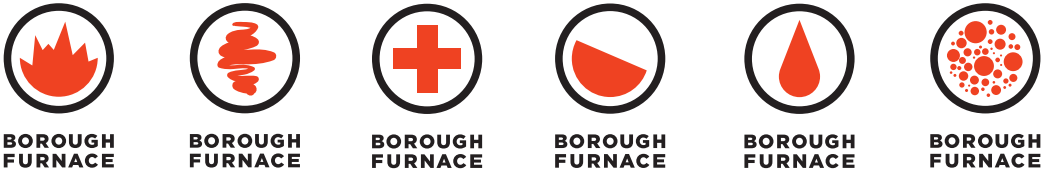
CONTEXT/OUT OF CONTEXT This logo begins as a grid of dots. Over time, the grid becomes populated with the elements of the graphic identity. Design: Natasha Jen, 2010.



READ MORE >> Irene van Nes, *Dynamic Identities: How to Create a Living Brand* (Amsterdam: BIS Publishers, 2012).



B-X LAB This identity features an invisible window that alters the letters as they move behind it. Design: Luiz Ludwig and Javier Lopez, 2013.

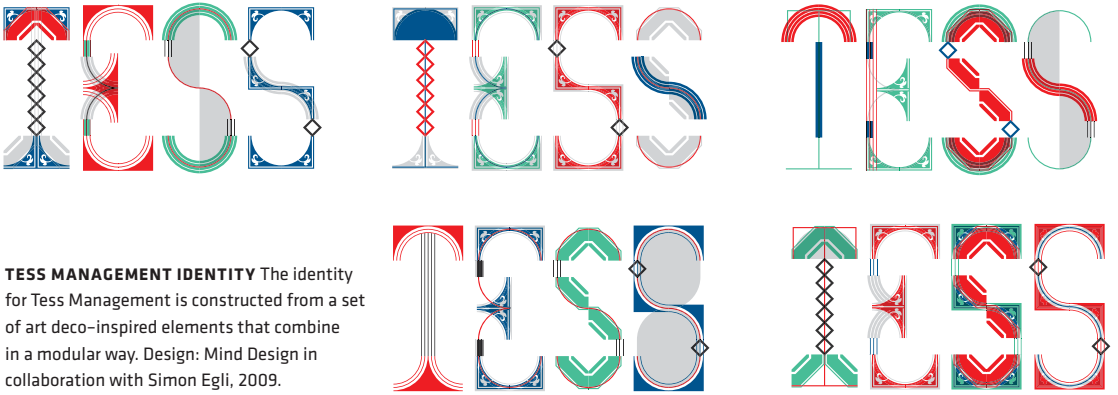


BOROUGH FURNACE The logo for this website for a two-person design and prototyping studio was designed to change on mouseover. The interior image changed, but the frame remained static. (The client later eliminated the interactivity.) Design: The Collaborative Works of Jeff & Paul, 2010.

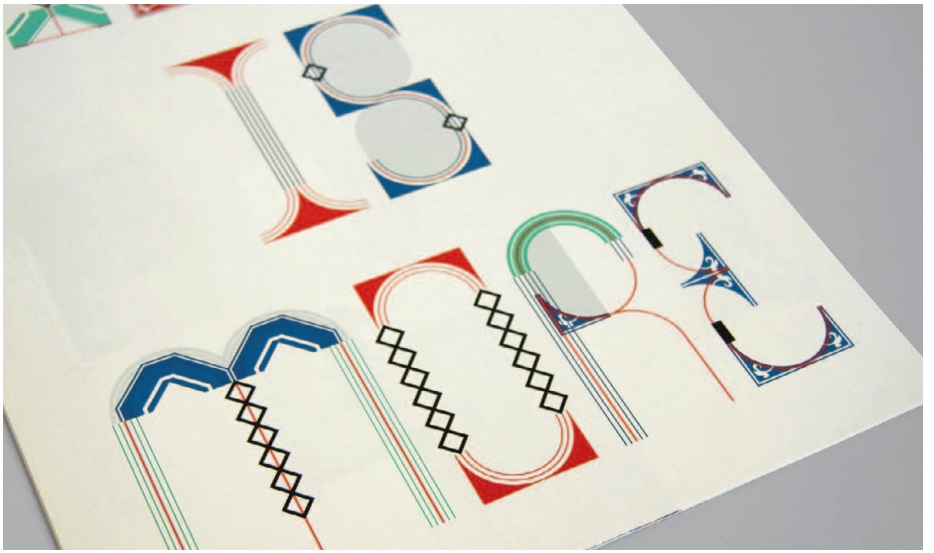
CURRENT TV LOGO This logo for a progressive cable news channel appears to blow in the wind like a flag. Design: Wolff Olins with motion assistance by Ghava, 2011.

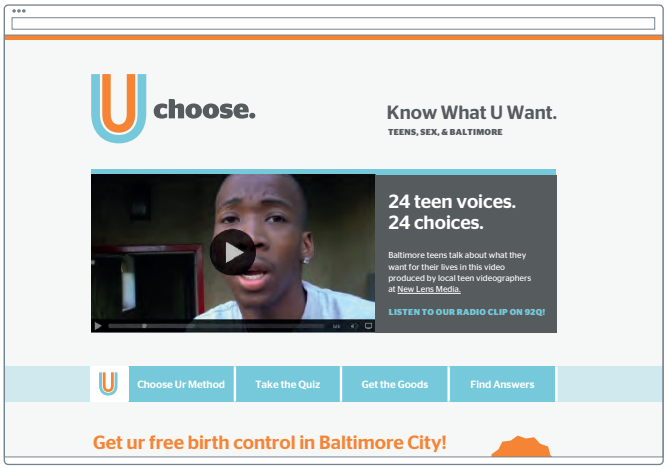
FLEXIBLE LOGOTYPES

Flexible logos are designed to change and mutate in different contexts. Variables include shape, color, words, and images. Many contemporary identity programs consist of flexible rather than fixed elements that are arranged in a variety of configurations or continuously infused with new content. The challenge for the designer is to create a vocabulary of elements that hold together visually and remain strong and recognizable.



TESS MANAGEMENT IDENTITY The identity for Tess Management is constructed from a set of art deco–inspired elements that combine in a modular way. Design: Mind Design in collaboration with Simon Egli, 2009.



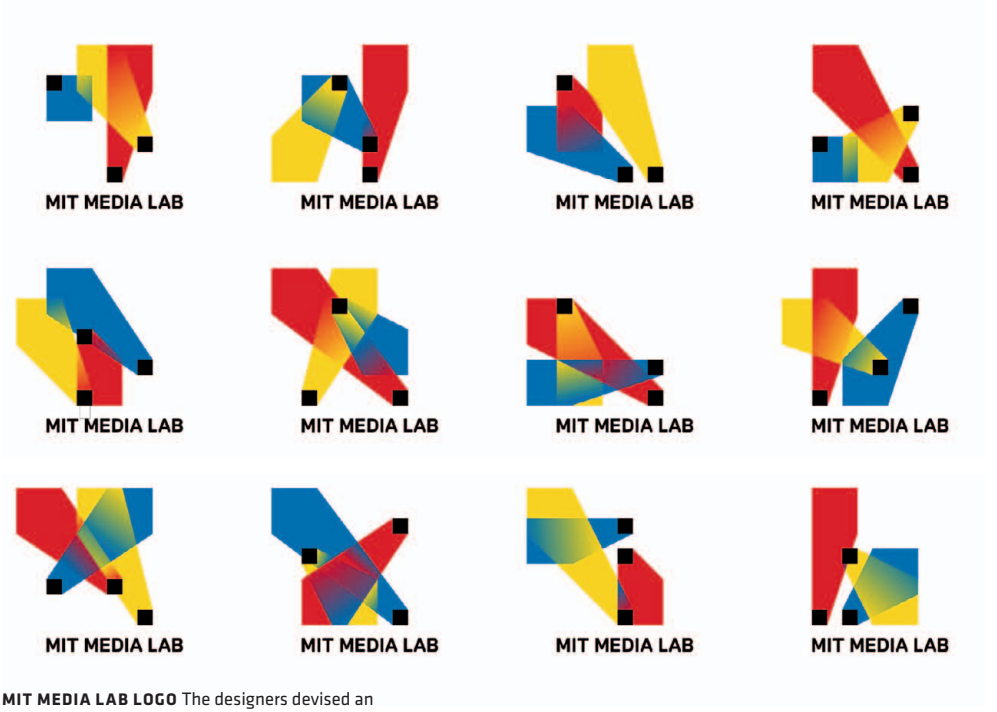


BALTIMORE CITY HEALTH DEPARTMENT, TEEN PREGNANCY PREVENTION CAMPAIGN
This flexible identity was created by MICA design students in partnership with the Baltimore City Health Department. Letterforms adapted from type by House Industries's online typesetting service, Photolettering.com. Designers: Lauren Adams, Noel Cunningham, Nicki Dlugash, Ben Peterson, and Javier Lopez, 2012.

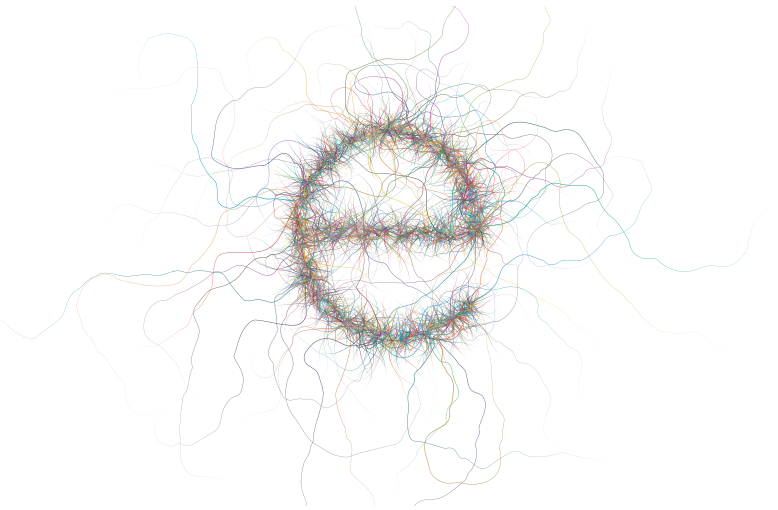
1871 A stencil serves as a frame for changing content in this identity for *1871*, an exhibition about the Great Chicago Fire of 1871. Design Agency: VSA Partners, 2012. Designer: Luke Galambos. Creative director/writer: Jonathan Turitz. CEO/ECD: Dana Arnett.

GENERATIVE LOGOTYPES

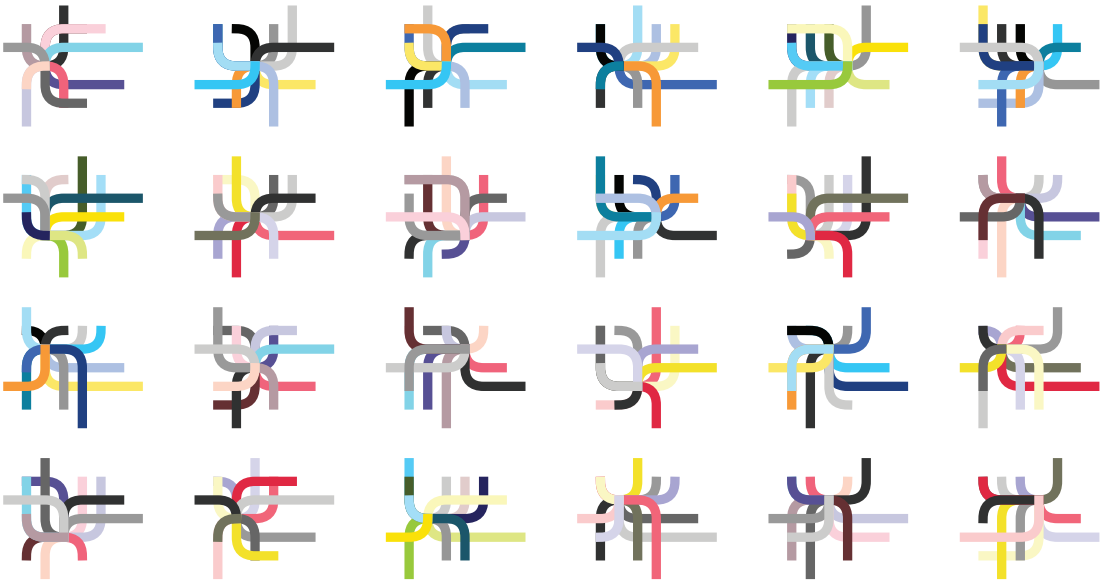
Generative logotypes employ rule-based algorithms to produce variations on an underlying form. A generative logo might potentially produce infinite versions. This experimental method of logo design is often used to emulate or demonstrate the thought process associated with institutions engaged with science and technology. The identity system created for MIT Media Lab in 2011 allows every member of the organization—faculty, staff, and student—to have a unique logo. The identity aims to express the collaborative nature of Media Lab's work while its design strategy matches the institute's experimental outlook. Custom animation software allows each member to add unique animations to the many videos produced by Media Lab. Creating all those manually would be unmanageable, so instead a system is set up and given some rules (color sets and a grid in this case), which can generate an infinite number of individual logos.



MIT MEDIA LAB LOGO The designers devised an algorithm to generate endless variations of the MIT Media Lab logo. Design: Richard The, E. Roon Kang, and the Green Eyl, 2011.



EXPLORATORIUM: CONCEPT LOGO This animated logo grows and changes like a living thing. Design: Paul Hoppe, 2011.



EPFL ALUMNI This identity system for the alumni association of an esteemed Swiss university (EPFL) has thousands of logo variants. The curves are paths connecting an underlying grid of dots, suggesting a network of relationships among people. Recalling subway maps, the marks suggest the different roads that students take after graduating. Design: Enigma, 2012.

SCALABLE VECTOR GRAPHICS

Scalable vector graphics (SVG) bring the flexibility of the vector to the web. Like other vector file formats (such as ai and eps), SVGs are infinitely scalable. The difference between SVGs and ai or eps files is that the XML source code renders the SVG file directly in a browser. Simply copy the code, place it in your HTML file, and your browser does the rest. The SVG will be crisp at any size or resolution; it won't look blurry on a Retina screen, and users can zoom in without compromising the graphic's clarity. SVGs can also be searched, indexed, and printed. The code for SVGs, which are becoming a favorite format for logos on the web and mobile devices, is output by Adobe Illustrator when you save a file as SVG code.

HTML5 LOGO This intricate illustrative logo can be rendered completely in the browser with the SVG code shown to the right; no <img> tags are necessary. Design: Michael Nieling, Ocupop, 2011.

READ MORE >> The World Wide Web Consortium, "Scalable Vector Graphics," *W3C*, http://www.w3.org/Graphics/SVG.

```
<svg xmlns="http://www.w3.org/2000/svg" viewBox="0 0 512 512">
   <title>HTML5 Logo</title>
   <polygon fill="#E44D26" points="107.644,470.877
   74.633,100.62 437.367,100.62 404.321,470.819 255.778,512
   <polygon fill="#F16529" points="256,480.523 376.03,447.246
   404.27,130.894 256,130.894 "/>
   <polygon fill="#EBEBEB" points="256,268.217 195.91,268.217
   191.76,221.716 256,221.716 256,176.305 255.843,176.305
   142.132,176.305 143.219,188.488 154.38,313.627 256,313.627"/>
   <polygon fill="#EBEBEB" points="256,386.153 255.801,386.206
   205.227,372.55 201.994,336.333 177.419,336.333
   156.409,336.333 162.771,407.634 255.791,433.457 256,433.399"/>
   <path d="M108.382,0h23.077v22.8h21.11V0h23.078v69.044H152.5
   7v-23.12h-21.11v23.12h-23.077V0z"/>
   <path d="M205.994,22.896h-20.316V0h63.72v22.896h-
   20.325v46.148h-23.078V22.896z"/>
   <path d="M259.511,0h24.063l14.802,24.26L313.163,0h24.072v69.0
   44h-22.982V34.822l-15.877,24.549h-0.397l-15.888
   24.549v34.222h-22.58V0z"/>
   <path d="M348.72,0h23.084v46.222h32.453v22.822H348.72V0z"/>
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   255.843,313.627 311.761,313.627 306.49,372.521 255.843,386.191
   255.843,433.435 348.937,407.634 349.62,399.962 360.291,280.411
   361.399,268.217 349.162,268.217"/>
   <polygon fill="#FFFFFF" points="255.843,176.305
   255.843,204.509 255.843,221.605 255.843,221.716
   365.385,221.716
   365.385,221.716 365.531,221.716 366.442,211.509
   368.511,188.488 369.597,176.305"/>
</svg>
```
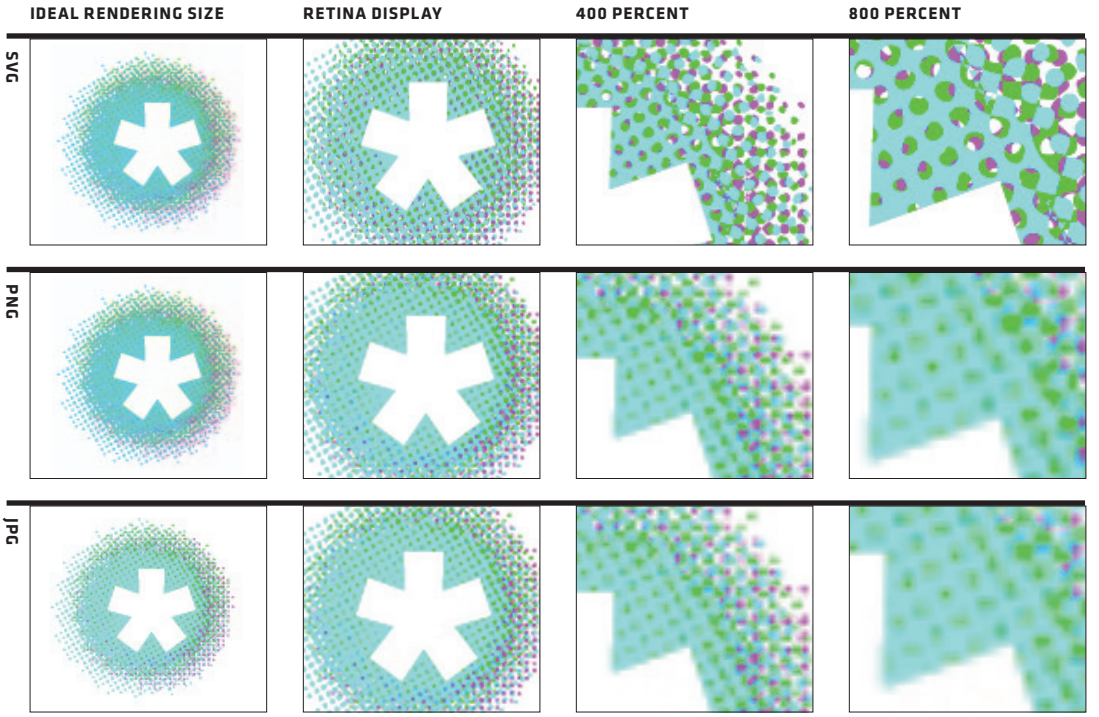

SVG VS. PNG VS. JPG Each of these file types has its place. JPGs are great for photos, and PNGs provide transparency, but vector-based graphics such as letterforms and logos work best as SVGs. Below is a comparison of the rendering quality of the same image saved as an SVG, PNG, and JPEG. Judge for yourself!



WHEN TO USE AN SVG

LOGOS The crisp outlines of a logotype are usually designed in vector-based programs. Define your logo as an SVG document, insert it into your HTML code, and scale it to the desired size.

GRAPHS The vector-based bars, lines, circles, and pies of information graphics lend themselves well to the SVG format, including live graphs fed by AJAX requests, user input, or real-time data.

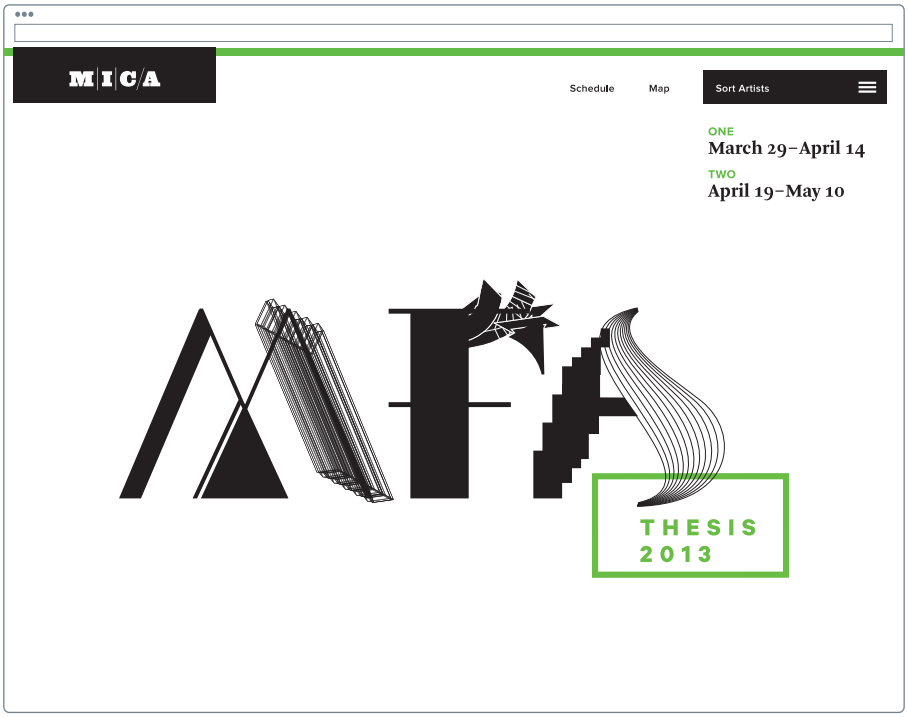
MAPS The precise lines and shapes of a road or street map work best in the SVG format. Users can zoom in on the map without sacrificing sharpness.

GETTING THE CODE
In Adobe Illustrator, save your file as an SVG from the "Save as" menu; at the bottom of the dialog box, click on "SVG code" and copy the content into a TXT file. Then paste the code into your HTML file.

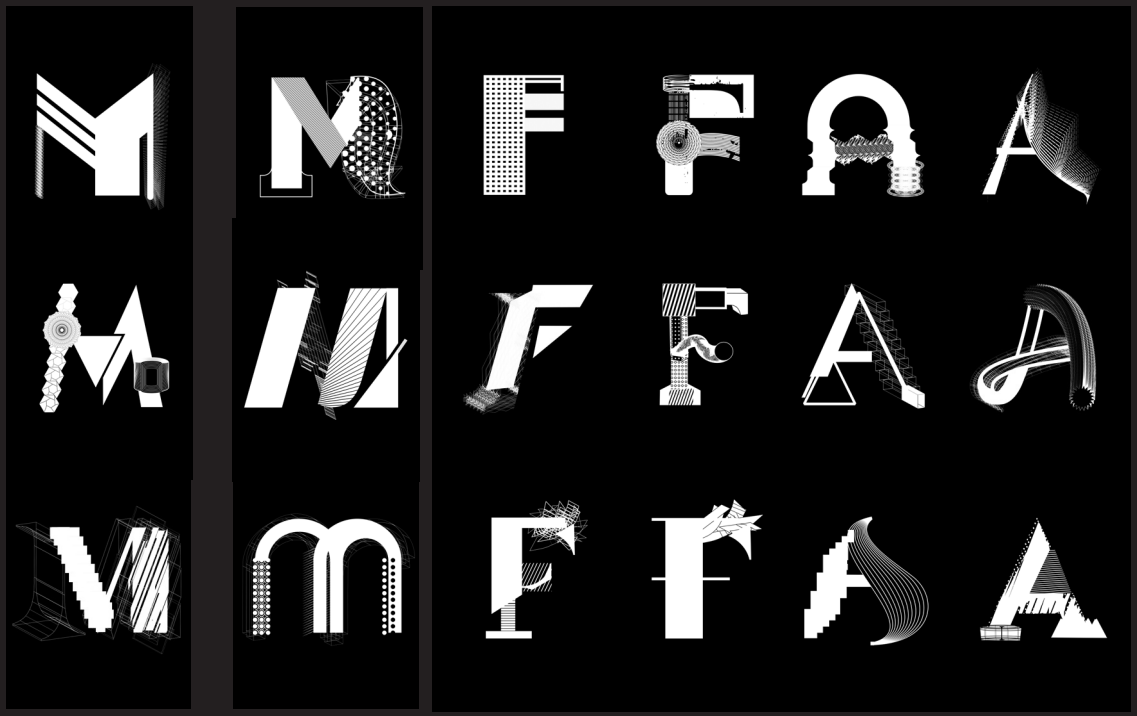
CASE STUDY

MFA BRANDING

This dynamic logotype was designed to promote a series of interdisciplinary MFA thesis exhibitions held at MICA. The logo is based on sixteen permutations of the letters *M*, *F*, and *A*. These varied custom letterforms symbolize the school's range of interdisciplinary study (painting, photography, design, illustration, digital media, and more). Each character was created collaboratively by three designers, who took turns adding their touches to the grids, lines, and warped planes that make up these distinctive shapes. On screen the logo flips through all of the available characters like a slot machine. The simple black-and-white color palette is accented by flashes of neon green.



INTERDISCIPLINARY LETTERFORMS Three designers played musical chairs, each taking a hand in creating the sixteen letterforms featured in this dynamic identity for MICA's MFA thesis exhibitions. Design: Brian Pelsoh, Javier Lopez, and Kelcey Towell, 2013.




MICA
ONE
March 29–April 14
TWO
April 19–May 10
MFA
THESIS
2013
Sort Artists
Schedule
Map

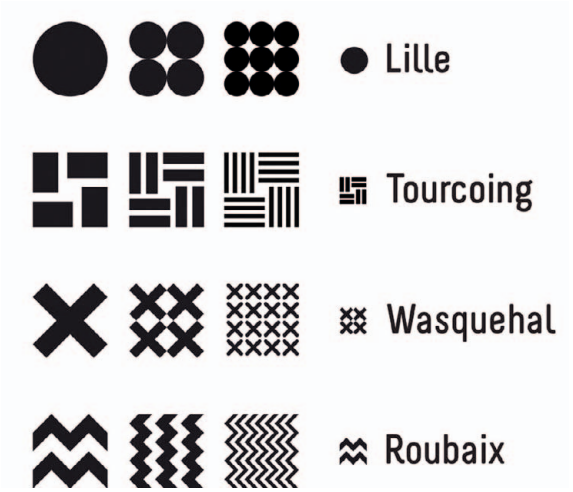
CASE STUDY

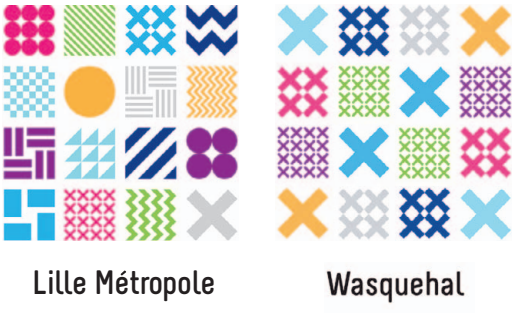
BRANDING A METROPOLIS

In their entry for an urban design competition, a team of designers from MICA set out to create a visual identity for Lille Métropole, an urban area in Northern France. The team's goal was to represent Lille's history and future in a rich visual system that could function both locally and globally.

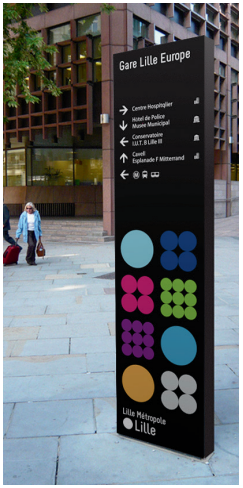
Lille Métropole is a diverse area consisting of many member districts and several large cities. The region has joined together in an effort to create a "city of the future," a metropolis with high standards for social, economic, and ecological well-being. The designers aimed to communicate the idea of a unified, integrated region while honoring the unique qualities of the various locations. Each member community is an integral part of the greater whole, and the visual system reflects this.

The brand includes design elements that symbolize each member city within Lille Métropole and combine to represent the broader region. The elements are based on defining characteristics of each district: circles for Lille, the capital city; diagonals for Roubaix's water and its many pools; *x*'s for Wasquehal's heavy industry and manufacturing; and grids for Tourcoing, the heart of the textile industry. The proposed system is expressed across various media, from environmental signage to mobile apps.





BASE SYSTEM The visual system is based on a set of patterns derived from each district's unique identity. These elements combine to represent the metropolis as a whole, or they can be used separately for each district. Design: Richard Blake, Emma Sherwood-Forbes, Nour Tabet, and Yingxi Zhou, 2013.

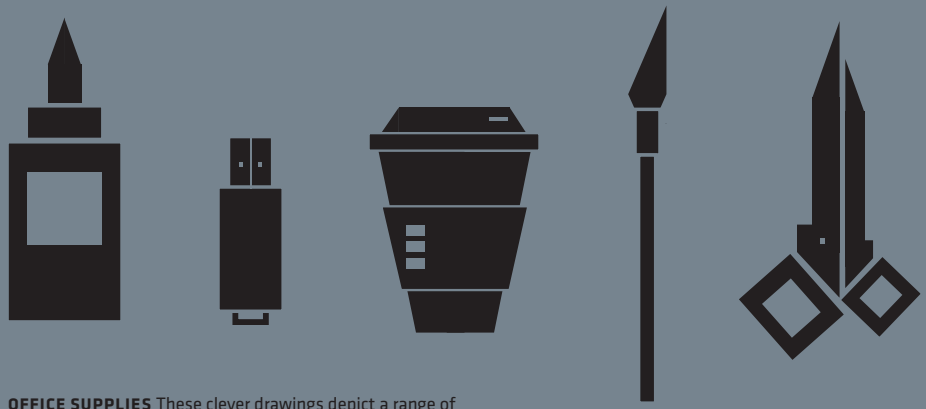


APPLICATIONS The identity system can be used both as a set of patterns for large-scale implementation and as a single mark to stand alone. The visual language does not simply live and die on official letterheads or envelopes. It is present in day-to-day life, as taken in by business travelers stepping off the train or residents doing their grocery shopping.

IN THE CLASSROOM: ICONS

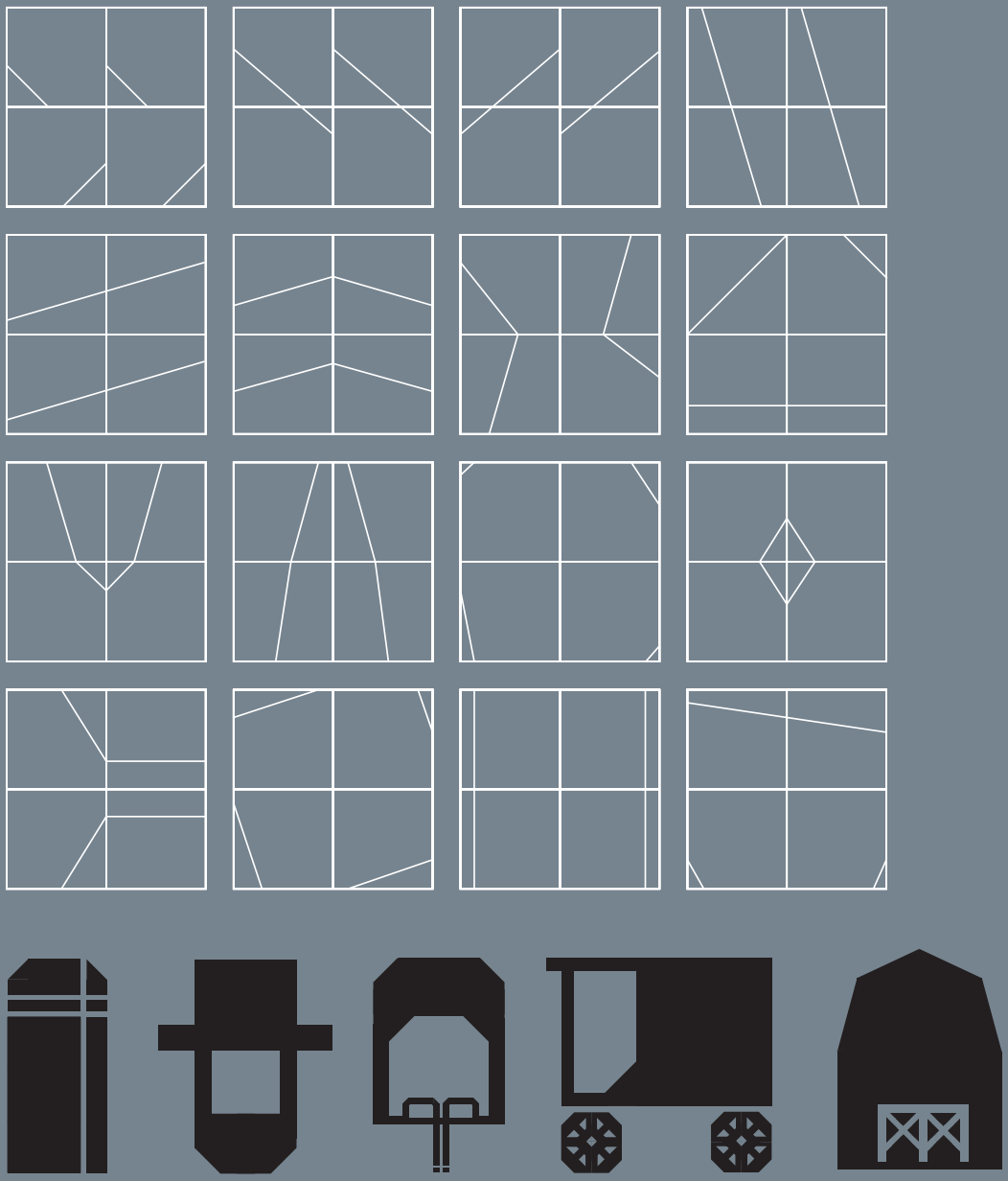
WITH ELLEN LUPTON

Students in Lupton's Graphic Design I course at MICA designed icon families built from bits and pieces of a square. They began by dissecting a series of squares with straight lines, and then used these diagrams to create shapes for building simple images. The project demanded thinking about constraints, modularity, consistency, abstraction, and simplicity, and challenged students to construct drawings using shapes instead of lines—a shift in method for many participants. Students also sought to express their individual points of view through their quirky choices of subject matter.

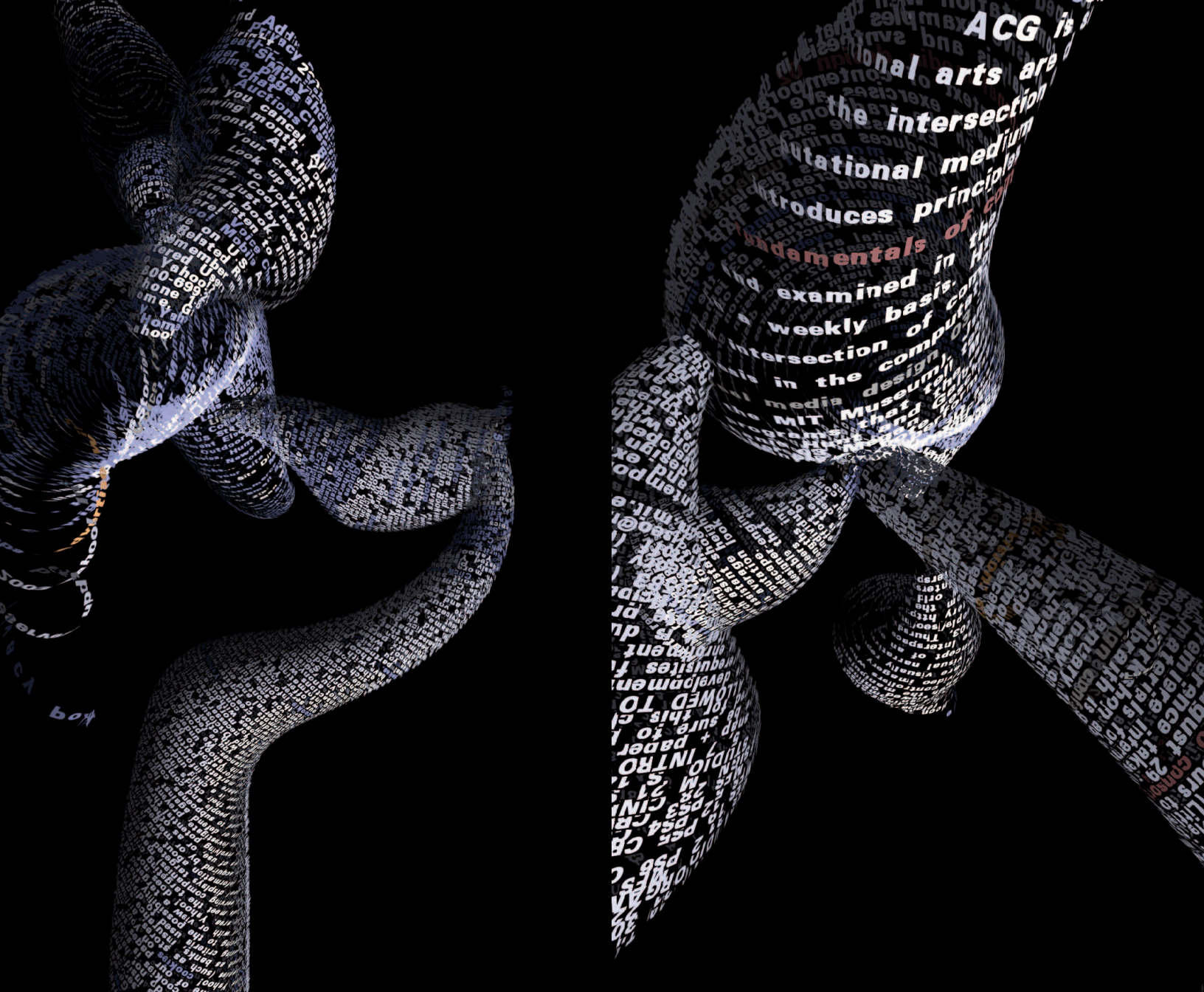


OFFICE SUPPLIES These clever drawings depict a range of everyday office supplies (including the mental fuel contained in a cup of coffee). The scissors proved especially challenging. Design: Wendy Du, 2009.

BOTTLES These elegant icons for familiar bottle types line up to become a stark commercial still life. Design: Emi MacLeod, 2009.



AMISH ICONS Simple forms combine to represent a simple life in these icons depicting the customs of the Amish people. Design: Ben Sifel, 2009.


ACG is
nal arts are
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examined in
weekly basis.
intersection of
in the
media design,
MIT Museum,

06 ANIMATION AND CODE

BRIAN PELSOH
JINHWAN KIM
NICKI DLUGASH
CAMERON ZOTTER

Kinetic type saturates screens of all types and sizes and across all digital platforms, from phones to computer screens to jumbotrons. Motion enlivens typography by adding complexity and dimension to flat letterforms. We've come to expect type to move and change in title sequences for film and television and on the flashing screens of Times Square, pitching the latest gadgets and news. Animated text appears in more subtle ways in digital interfaces. Triggered by a simple touch, type moves as we open applications on our smartphones or click on a menu on a website.

Animated typography is not a new phenomenon. Saul Bass pioneered the medium more than fifty years ago with his innovative title sequences for Alfred Hitchcock films. While Bass was able to produce stunning effects with limited means, today's advanced soft- and hardware have made the process of animating letters more accessible than ever. Ranging from simple to sophisticated, animation effects have become integral to such commonplace tools as Powerpoint, Keynote, InDesign, and HTML5. An animated GIF (Graphic Interchange Format), the simplest form of web-based animation, can be produced entirely with Photoshop.

Typography is not inherently kinetic. Most letterforms are designed to be static, frontal, and upright. Motion allows type to grow, shift, transform, shrink, and stretch across time and space. Working with so many parameters can be overwhelming. But by storyboarding a concept and focusing on a few basic transformations, designers can plan and produce animations that add meaning and purpose to a project instead of stirring up a maelstrom of arbitrary effects.

In addition to transforming text through carefully controlled animation techniques, today's designers are using code to produce unexpected forms. Experimenting with programming tools such as Processing, Paper.js, and Nodebox, designers create generative systems that construct complex letterforms and texts that behave like living or mechanical organisms.

TENDRIL This experimental web browser builds typographic "sculptures" based on the text of a website. The first page of the site is represented by a three-dimensional column. Clicking on highlighted links causes additional columns to grow from the core, yielding strange biomorphic landscapes. Design: Ben Fry, 2000.

THE ALPHABET OF NATIONS Created with the band They Might Be Giants (John Flansburgh and John Linnell), this video presents kids with an alphabet of geographic locations. The project was designed by Emily Oberman and her team at Pentagram, who produced a layered landscape of letterforms that plays with space in two and three dimensions. The typographic maps are mixed with crowd-sourced imagery, supplied by TMBG fans from around the world via Twitter and Tumblr. The video was made to benefit the Global Fund for Children, an international charity. Design: Pentagram, 2012.

BASIC ANIMATIONS

In any time-based design—from a complex title sequence to a simple Keynote presentation—there are numerous possibilties for text to arrive on screen. It can fade in, fade out, drop down, or simply appear on a blank canvas. It can emerge all at once, word by word, or letter by letter. Type can change in opacity to appear or disappear, or the background can shift to reveal or conceal what is printed on top of it.

APPEAR The type simply appears on a blank screen.

WORD APPEAR Each word appears in sequence to reveal the full text.

OPACITY Text gradually becomes opaque.

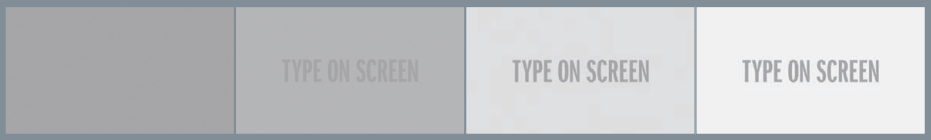
FALL IN Text falls from the top of the screen and stops in place.

FOCUS Text comes into focus from a blurred state.

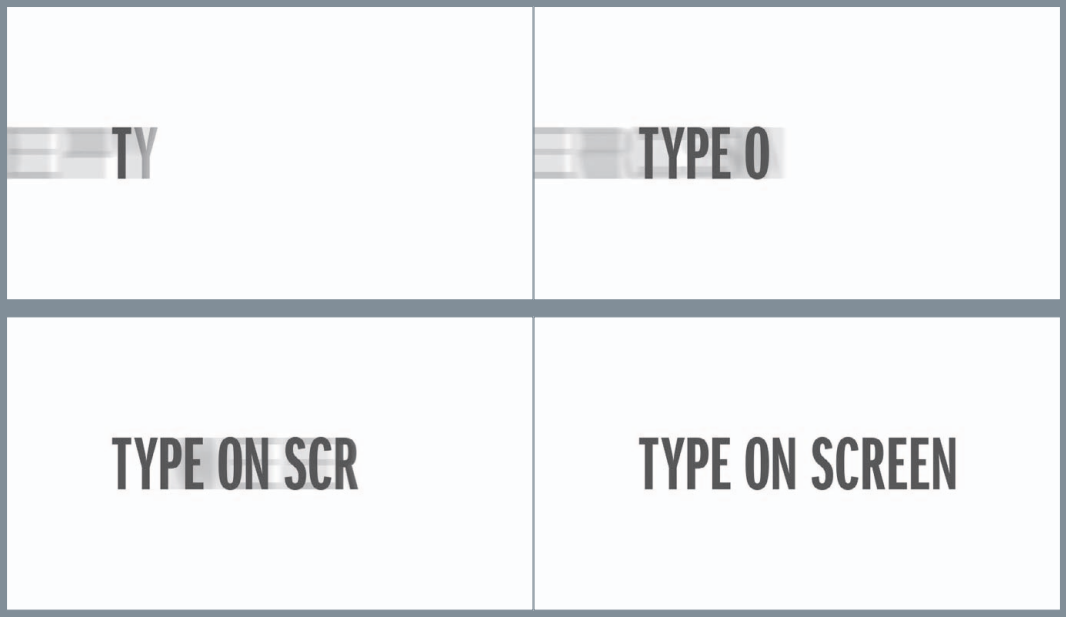
Diagrams designed by Cameron Zotter.

MORE BASIC ANIMATIONS

VERTICAL REVEAL A foreground plane slides up or down to reveal text.



BACKGROUND COLOR SHIFT The background changes color to reveal the type.



LETTER SLIDE IN Individual letters slide in horizonally, in order.

PAGE FLIP The type enters the screen with the motion of a flipping page.

FLY IN + OPACITY The individual letters fly into place while increasing in opacity.

Diagrams designed by Cameron Zotter.

COMBINED TECHNIQUES

Although animation can be highly abstract, designers often use motion to imitate movements and behaviors observed in the physical world. As projects build in complexity, they manipulate multiple parameters to create text that appears to inhabit a dynamic, three-dimensional universe.

PAN + OPACITY The camera pans to each word, which changes in opacity, and pauses when the word is opaque.

PAN + ROTATE The camera pans and rotates to reveal the type.

REVOLVE + ZOOM Each word is displayed, and then rotated and enlarged.

The use of lighting, texture, transparency, and photographic imagery makes typography come to life, as if the text were performing on a physical stage. Type becomes a character in a living drama as the realms of analog and digital expression converge.

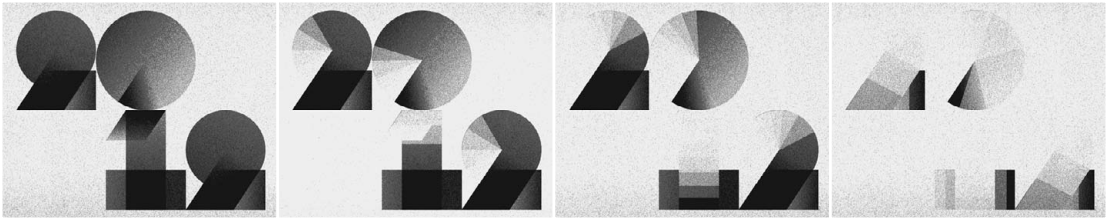
OUT OF YOUR LEAGUE This animated music video emulates cut paper layered in a shadow box. Design: Jamie Carusi, 2013.

LET ME LIVE Three-dimensional text drifts in space, perpendicular to a printed page. Design: David Lam, 2013.

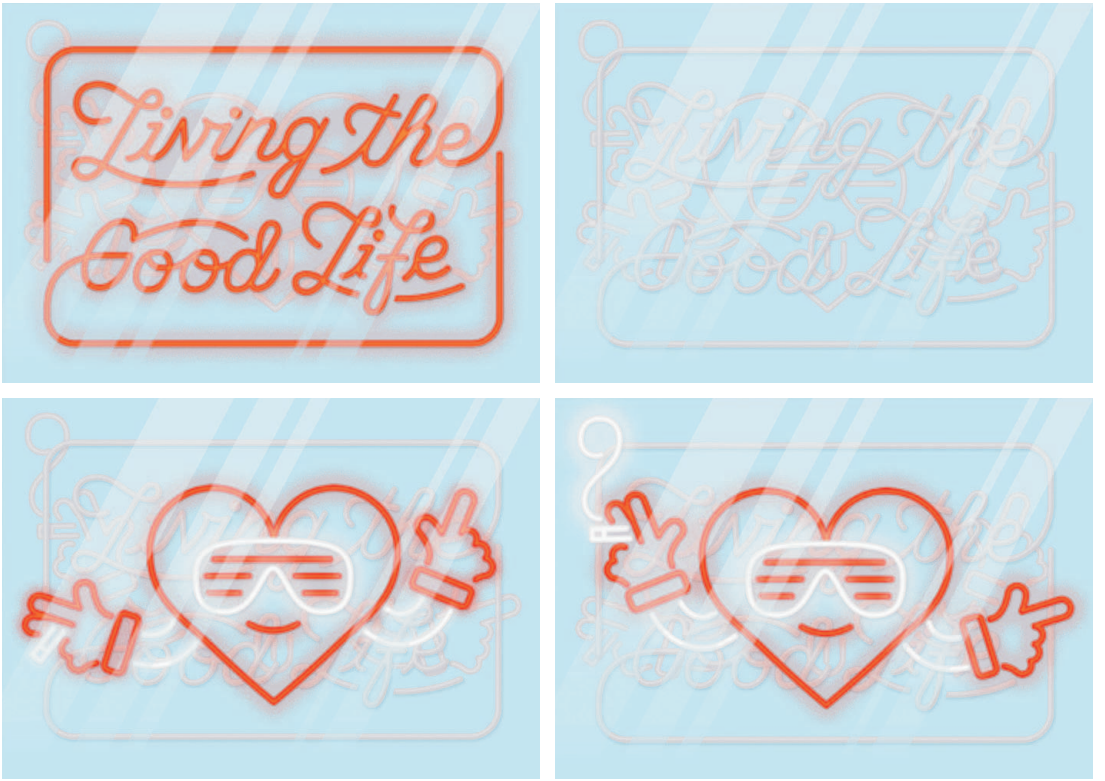
ANIMATED GIFS

The animated GIF is one of the oldest animation formats for the web. Introduced by CompuServe in 1987, it consists of a series of single-image frames that play in sequence, often in a loop, to form an animation. This crude technology polluted the Internet during the 1990s, when animated GIFs popped up everywhere in the form of flashing flames and "under construction" signs. The Web 2.0 gradient craze of the early 2000s left the animated GIF for dead, but designers and photographers recently resurrected this trusty format, finding new ways to exploit its technical simplicity and retro charm. In a few short frames, a GIF creates moving images for display on any device.

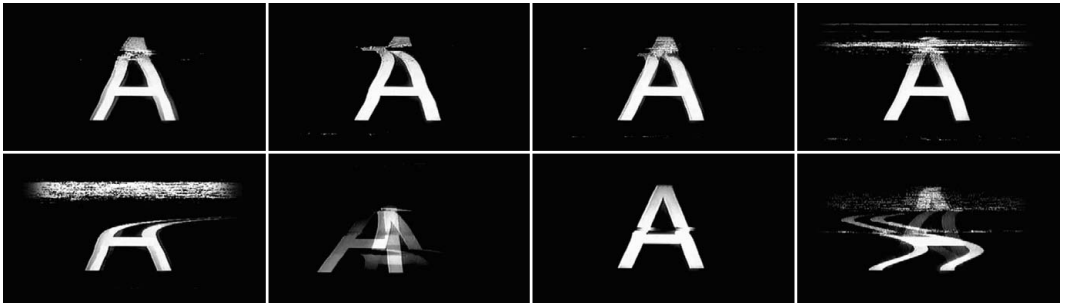
GRAFFITI MEETS GIF British artist Insa creates animations from photographs of his street art by manipulating the stripes in the photograph. Design: Insa, 2011.



BRAND NEW STARTS In this typographic animation, the numbers dissolve in a clockwise wipe, then reappear. Design: Jason Wong, Friends of Type, 2012.



WHOLE LOTTA LUV FOR YA Just like a moving neon sign, in which tubes turn off and on in a predetermined sequence to create the illusion of motion, an animated GIF flips through a loop of still frames. Design: Erik Marinovich, Friends of Type, 2011.

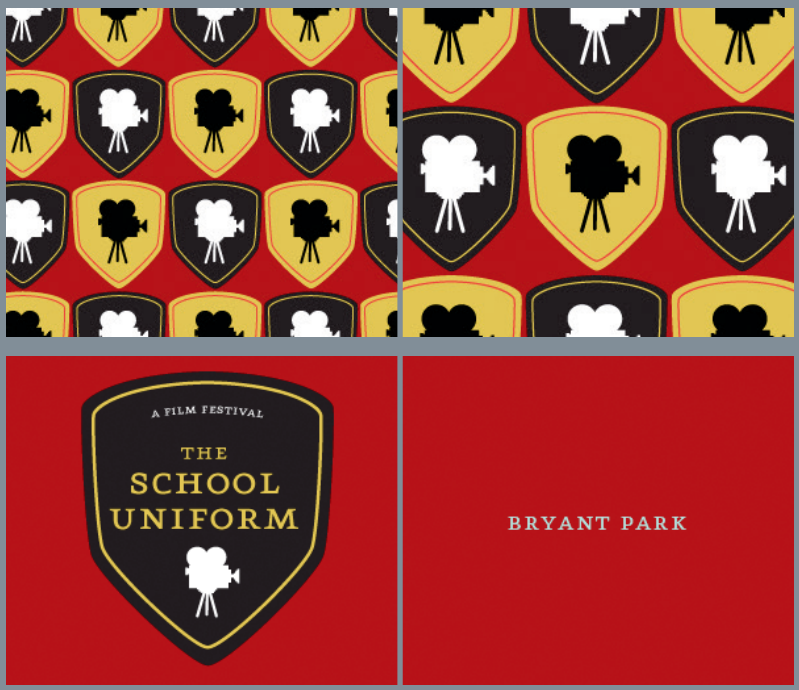


WAVERING A The flicker of a computer screen is animated over several frames in this eerie GIF. Designer unknown.

IN THE CLASSROOM: ANIMATED GIFS

WITH BRIAN PELSOH

Animated GIFs offer students a simple and accessible introduction to motion graphics. Students in Pelsoh's typography course at MICA developed logos and animated concepts to promote imaginary film festivals. These animated GIFs were built entirely in Photoshop. The designs can be placed directly within an HTML page, requiring no additional players or software.

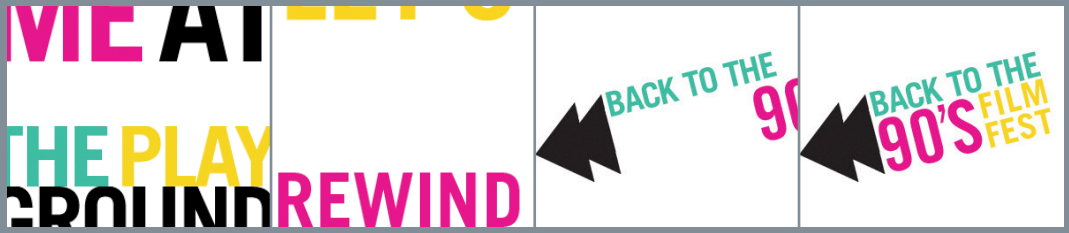


THE SCHOOL UNIFORM A patchwork of shields emblazoned with a movie camera zooms closer and closer, revealing the name and location of this film festival. Design: Cindy Hsu, 2012.

CHOOSY DESIGNERS CHOOSE GIF
Some pronounce it with a soft *G*, as in "giraffe," while others say it with a hard *G*, as in "gift," but according to Bob Berry, inventor of the GIF, it should always be "jif," like the peanut butter.

SKATEBOARDING VIDEO FESTIVAL The acronym SVF zooms into the center of the viewfinder, like a skateboard. Design: Brian Ahola, 2012.

FILMS IN TRANSIT The logo rushes from the left edge of the frame to the right and then drops down, mimicking the movement of a bus or train. Design: Carolyn Hampe, 2012.



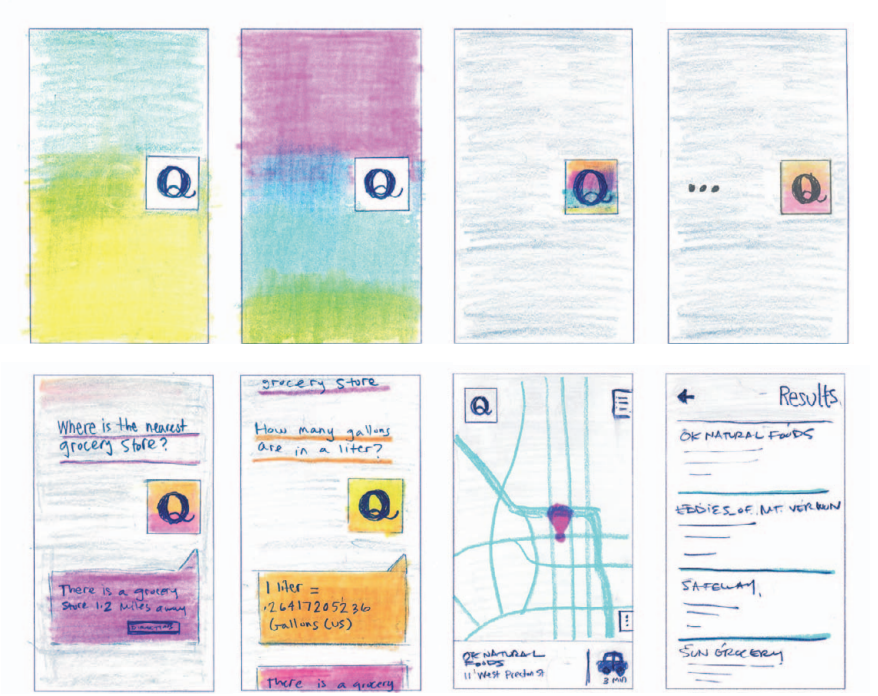
BACK TO THE 90'S Stacked type in colors reminiscent of the 1990s falls into place, before the festival logo rewinds to the center of the page. Design: Morgan Frazier, 2012.

POLITICAL SATIRE In this brand campaign for a political film festival, a large protruding point reveals itself to be the tip of the Washington Monument. Design: Jamie Carusi, 2012.

STORYBOARDING

A storyboard is a series of sketches showing the primary structure and movements of an animation or interaction. Designers create these rough stills in pre-production in order to quickly develop and communicate a narrative. Much like layout thumbnails for a magazine, storyboards serve to visualize, plan, and explain a sequential narrative.

A storyboard is a practical tool and need not be a thing of beauty. Typically it consists of a series of hand-drawn frames accompanied by lined spaces for written directions. These verbal notes describe camera motions, sound elements, voice-overs, user interactions, and other important elements of the design and concept. Storyboards can also be drawn digitally.



STORYBOARDS FOR INTERACTION Storyboards are useful tools for planning product interfaces, games, apps, and other interactive media. A storyboard describes a typical set of actions, showing how elements will change and respond to user input. Shown here is a storyboard for an app, showing the start screen and a sequence of interactions. Design: Brian Pelsoh, 2013.

STARTING WITH A PLAN In this storyboard for an animated narrative, small diagrams indicate the movement of type and other elements on the screen, allowing the designer to quickly envision the entire project and understand the work required to complete it. Design: Kelcey Towell, 2012.

NARRATIVE TECHNIQUES

Aristotle described a story as "a whole action of a certain magnitude." What makes a story feel whole and complete? Words and images bopping aimlessly around a screen don't add up to a fulfilling experience for viewers. Movement on screen should feel purposeful. Like a story, it should have a beginning, middle, and end; it should convey from the outset that the motion is heading somewhere and deliver a satisfying sense of closure. A fully developed story follows an arc, from a set of initial conditions to a problem or conflict to a final resolution. Similarly, a successful animation consists of sequences of changes in scale, position, or color that work together to convey whole actions.

ANALOG MEETS DIGITAL This animation combines hand-drawn lettering and multiple animation principles to illustrate the story of a young boy confronting his fears. Design: Kelcey Towell. Story: Corey Bradbury, 2012.

READ MORE >> On definitions of narrative, see John Barth, *Final Fridays* (Berkeley, CA: Counterpoint Press, 2012).

SCALE CHANGE Animation software allows the designer to change the position of the viewer/camera or add motion to graphic elements such as text, layers, or shapes. Here, the camera zooms out to create a shifting sense of scale.

APPEARANCE OF DEPTH Shifts in scale can be used to imply depth on a two-dimensional surface. The white lettering shrinks into the counterform of an enormous *O*, which then reveals itself to be part of the word "sloth."

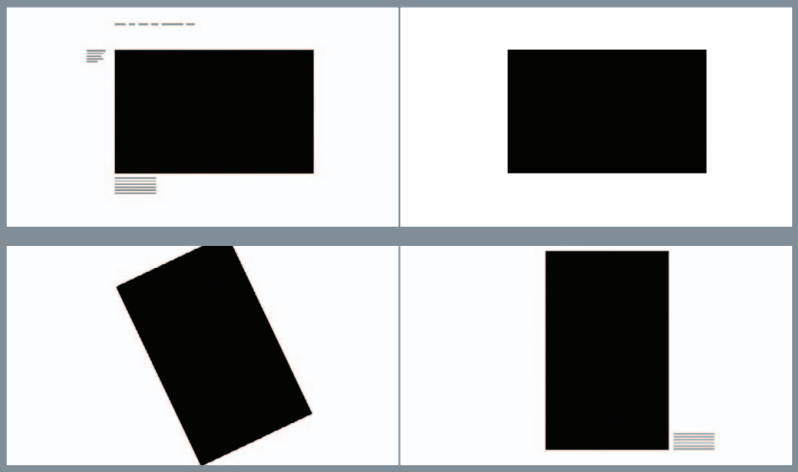
ANIMATING FILL Any graphic element can be animated. Here, the fill inside the letters changes over time, giving the impression of a volume that is filling up with liquid.

EMPHASIS Various words are knocked out of moving shapes in order to create emphasis. "Fought" appears out of the shape of a moving fist, drawing attention to this word.

TRANSITIONS: GETTING FROM A TO B

Animation is often used to transition between two states. The in-between state is where the action occurs. Some may scoff at the standard transitions we have inherited from filmmaking, such as swipes and fades, but often the more basic a transition is, the more effective it is. Following are some simple and some more complex ways to animate the transition between two frames of information. These techniques can be used in websites, slideshows, or motion graphics.

ROTATE Landscape image rotates to portrait.



CHECKERBOARD Square segments of frame A flip over to reveal frame B. The new frame is built up over time.

OVERLAP Frame B moves in over frame A. The direction may vary.

FOCUS Frame A becomes blurred as the focus is given to frame B.

FADE OUT Frame A fades out as frame B appears from behind.

PAGE SPIN A three-dimensional cylinder (functioning like a binder) spins around and pulls out a selected page.

PAGE TURN Frame A folds closed as frame B unfolds from the other side.

Diagrams designed by Jinhwan Kim.

CASE STUDY

TRANSITIONS ON THE STREET

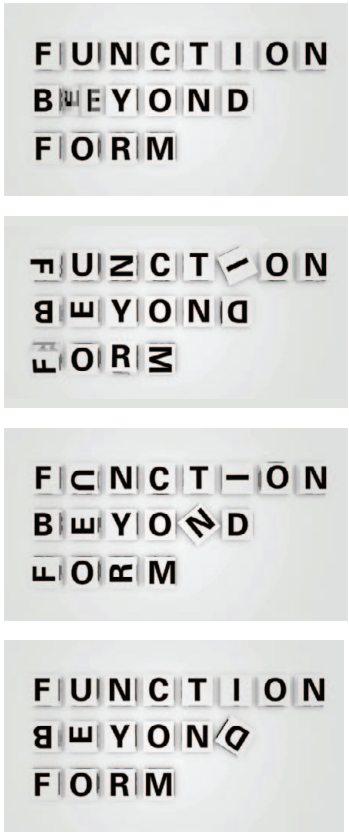
On the street, everything is moving, including signs. Traffic signs flicker and restaurant signs flash, all vying for our limited attention. The ubiquitous road construction sign shown here is made from square units that become green when open and black when closed. Each segment changes at a different speed, a simple system that creates surprisingly interesting transitions.

ANALOG PIXELS This common construction sign can display a maximum of twenty-four characters, eight characters in each of three rows. Each character is formed by a combination of thirty-five available pixels, which are either on or off. The images here were captured in less than two seconds. Photos: Jinhwan Kim, 2012.

CASE STUDY

LOGO TRANSITION

Designed by Jinhwan Kim, this animated logotype for a website about future technologies employs images of six-sided cubes, one for each character of the title. The cubes are programmed to rotate randomly yet always spell out the text "function beyond form."

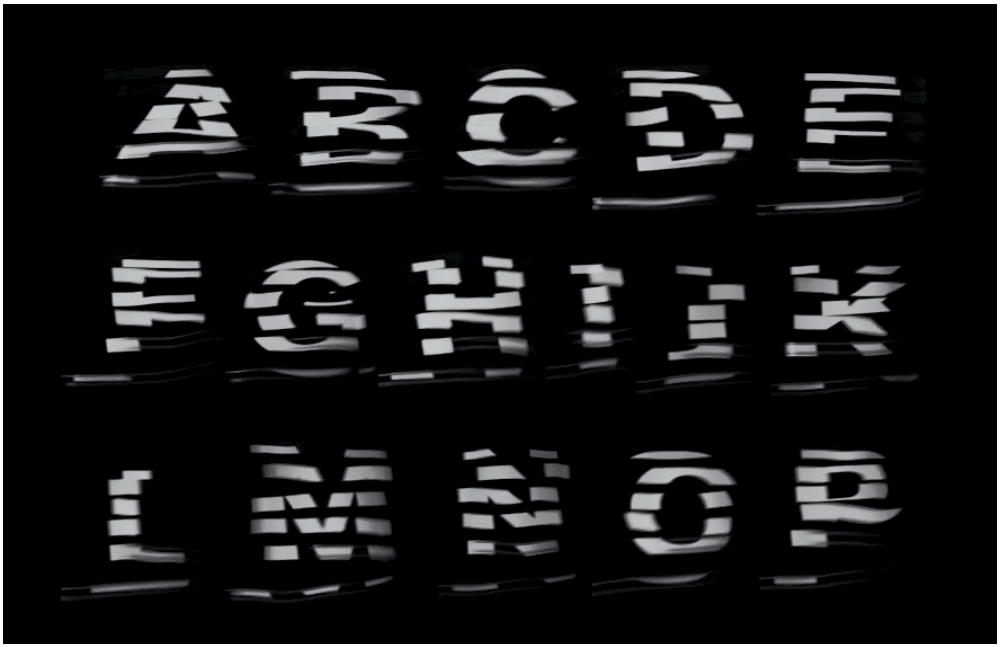


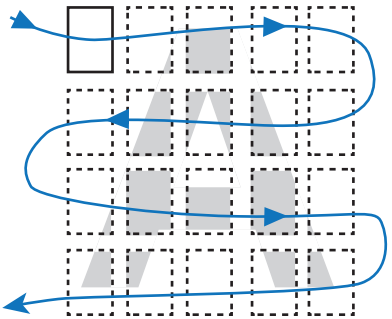
FUNCTION BEYOND FORM
Design: Jinhwan Kim, 2012.

CASE STUDY

PIXEL PAINTING TYPOGRAPHY

Inspired by Dentsu London's *iPad Light Painting*, Jinhwan Kim and Cameron Zotter experimented with motion and typography. They created a video in which Akzidenz-Grotesk letterforms scroll across the frame, partially obscured. Moving an iPod Touch back and forth and up and down, they countered the motion of the videos. A long-exposure photograph of the moving, handheld iPod screen produced an interesting image of each letter.



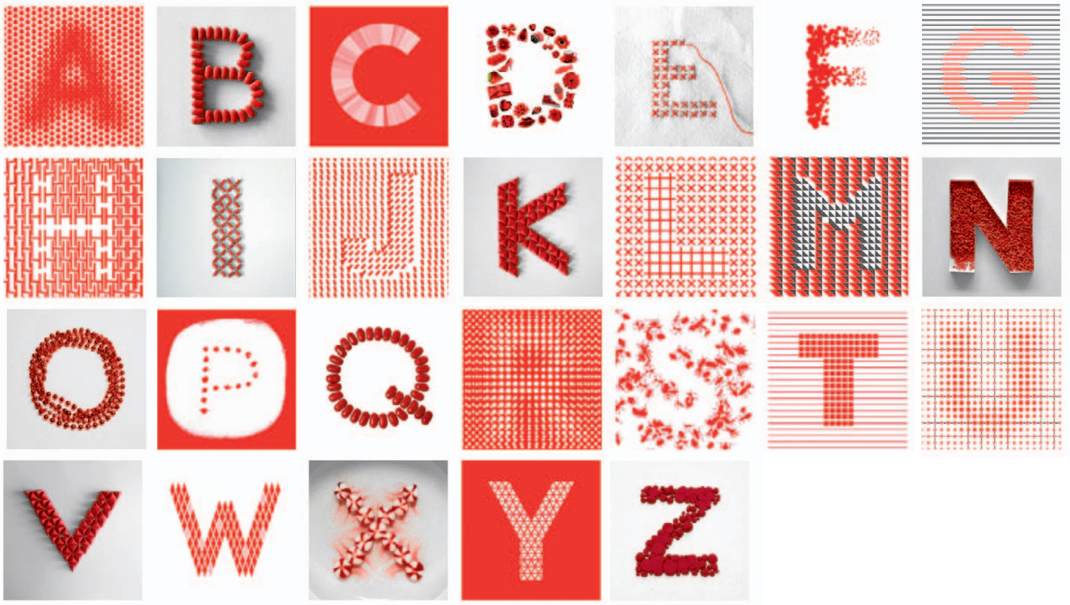


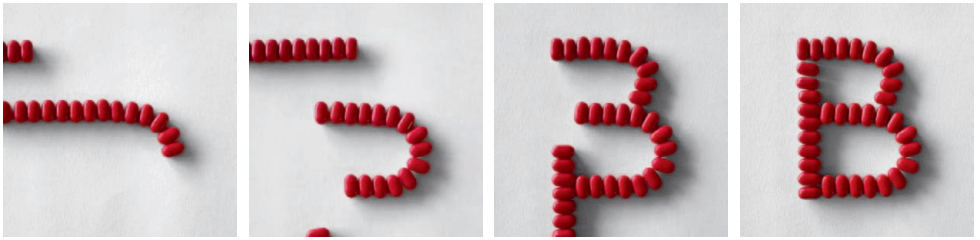
PIXEL PAINTING TYPOGRAPHY WITH IPOD Design: Jinhwan Kim and Cameron Zotter, http://vimeo.com/20678911, 2011.

CASE STUDY

KIXEL: A KINETIC ALPHABET

Kixel is a collection of kinetic letterform experiments, one for each letter of the alphabet, designed by Jackie Littman. The series explores the construction and deconstruction of form through a variety of animation techniques, including stop motion, digital effects, and animated GIFs. Each animation is based on a modular unit, from paper to pixels to peppermints.





STOP MOTION B Red Tic Tac candies are placed on a sheet of paper, one at a time, to create the form of a letter B. Design: Jackie Littman, 2012.

TYPE AND CODE

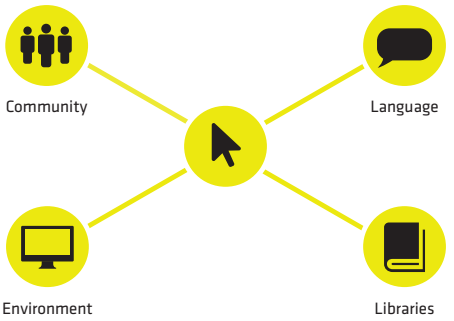
Programming is no longer the exclusive domain of software engineers or computer nerds. Many designers are writing their own programs in order to avoid or augment the standardized features of commercial software. Some are creating whole new software tools or programs, while others are using code as a means within the design process to open up unexpected visual possibilities.

By systematically playing with variables, inputs, and conditions, designers can achieve unplanned results and generate complex forms. Automating basic processes allows designers to produce rapid iterations that would be prohibitively time-consuming to implement manually.

Writing code can provide a way to reintroduce tangible human qualities to digital work by enabling the translation of human input into visual output. In the same way that handwriting reveals much about an author's process, style, and frame of mind, so too can code-generated type reflect and record the designer's process. Designers can personalize or humanize typography's formal perfection by introducing natural movements, patterns, and irregularities. Code allows them to apply controlled randomness to form making, disrupting the regularity of digital type without compromising its structural integrity.

The projects and processes introduced on the following pages indicate the range of ways that code can be applied to text- and letterform-based projects, including static compositions, animated works, interactive programs, and physical objects and systems.

LIMITLESS EFFECTS
Creating the appearance of oozing and dripping text would be a tedious task in standard applications sych as Photoshop or Illustrator, but with programming languages such as Processing, designers can render such effects relatively quickly. Design: Reza Ali, 2012. Reza Ali, "Generative Type Experiments," *REZA* (blog), January 15, 2012, http://www.syedrezaali.com/blog/?p=2007.



PROGRAMMING IS MORE THAN CODE A program is a set of instructions that allows a computer to carry out a specific task. The components of programming include the programming language itself; an environment in which to write and test code; libraries containing code and data that extend the function of a program; and a community of users who share and build upon one another's work. A handful of powerful tools for visual designers and artists have been designed to aid the creative process. Diagram: Nicki Dlugash.

EXPLORING THE MEDIUM Investigating the creative potential of the computer programming language Processing in relation to typography, Yeohyun Ahn has constructured letterforms using the Geomerative Library, developed by Ricard Marxer Piñón, and the Binary Tree Algorithm. Design: Yeohyun Ahn, 2008–10, http://www.yeoahn.com/hp/typography.html.

PROGRAMMING TOOLS FOR DESIGNERS

PROCESSING is a Java-based, open-source programming language and environment created by Ben Fry and Casey Edwin Barker Reas. Designed for producing images, animations, and interactions, Processing has attracted a large user community and supports a robust library of preexisting scripts. The basics of Processing can be grasped by people with minimal programming background.

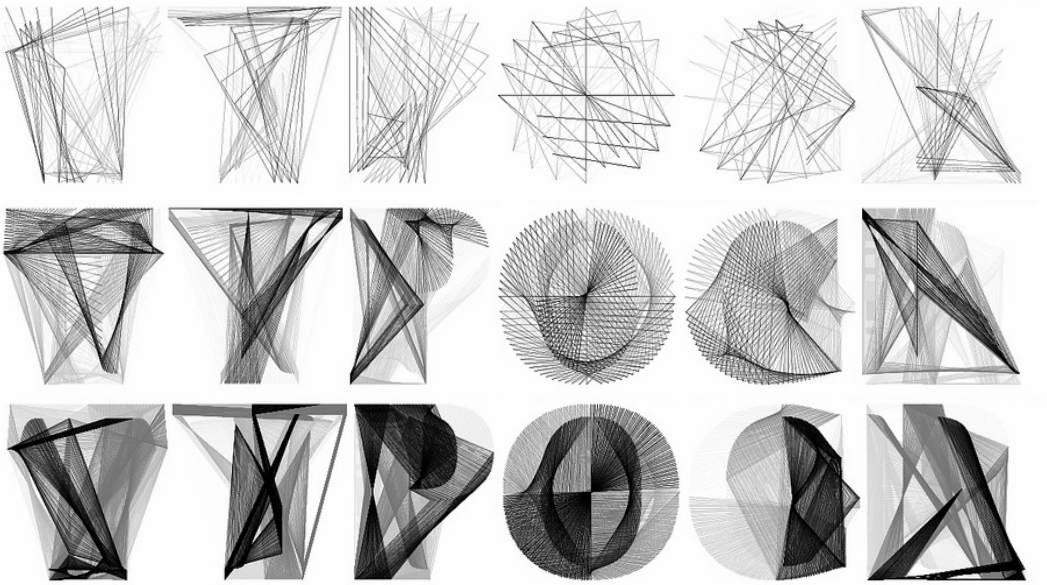
SCRIPTOGRAPHER, a scripting plug-in for Adobe Illustrator, was developed by Jürg Lehni in 2001; Jonathan Puckey joined this open-source endeavor in 2007. A community of users has shared numerous plug-ins, including drawing tools, filters for modifying existing graphics, and scripts for generating complex graphic objects. Scriptographer, which can create lines and patterns that change each time the script is run, is not supported by Adobe CS6.

PAPER.JS, also created by Lehni and Puckey, is the heir to Scriptographer. Paper.js provides fine-grained tools for creating, inspecting, and manipulating vector graphics down to the level of points, handles, tangents, and curvature, building on top of the HTML5 canvas. Largely compatible with Scriptographer, Paper.js brings a print-oriented graphics mentality to the web, adding capabilities for interactivity and animation.

NODEBOX is an open-source tool that enables designers to create generative projects, automate boring production challenges, visualize large sets of data, and access the raw power of the computer without thinking in ones and zeroes. Nodebox integrates with traditional design applications and runs on many platforms.

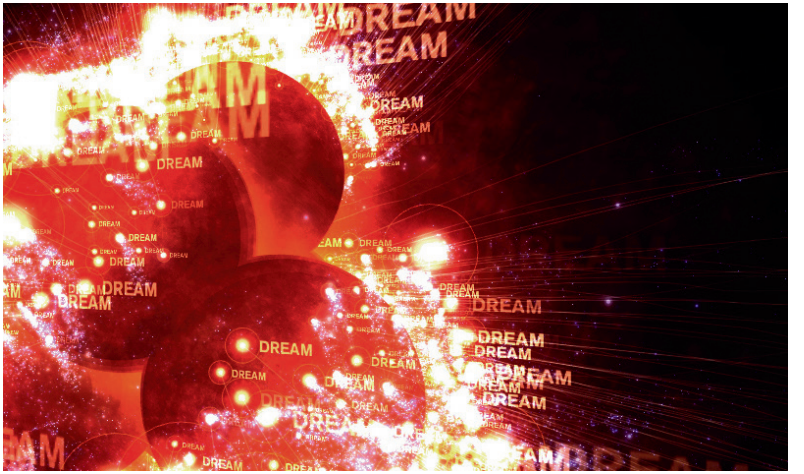
CINDER, a cross-platform programming tool created for use with graphics, audio, video, networking, and computational geometry, exploits the native capabilities of diverse platforms, including Mac OSX, Windows, and iOS. It upgrades automatically with the operating system.

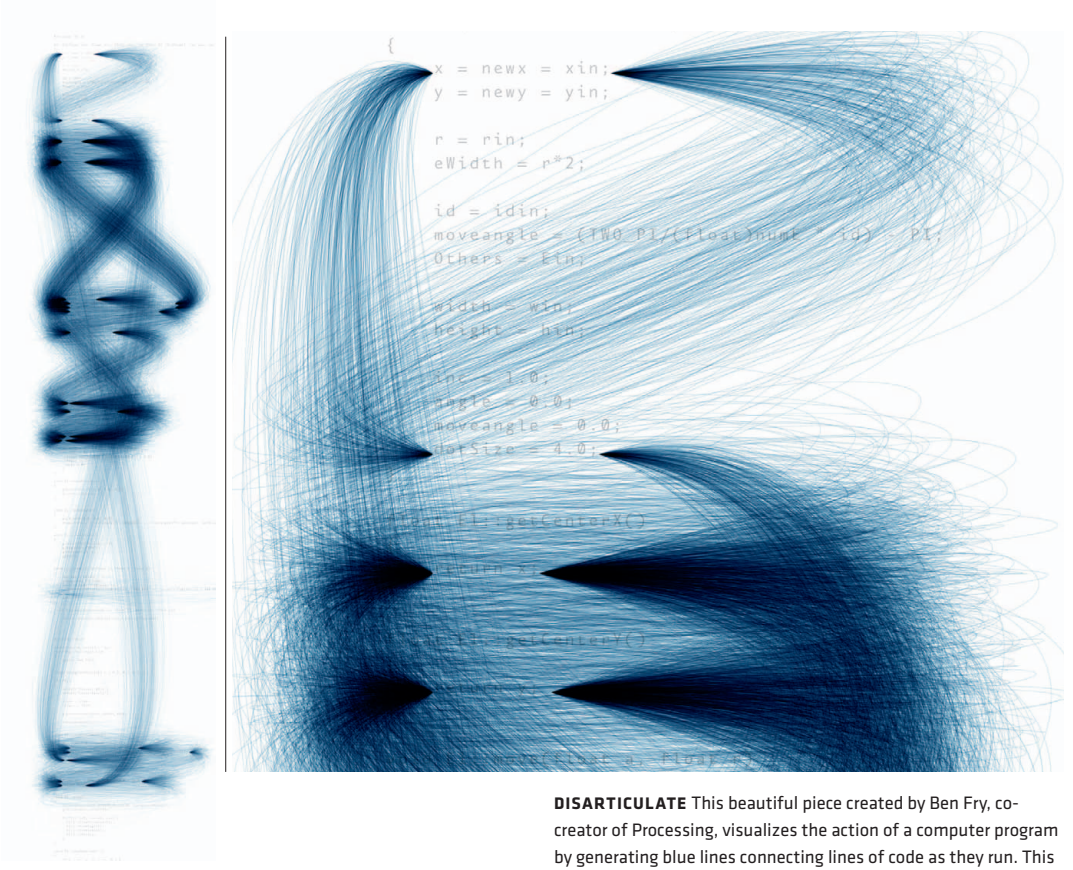
PROCESSING IN USE



BROKEN GRID These letterforms are made completely without the use of Bézier curves, resulting in radical, highly abstract characters. Design: Nils Holland-Cunz, "Broken Grid - Nils Holland-Cunz," *Generative Typografie*, http://generative-typografie.de/generativetypografie/broken-grid/.

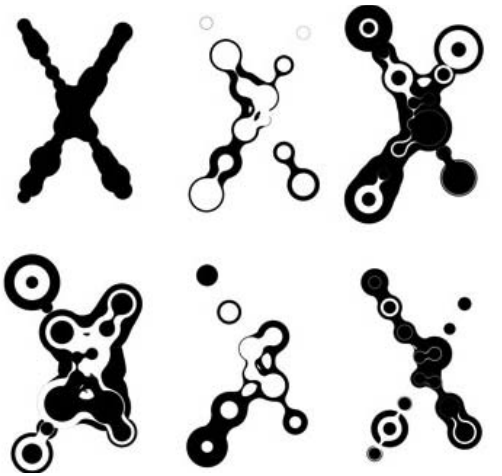
SOLAR is an audio visualizer consisting of particles that pick up specific frequencies of incoming audio. The particles get larger and more aggressive in relation to the amplitude of the audio input. Design: Robert Hodgin, 2008, http://roberthodgin.com/solar/.





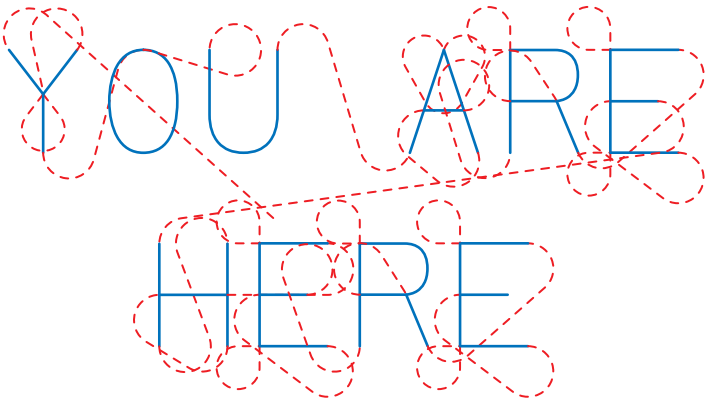
DISARTICULATE This beautiful piece created by Ben Fry, co-creator of Processing, visualizes the action of a computer program by generating blue lines connecting lines of code as they run. This image shows one moment in time; the darker lines represent recently run code, while the lighter lines represent code that took place farther in the past. Design: Ben Fry, 2008, http://benfry.com/disarticulate/.

DOT-MATRIX IN THE TWENTY-FIRST CENTURY Coded with Processing, this generative monospace alphabet was created by overlaying circles of differing sizes. Design: Tatevik Aghabayan, *Elien*, 2008, http://elien.tatssachen.de/.

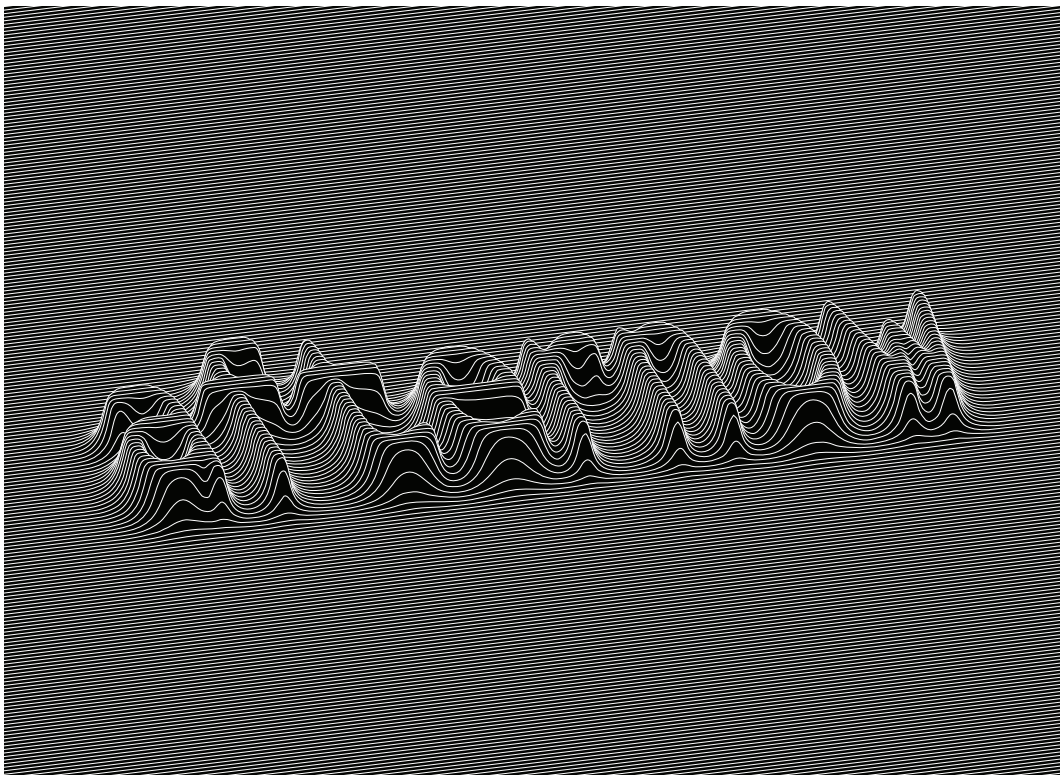


SCRIPTOGRAPHER IN USE

LETTERING TOOL Using Scriptographer, Puckey created a drawing tool that allows the user to modify the strokes of individual letters from a custom-designed typeface. The application shown above comes from the cover of *Jetzt/Now*, commissioned by Luna Maurer. Design: Jonathan Puckey, Moniker, 2005. Jonathan Puckey, "Lettering Tool," http://jonathanpuckey.com/projects/lettering-tool/.



YOU ARE HERE Hektor is a drawing device that produces large-scale wall drawings with spray paint. The can floats in front of the wall in a constant struggle with gravity, suspended only by two strings, requiring it to move on smooth paths. Shown here is a design for signage created for the exhibition *You Are Here: The Design of Information* at the Design Museum London in 2005. The image depicts the motion diagram that the Hektor software (written in Scriptographer) generates in order to move the spray can smoothly over the wall. Hektor was created by Jürg Lehni and Uli Franke in 2002. Signage designed by Laurent Benner, Jonathan Hares, and Jürg Lehni.



AFTERNOW Lehni used Scriptographer to produce this three-dimensional typography, inspired by the three-dimensional lettering on the 1973 record sleeve *The Faust Tapes*. Design: Jürg Lehni, 2006, *Scriptographer*, http://scriptographer.org/gallery/afternow/.

FONT RHYTHM This custom script for Scriptographer allows users to manipulate the scale, baseline, rotation, and font selection of letters in a text. Design: Guillaume Chabot, Vincent Delaleu, Hugo Hoppmann, and Olga Prader, 2010. Workshop with Jürg Lehni and Jonathan Puckey, ECAL (Ecole cantonale d'art de Lausanne), 2010.

for more than just music. Please explain for th
don't know yet your philosophy behind the lab
do you find new talent, what do you do beyond th
work? The idea of "resistance" is very old. A mor
portant question is what are the conditions that c
it? The spirit of resistance survived in us Afric
Americans throughout the ages and manifested it
into me and Jeff Mills as kids as it did in many of
friends. Our parents were educated and had surv
the turbulent 60's and supported the "resistant"
Martin Luther King's Civil Rights Movement and a
war campaigns. Consequently both Jeff and mys

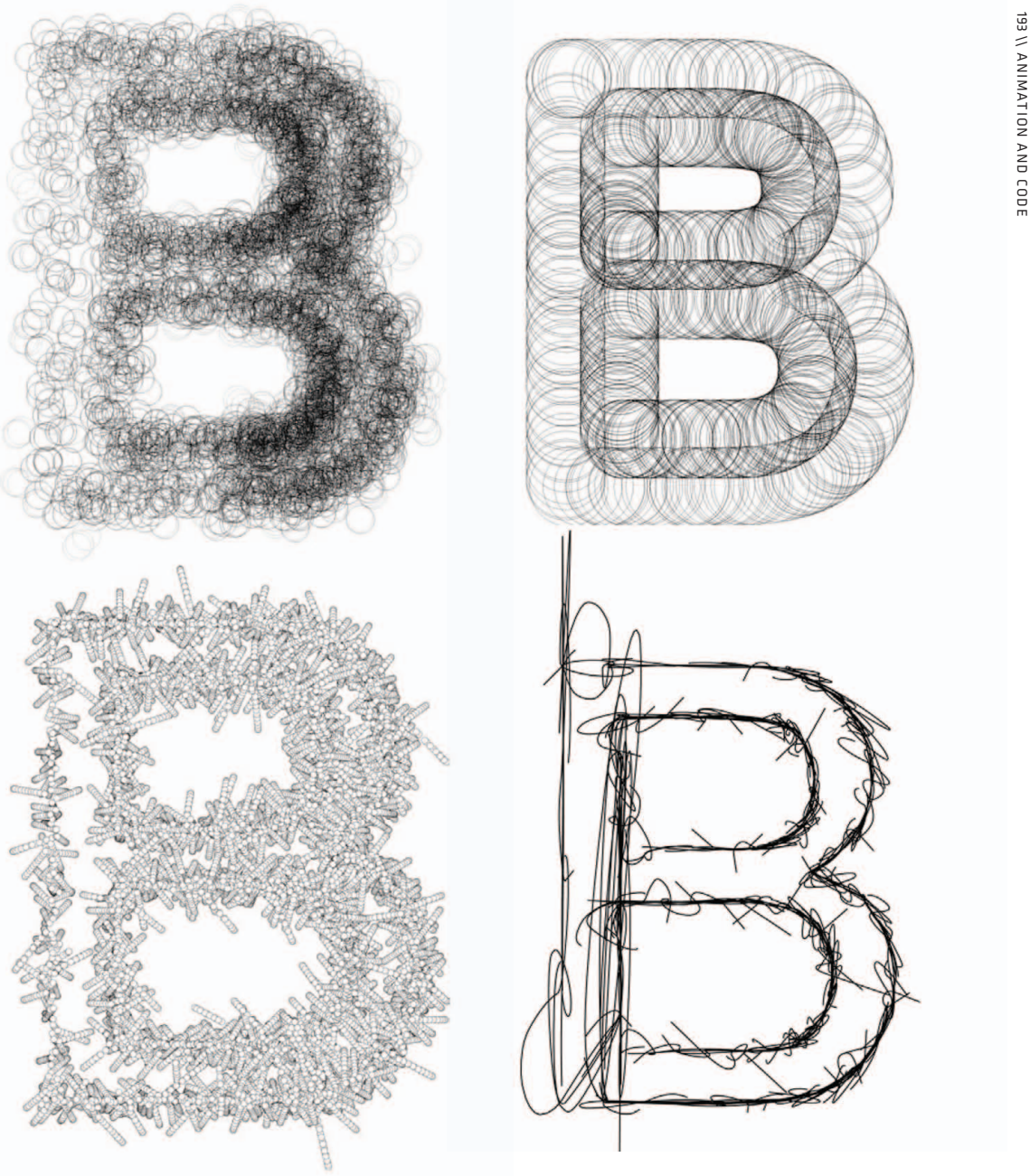
MODIFYING CODE

Experts as well as novices learn new programming techniques by studying code written by other programmers. Armed with a basic understanding of how code works, designers can look for variables and change their values, observing how each change alters the results. They can also experiment by temporarily disabling some lines of code, setting them off as comments ("commenting out"), and exploring how the missing lines affect the code.

As designers become more skilled, they can modify code in more ambitious ways, including combining elements from several different sources into new pieces of software. This is best done slowly and methodically; the new chunks of code should be tested a few lines at a time as they are incorporated. Bringing in too much material at once yields what programmers call "Frankenstein code"—a malfunctioning mishmash that is difficult to repair.

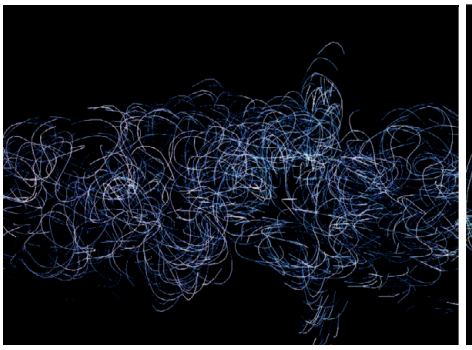
Whenever modifying or otherwise incorporating someone else's code, the designer must credit the originators of the source code within the new code and preserve any copyright notices and other information the authors have included. Explaining what you did with comments of your own can help inspire other designers down the road. The best way to learn about code is to get inside and play with what's there.

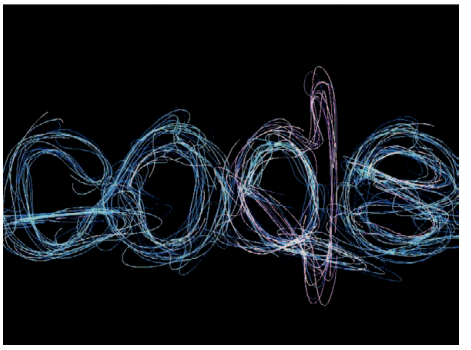
GETTING STARTED WITH CODE Designer Qian Li began by exploring the type tutorials available on Processing.org. By making a few changes to the code, she was able to create this sketch of text waving like a flag. Design: Qian Li, 2012.

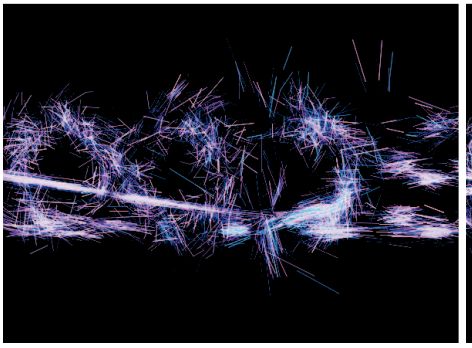


SMALL DIFFERENCES, BIG CHANGES By experimenting with single lines of code in Processing—for example, changing "bezier" to "line" or changing "ellipse" to "ellipse with stroke"—designer Yeohyun Ahn generated vastly different letterforms. Design: Yeohyun Ahn, 2008, using the Geomerative Library by Ricard Marxer Piñón.

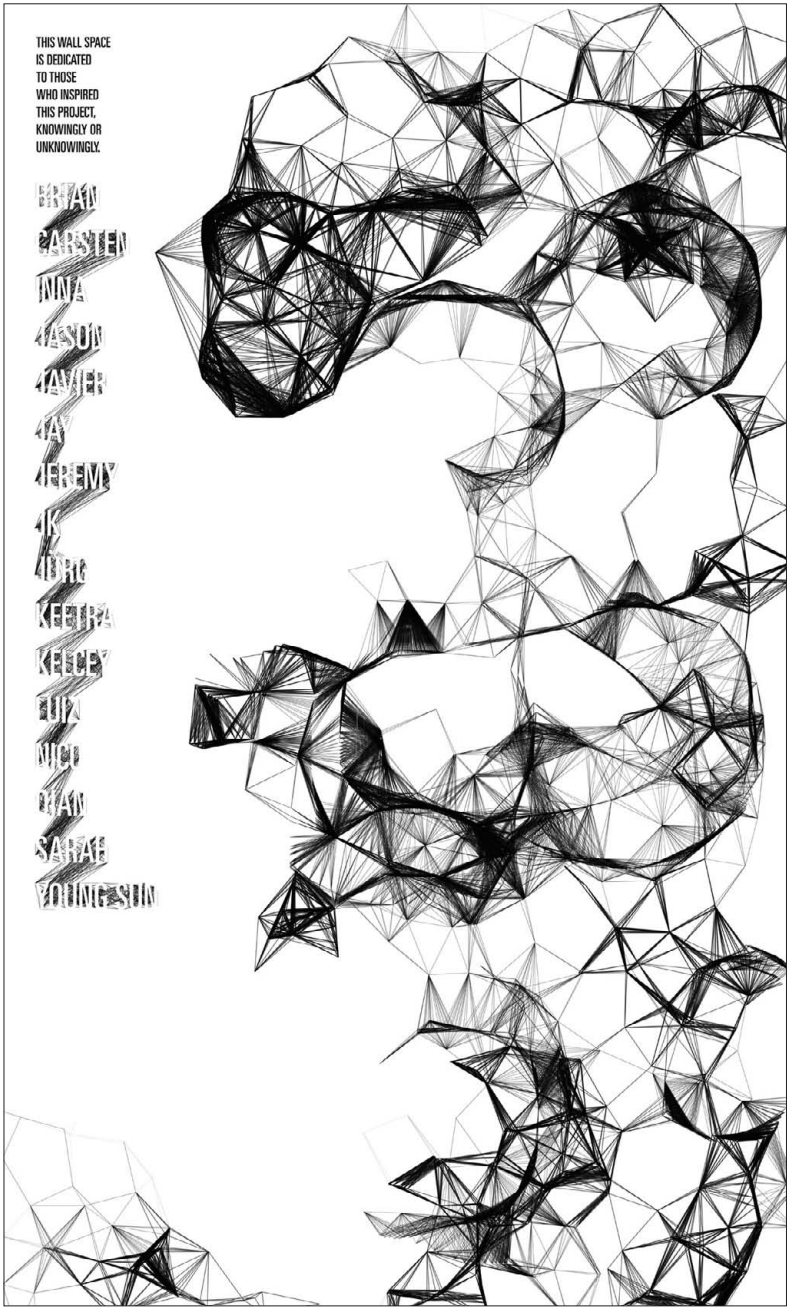
HILOS Created with Processing, this piece is based on the idea of particles swimming along the characters' outlines. The position of the mouse controls the parameters; clicking on the text will rerun the program with a new set of random colors. Design: Ricard Marxer Piñón.







HILOS MODIFIED By making changes in Piñón's code, designer Qian Li was able to customize the effect, instilling greater control over the colors and the speed at which particles move around the letterforms.

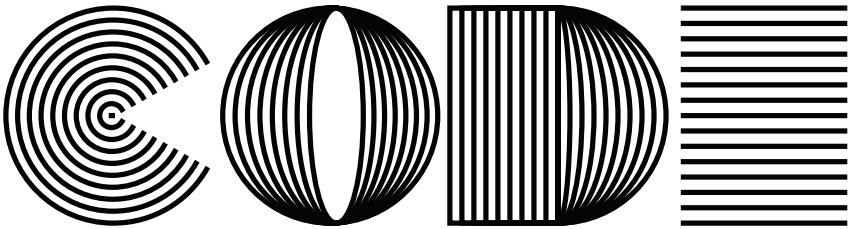


DIGITAL COLLAGE Working with Scriptographer, the designer pieced together code from multiple sources, including rasterColor.js by Jürg Lehni, sketchStructs.js by Jay Weeks, and Carsten Nicolai's Vector Grid File. Design: Nicki Dlugash, 2012.

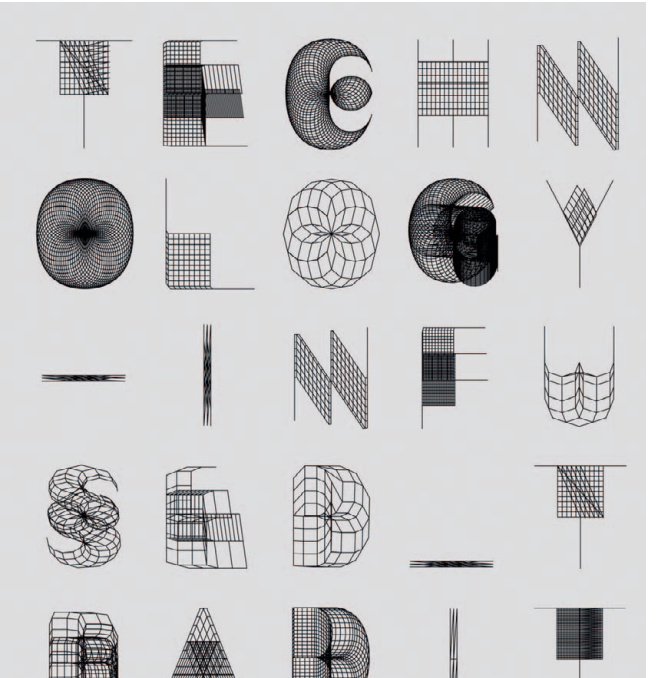
CASE STUDY

COMPUTATIONAL TYPE

Designer Kyuha Shim became interested in the ability of software to easily automate repetitive tasks and created rules for constructing letterforms with code. Many of the characters shown here are constructed by repeating numerous small elements using Nodebox and Processing. Shim is also interested in using code as a means to expose the design process and has shared the code for his computational type projects (ndbx files) so that other designers can understand his process and play with the parameters.

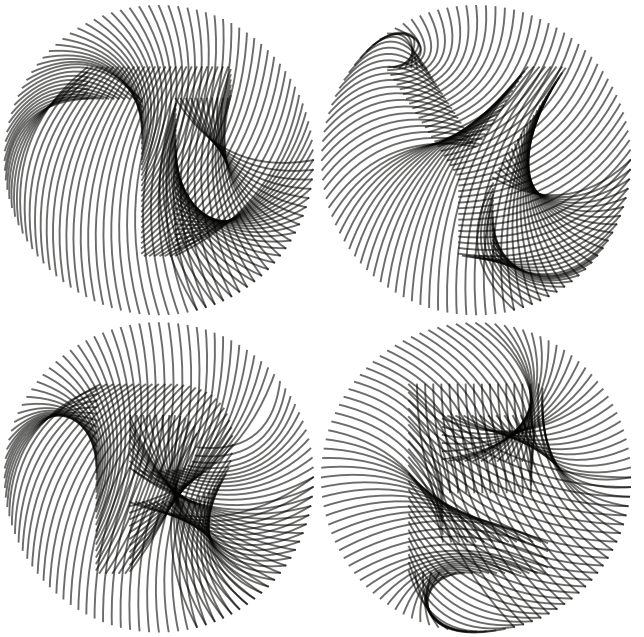


CONCENTRIC FORMS Designers have long experimented with creating letterforms out of concentric lines and shapes. These letters acquire depth and dimension where the lines converge. Design: Kyuha Shim, 2013.

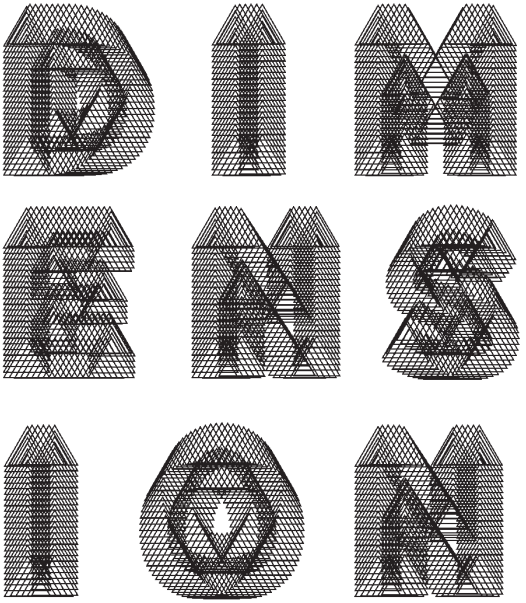


MESH ALPHABETS These letterforms are constructed from lattices of lines that describe planes in two and three dimensions. Design: Sangun Jeon. Created in a workshop with Kyuha Shim at RISD, 2012.

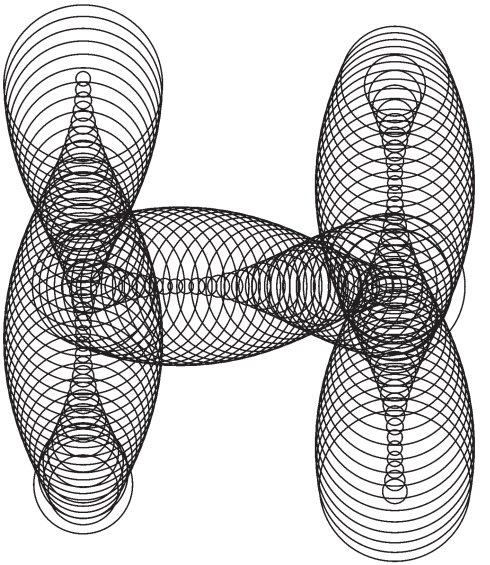
READ MORE >> Kyuha Shim, *Code & Type*, 2013, http://code-type.com/; *Data: Multi-sensory Representation*, 2013, http://multisensory-data.com/.



TYPE SPIN These unusual shapes are generated by creating lines around the contours of letterforms and connecting them to the edges of a circle. Look closely for the ghosts of *T*, *Y*, *P*, and *E*. Design: Kyuha Shim, 2013.



TRI-GRID Hundreds of stacked triangles come together to create these dense, volumetric letterforms. Design: Kyuha Shim, 2013.



SEQUENTIAL CIRCLES The strokes of this letter are constructed with stacks of circles of gradually diminishing diameter. Design: Kyuha Shim, 2013.

CASE STUDY

SLITSCAN TYPE GENERATOR

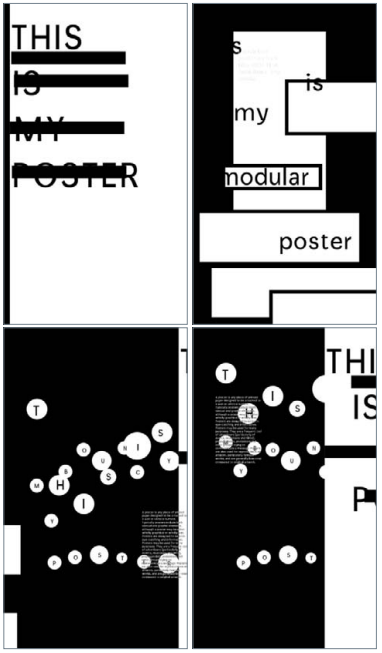
This Illustrator script, written by designer J. K. Keller using JavaScript, types a letter using every font installed on a computer. It aligns all the letters and then creates slices out of each one, positioning them next to one another based on each font's baseline position. The color of each slit is then randomized to create colorful gradations.

Design: J. K. Keller, 2006 (updated 2010), "Slitscan Generator," http://jk-keller.com/slitscan-type-generator/.

CASE STUDY

POSTER MACHINE

Using Processing and Arduino, designer Luiz Ludwig developed the Poster Machine to challenge the digital tools that designers conventionally use to make posters. Instead of a computer and Adobe software, Ludwig offers users a series of knobs and switches and a flat-panel television; anyone can create a poster by manipulating the position and scale of a set of given design elements. Each poster is both hand- and machine-made.



Design: Luiz Ludwig, 2013.

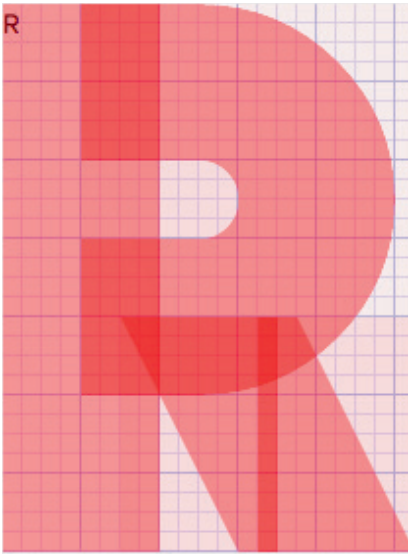
CASE STUDY

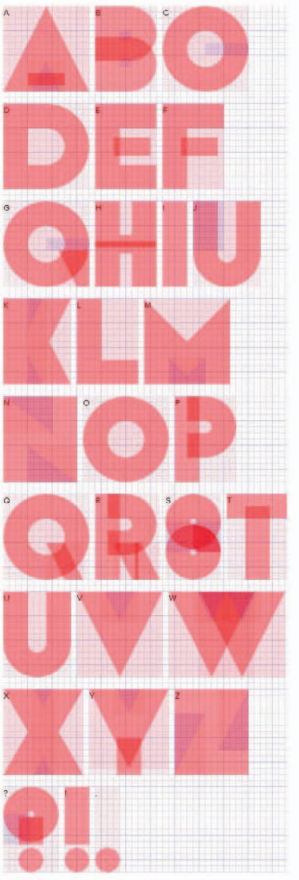
BUILDING AN ALPHABET WITH CSS

Programmer David Desandro created his Curtis CSS typeface (opposite page) to see if it was possible to build type directly in the browser using only CSS. The browser renders each shape in the letters with a combination of background color, border width, border radius, and absolute and relative positioning. Gabe Kelley was inspired by Desandro to create his own alphabet (below).

TØTB Each character of this playful display alphabet is made up of divs that are given an ID and then styled and positioned with CSS. Below is the markup for the letter *B*. Design: Gabe Kelley, 2012, http://gabekelley.com/totb/.

```
<div id="b" class="letterform">
    <div id="b_left"></div>
    <div id="b_top_bowl"></div>
    <div id="b_bottom_bowl"></div>
    <div id="b_top_corner"></div>
    <div id="b_middle_corner"></div>
    <div id="top_corner_shadow"></div>
    <div id="middle_corner_shadow"></div>
</div>
```





CURTIS CSS TYPEFACE Desandro used CSS spans to create these letterforms. The *R* is constructed from four elements (inside split_vert, outside split_vert, stroke, and fill). Design: David Desandro, 2010, https://github.com/desandro/curtis-css-typeface.

```
<span class="css_char r">
    R
    <span class="inside split_vert">
      </span>
    <span class="outside split_vert">
      </span>
    <span class="stroke"></span>
    <span class="fill"></span>
</span>
```

CASE STUDY

WEB TYPOGRAPHY FOR THE LONELY

Designer Christopher Clark is inventing surprising uses for SVG, HTML5 Canvas, and other emerging tools. His site, WebTypographyfortheLonely.com, created as an MFA thesis project at MICA, not only showcases these startling prototypes, but also provides instructive commentary and free code. The shapes can be programmed to perform actions such as float away or disassemble on mouseover.

ILLUMINATE uses SVG graphics to encase letterforms in scalable vector elements in a shifting grid of shapes and colors.

GALACTIFY uses HTML5 Canvas to generate complex networks of forms. It also exploits Canvas's ability to fill a typeface with shapes.

CLUSTER reads a font's shape pixel by pixel and stores the data as coordinates. It then uses the stored data to reconstruct the text out of tiny particles.

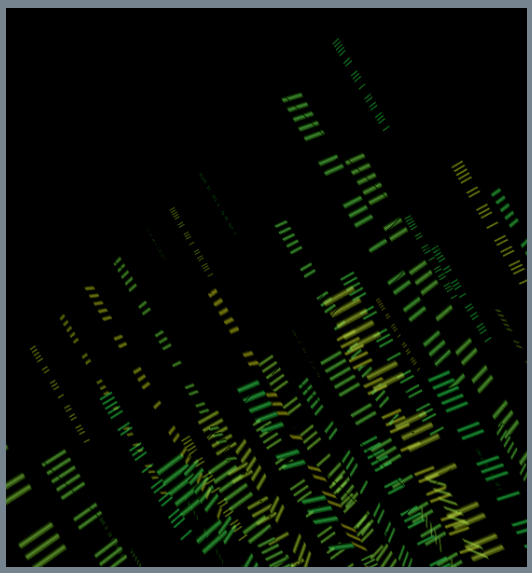
TRIANGULATE explores the sophisticated transparencies made possible by HTML5 Canvas. As the triangles expand, they crash into one another.

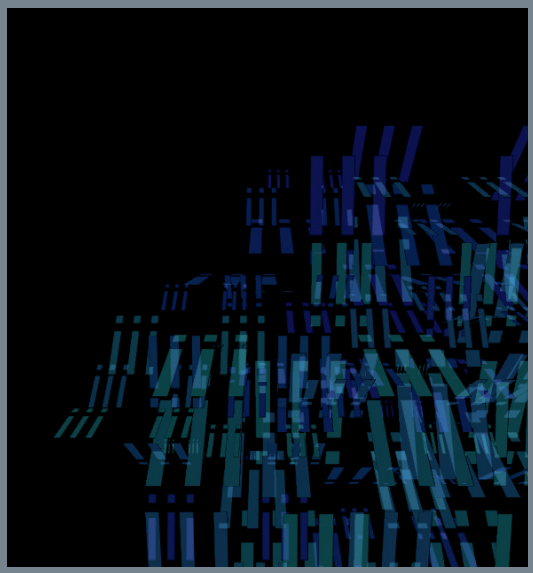
Design: Christopher Clark, 2011.

IN THE CLASSROOM: PROCESSING
WITH YEOHYUN AHN

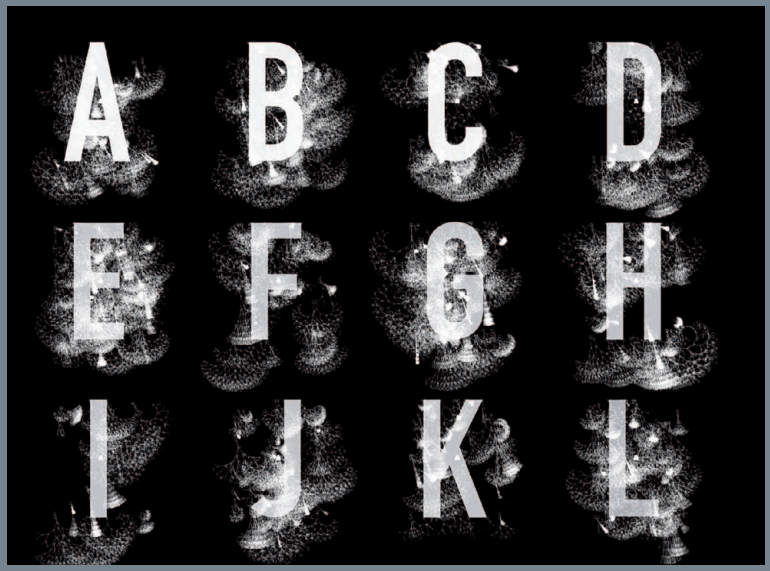
Students are introduced to the creative possibilities of Processing in this semester-long course taught by Ahn at SAIC (School of the Art Institute of Chicago). They learn the basics of Processing through a variety of short projects, including drawing, pattern making, and experimental alphabets. Weekly demos allow them to modify existing code while building their technological proficiency with the new language. Shown below are experimental typographic patterns created by students using only one letterform and repeating it in a variety of ways. Finally each student created his or her own experimental alphabet, shown on the page opposite.

READ MORE >> Yeohyun Ahn, "TYPE+CODE II," http://www.yeoahn.com/typecode.





TYPOGRAPHIC PATTERNS The letterforms *l* and *i* are multiplied and stacked to create an illusion of depth. The designer worked with the Binary Tree algorithm, which is often used in computer science to structure data. Here the algorithm controls visual complexity, hierarchy, and density. Design: Xiaofeng Lin, 2012.



COMPRESS AND RELEASE This experimental alphabet was created using the Binary Tree algorithm and Ricard Marxer Piñón's Geomerative Library for Processing. It explores interrelationships between English letters and Chinese characters. Behind the English letterforms are the Chinese characters whose pronunciation starts with the English letter in front of it; starting points of the binary trees are based on the forms of the Chinese characters. Design: Xiaofeng Lin, 2012.

FIERY LETTERFORMS This alphabet was made using the Geomerative Library and Caligraft by Ricard Marxer Piñón, with the open-source font Intro Inline. The designer used Processing to modify the letterforms and create new variations. Design: Matthew Dongki Kim, 2012.

INDEX

"At last, here is one book that helps make sense of the shifting world of type on screen(s) for students of design and the people who teach them." —LIZ DANZICO, CHAIR, MFA INTERACTION DESIGN, SCHOOL OF VISUAL ARTS

"This book is a sound and concise guide to screen-based design across a range of media. *Type on Screen* introduces the dark arts of digital type to the uninitiated." —VERONIKA BURIAN, TYPE TOGETHER

```
.blurb {
font-family:"Adelle";
font-size:10px;
line-height:20px;
}
```

Type on Screen is the definitive introduction to using typography in screen-based applications, from film and video to websites, electronic publications, and mobile apps. This practical primer shows how to combine classic concepts of typographic form and structure with screen-based technologies and principles of user interaction and animation. *Type on Screen* offers guidance on how to choose typefaces for the screen; how to style beautiful, functional text and navigation; how to apply principles of animation to text; and how to create compelling logos and icons. Reinforced with dos, don'ts, and basic exercises and tutorials, *Type on Screen* can be used as a textbook for college-level courses in web design, interaction design, and motion graphics and is an indispensable guide for any designer or developer seeking practical and inspirational information about digital typography.

Visit **www.typeonscreen.info** for demonstrations of screen-based material and information on digital editions of *Type on Screen*.

`line-height:100%`

We work on screens, write on screens, and read on screens.

`line-height:150%`

Type on Screen is one of the rare books examining graphic design for digital media.

`line-height:200%`

This guide points to ways that typography may be evolving.

Peter Bil'ak, Typotheque

```
.blurb {
font-family:"Fedra Serif A";
}
```

TYPE ON SCREEN is edited by Ellen Lupton, director of the Graphic Design MFA program at MICA (Maryland Institute College of Art). The book was researched, written, and designed by a team of designers at MICA, who explored the role of typography across a spectrum of contemporary digital practices. Other volumes produced by MICA faculty and students include *D.I.Y. Design It Yourself, Indie Publishing: How to Design and Produce Your Own Book, Graphic Design: The New Basics,* and *Graphic Design Thinking: Beyond Brainstorming.*

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