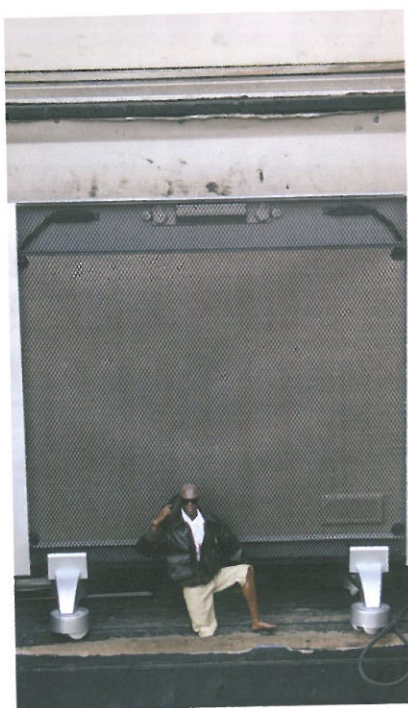
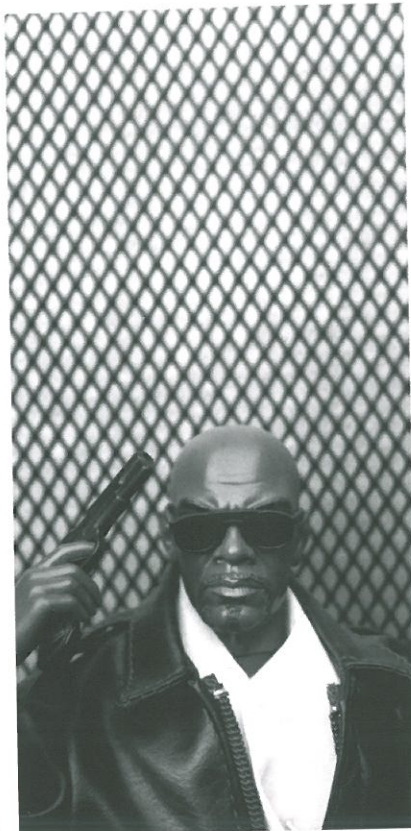
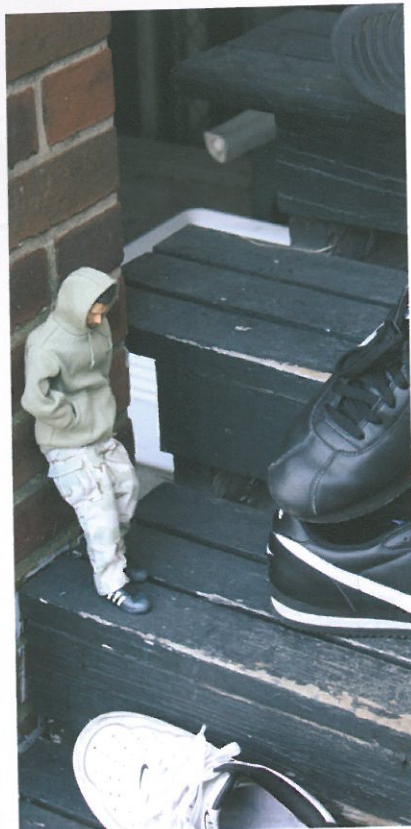
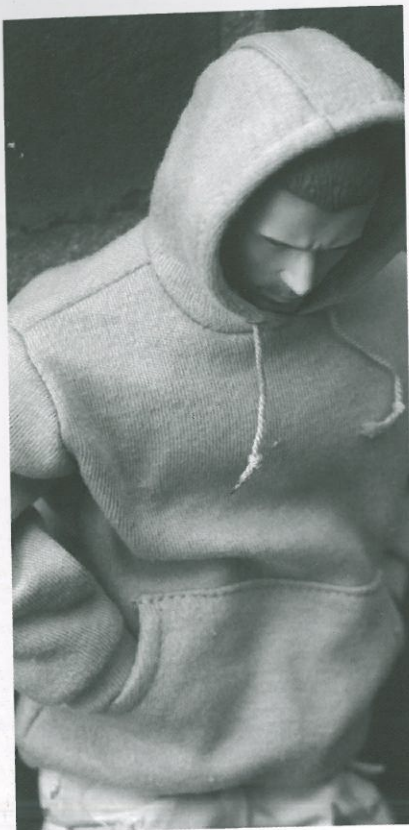




Ambiguous Scale These portraits of toy action figures play with the viewer's expectations about scale. Spatial cues reveal the actual scale of the figures; cropping out recognizable objects keeps the illusion alive. Yong Seuk Lee, MFA Studio. Abbott Miller, faculty.



Point of View Photographing small objects up close and from a low vantage point creates an illusion of monumentality. Kim Bentley, MFA Studio. Abbott Miller, faculty.

Scale is a Verb

To scale a graphic element is to change its dimensions. Software makes it easy to scale photographs, vector graphics, and letterforms. Changing the scale of an element can transform its impact on the page or screen. Be careful, however: it's easy to distort an element by scaling it disproportionately.

Vector graphics are scalable, meaning that they can be enlarged or reduced without degrading the quality of the image. Bitmap images cannot be enlarged without resulting in a soft or jaggy image.

In two-dimensional animation, enlarging a graphic object over time can create the appearance of a zoom, as if the object were moving closer to the screen.

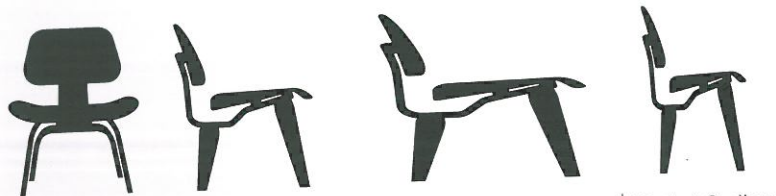


Scaling Letterforms If the horizontal and vertical dimensions of a letter are scaled unevenly, the resulting form looks distorted. With vertical scaling, the horizontal elements become too thick, while vertical elements get too skinny.

With horizontal scaling, vertical elements become disproportionately heavy, while horizontal elements get thin.



Full-Range Type Family Many typefaces include variations designed with different proportions. The Helvetica Neue type family includes light, medium, bold, and black letters in normal, condensed, and extended widths. The strokes of each letter appear uniform. That effect is destroyed if the letters are unevenly scaled.



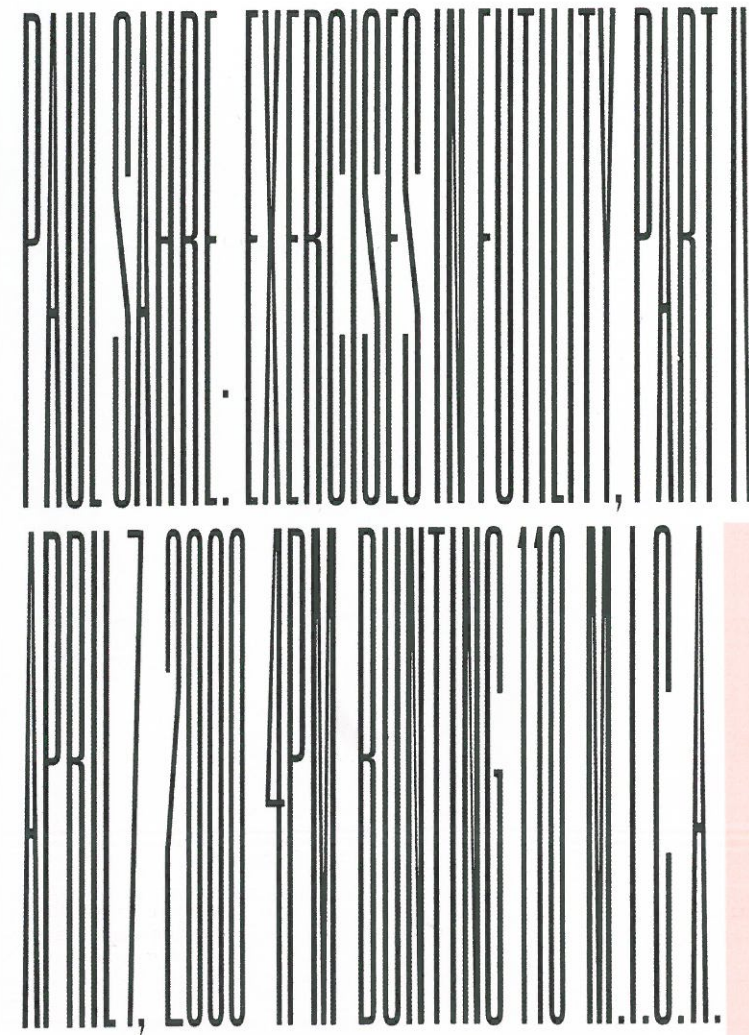
Correct Proportions

Horizontal Scaling

Vertical Scaling

Scaling Images and Objects Uneven scaling distorts images as well as typefaces. Imagine if you could scale a physical object, stretching or squashing it to make it fit into a particular space. The results are not pretty. Eric Karnes.

Extreme Heights In the poster at right for a lecture at a college, designer Paul Sahre put his typography under severe pressure, yielding virtually illegible results. (He knew he had a captive audience.) Paul Sahre.



Texture

If you touch something (it is likely) someone will feel it.
If you feel something (it is likely) someone will be touched.

Rick Valicenti

Texture is the tactile grain of surfaces and substances. Textures in our environment help us understand the nature of things: rose bushes have sharp thorns to protect the delicate flowers they surround; smooth, paved roads signal safe passage; thick fog casts a veil on our view.

The textures of design elements similarly correspond to their visual function. An elegant, smoothly patterned surface might adorn the built interior or printed brochure of a day spa; a snaggle of barbed wire could stand as a metaphor for violence or incarceration.

In design, texture is both physical and virtual. Textures include the literal surface employed in the making of a printed piece or physical object as well as the optical appearance of that surface. Paper can be rough or smooth, fabric can be nubby or fine, and packaging material can be glossy or matte. Physical textures affect how a piece feels to the hand, but they also affect how it looks. A smooth or glossy surface, for example, reflects light differently than a soft or pebbly one.

Many of the textures that designers manipulate are not physically experienced by the viewer at all, but exist as optical effect and representation. Texture adds detail to an image, providing an overall surface quality as well as rewarding the eye when viewed up close.

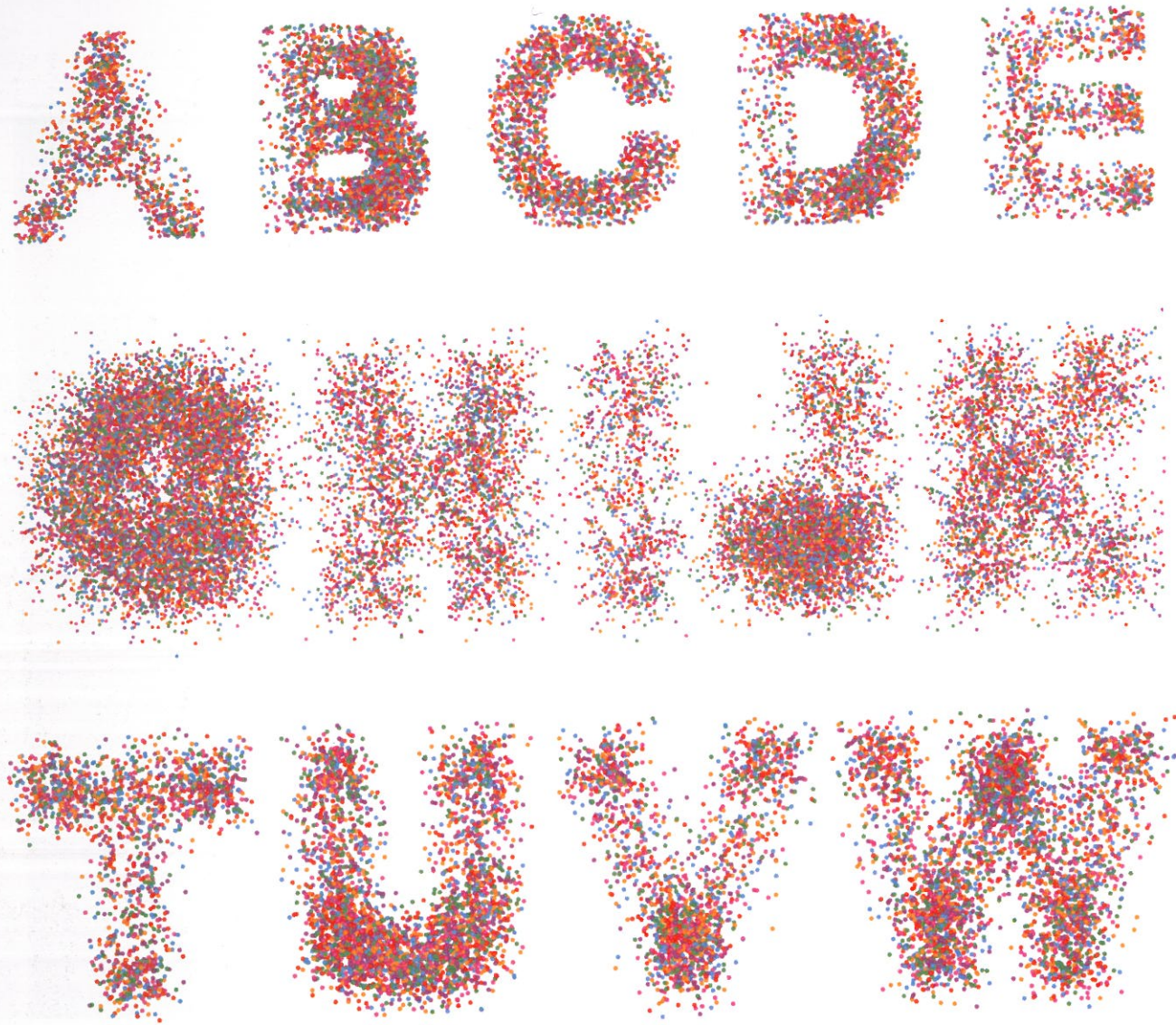
Whether setting type or depicting a tree, the designer uses texture to establish a mood, reinforce a point of view, or convey a sense of physical presence. A body of text set in Garamond italic will have a delicately irregular appearance, while a text set in Univers roman will appear optically smooth with even tonality. Likewise, a smoothly drawn vector illustration will have a different feel from an image taken with a camera or created with code.

As in life, the beauty of texture in design often lies in its poignant juxtaposition or contrast: prickly/soft, sticky/dry, fuzzy/smooth, and so on. By placing one texture in relation to its opposite, or a smart counterpart, the designer can amplify the unique formal properties of each one.

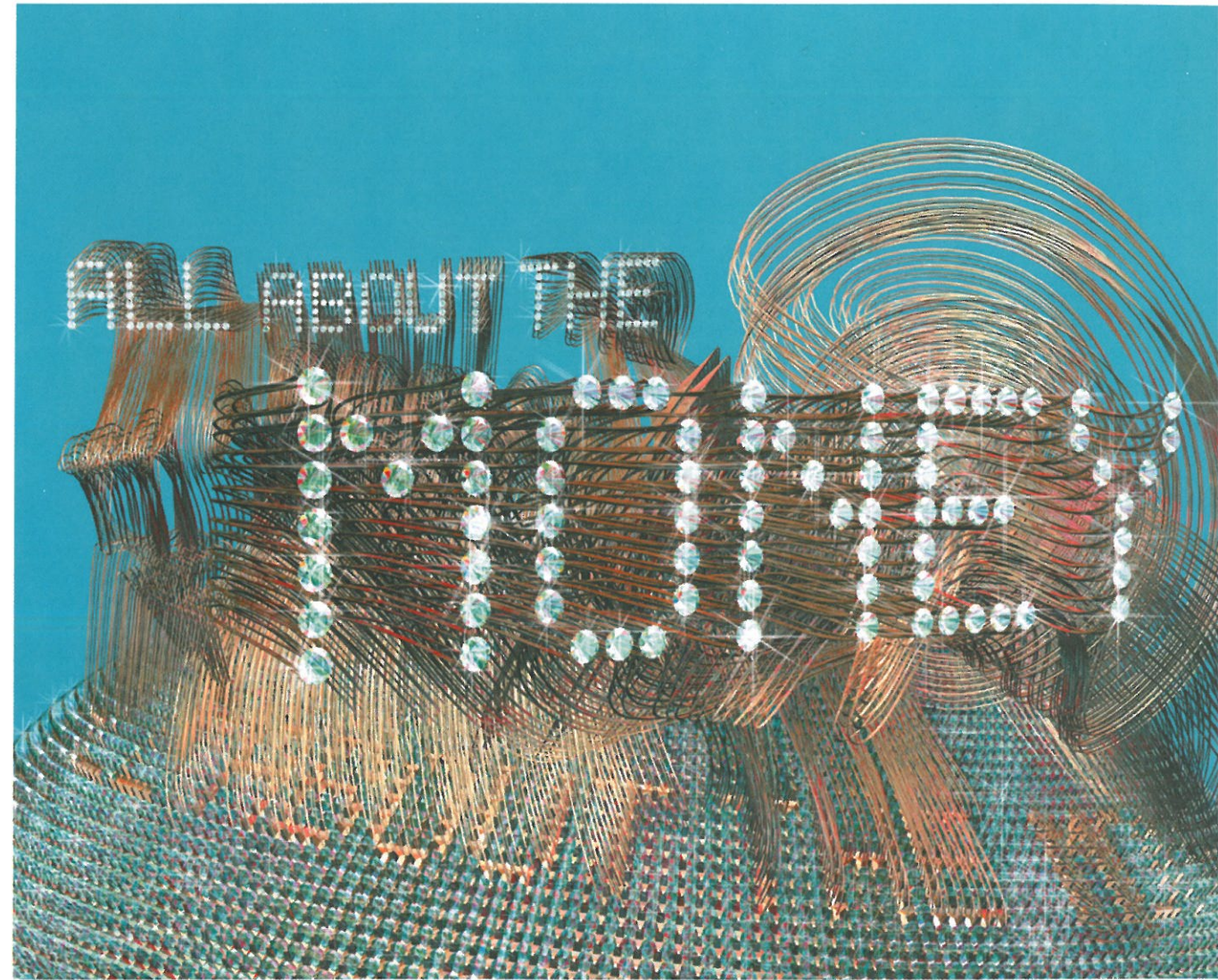
This chapter presents a wide spectrum of textures generated by hand, camera, computer, and code. They are abstract and concrete, and they have been captured, configured, sliced, built, and brushed. They were chosen to remind us that texture has a genuine, visceral, wholly seductive capacity to reel us in and hold us.

High-Tech Finger Paint The letterforms in Rick Valicenti's Touchy Feely alphabet were painted on vertical glass and recorded photographically with a long exposure from a digital, large-format Hasselblad camera.
Rick Valicenti, Thirst.





Code-Driven Texture The Swiss typographer Emil Ruder once claimed that vital and individual typographic rhythms are alien to machines. The code-driven letterforms shown here prove otherwise. Generated in the computer language Processing, these forms are effervescent, organic, and, indeed, vital. Yeohyun Ahn, MFA Studio.



All About the Money The textured letters in this editorial illustration are rendered in 3D imaging software. The rhinestone-studded text is set against a Tiffany-blue sky, providing what designer Rick Valicenti calls "a suburban white male's version of the pixel pusher/gangsta aesthetic." Designer: Rick Valicenti, Thirst. Programmer: Matt Daly, Luxworks.

swarm

Abbott Miller and Kristen Spilman, Pentagram

Textured Logotypes The logotypes shown here, designed by Pentagram, use textured surfaces to convey ideas of movement and change. In a logo for an exhibition about the idea of “swarming” in contemporary art, thousands of tiny elements flock together to create a larger structure. In Pentagram’s visual identity for MICA, patterning provides a rich patina that resonates with the school’s urban neighborhood. The main typographic mark gracefully balances tradition and innovation. Solid historical letterforms are punctuated by a modern linear framework, referencing the two architecturally significant buildings that anchor the campus—one building is classical and cubic, while the other is dramatically angled. The texture makes the logo light and engaging when it is used at a large scale.

M | I | C / A

M | I | C / A

M | I | C / A

Abbott Miller and Kristen Spilman, Pentagram



Textural Applications The MICA mark and pattern breathe life into a cardboard portfolio. The same pattern appears on works of street couture. Abbott Miller and Kristen Spilman, Pentagram. Photography: Nancy Froehlich.

Color

All colors are the friends of their neighbors
and the lovers of their opposites. Marc Chagall

Color can convey a mood, describe reality, or codify information. Words like “gloomy,” “drab,” and “glittering” each bring to mind a general climate of colors, a palette of relationships. Designers use color to make some things stand out (warning signs) and to make other things disappear (camouflage). Color serves to differentiate and connect, to highlight and to hide.

Graphic design was once seen as a fundamentally black-and-white enterprise. This is no longer the case. Color has become integral to the design process. Color printing, once a luxury, has become routine. An infinite range of hues and intensities bring modern media to life, energizing the page, the screen, and the built environment with sensuality and significance. Graphics and color have converged.

According to the classical tradition, the essence of design lies in linear structures and tonal relationships (drawing and shading), not in fleeting optical effects (hue, intensity, luminosity). Design used to be understood as an abstract armature that underlies appearances. Color, in contrast, was seen as subjective and unstable.

And, indeed, it is. Color exists, literally, in the eye of the beholder. We cannot perceive color until light bounces off an object or is emitted from a source and enters the eye.

Our perception of color depends not solely on the pigmentation of physical surfaces, but also on the brightness and character of ambient light. We also perceive a given color in relation to the other colors around it. For example, a light tone looks lighter against a dark ground than against a pale one.

Likewise, color changes meaning from culture to culture. Colors carry different connotations in different societies. White signals virginity and purity in the West, but it is the color of death in Eastern cultures. Red, worn by brides in Japan, is considered racy and erotic in Europe and the United States. Colors go in and out of fashion, and an entire industry has emerged to guide and predict its course.

To say, however, that color is a shifting phenomenon—both physically and culturally—is not to say that it can’t be described or understood. A precise vocabulary has been established over time that makes it possible for designers, software systems, printers, and manufacturers to communicate to one another with some degree of clarity. This chapter outlines the basic terms of color theory and shows ways to build purposeful relationships among colors.

Opposites Attract Strong color contrasts add visual energy to this dense physical montage made from flowers. Blue and purple stand out against pink, orange, and red. Nancy Froehlich and Zvezdana Rogic.





Complementary and Analogous Colors
This diagram shows combinations of primary, secondary, and tertiary colors.
Robert Lewis, MFA Studio.

Basic Color Theory

In 1665 Sir Isaac Newton discovered that a prism separates light into the spectrum of colors: red, orange, yellow, green, blue, indigo, and violet. He organized the colors around a wheel very much like the one artists use today to describe the relationships among colors.¹

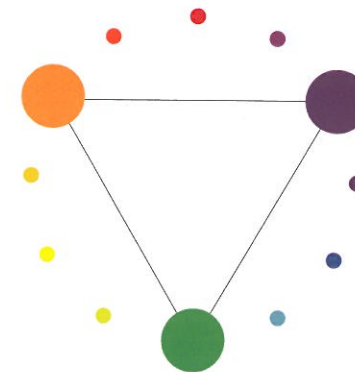
Why is the color wheel a useful design tool? Colors that sit near each other on the spectrum or close together on the color wheel are analogous. Using them together provides minimal color contrast and an innate harmony, because each color has some element in common with others in the sequence. Analogous colors also have a related color temperature. Two colors sitting opposite each other on the wheel are complements. Each color contains no element of the other, and they have opposing temperatures (warm versus cool). Deciding to use analogous or contrasting colors affects the visual energy and mood of any composition.

1. On basic color theory and practice, see Tom Fraser and Adam Banks, *Designer's Color Manual* (San Francisco: Chronicle Books, 2004).



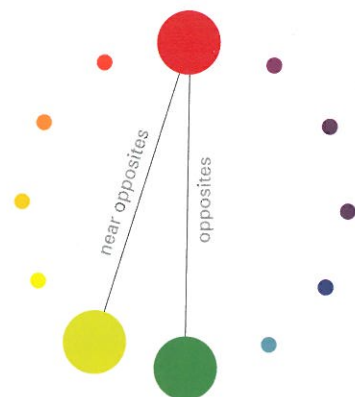
The Color Wheel

This basic map shows relationships among colors. Children learn to mix colors according to this model, and artists use it for working with pigments (oil paint, watercolor, gouache, and so on).



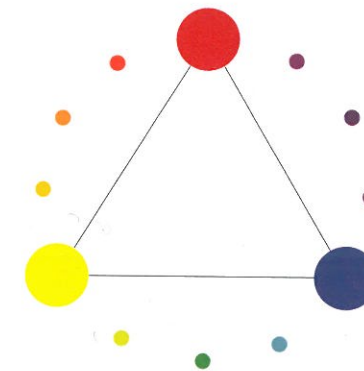
Secondary Colors

Orange, purple, and green each consist of two primaries mixed together.



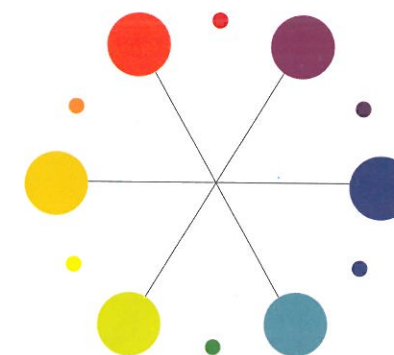
Complements

Red/green, blue/orange, and yellow/purple sit opposite each other on the color wheel. For more subtle combinations, choose "near opposites," such as red plus a tertiary green, or a tertiary blue and a tertiary orange.



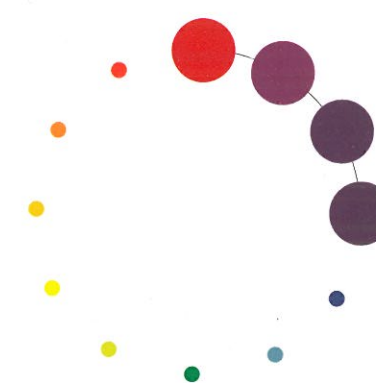
Primary Colors

Red, yellow, and blue are pure; they can't be mixed from other colors. All of the other colors on the wheel are created by mixing primary colors.



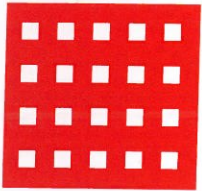
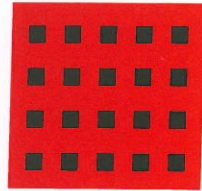
Tertiary Colors

Colors such as red orange and yellow green are mixed from one primary and one secondary color.

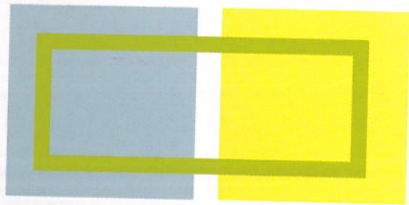


Analogous Colors

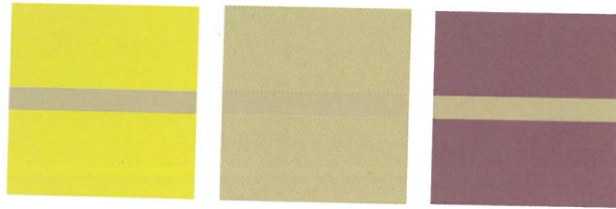
Color schemes built from hues that sit near to each other on the color wheel (analogous colors) have minimal chromatic differences.



Bezold Effect Johann Friedrich Wilhelm von Bezold was a German physicist working in the nineteenth century. Fascinated with light and color, he also was an amateur rug maker. He noticed that by changing a color that interwove with other colors in a rug, he could create entirely different results. Adding a darker color to the carpet would create an overall darker effect, while adding a lighter one yielded a lighter carpet. This effect is known as optical mixing.



Vibration and Value When two colors are very close in value, a glowing effect occurs; on the left, the green appears luminous and unstable. With a strong value difference, as seen on the right, the green appears darker.



One Color, Different Effects The neutral tone passing through these three squares of color is the same in each instance. It takes on a slightly different hue or value depending on its context.

Interaction of Color

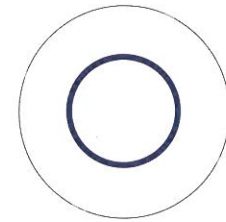
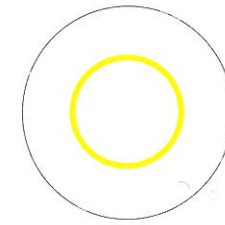
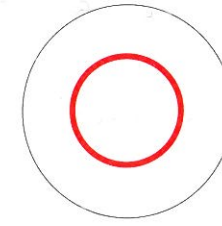
Josef Albers, a painter and designer who worked at the Bauhaus before emigrating the United States, studied color in a rigorous manner that influenced generations of art educators.² Giving his students preprinted sheets of colored paper with which to work, he led them to analyze and experience how the perception of color changes in relation to how any given color is juxtaposed with others.

Colors are mixed in the eye as well as directly on the painter's palette or the printing press. This fact affects how designers create patterns and textures, and it is exploited in digital and mechanical printing methods, which use small flecks of pure hue to build up countless color variations.

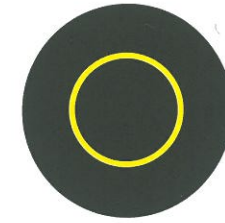
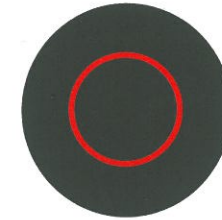
Designers juxtapose colors to create specific climates and qualities, using one color to diminish or intensify another. Understanding how colors interact helps designers control the power of color and systematically test variations of an idea.

2. See Josef Albers, *Interaction of Color* (1963; repr., New Haven: Yale University Press, 2006).

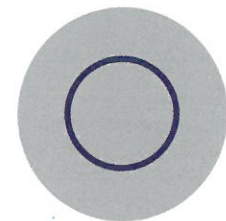
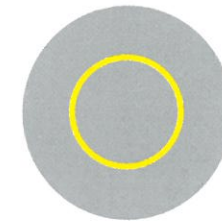
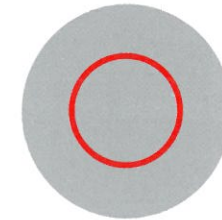
Color + White



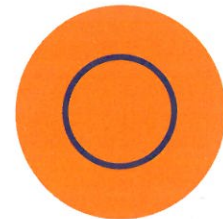
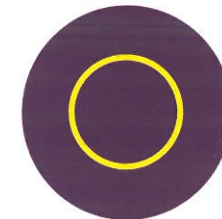
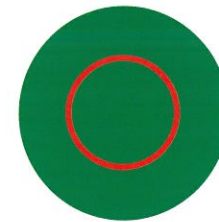
Color + Black



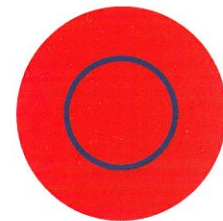
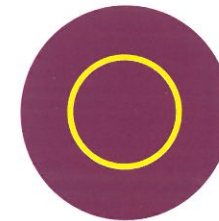
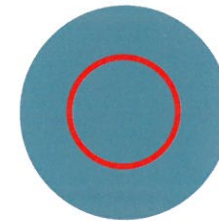
Color + Gray



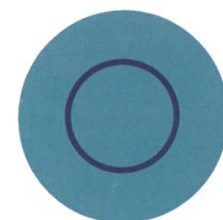
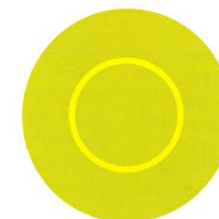
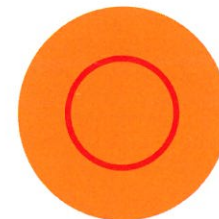
Complements

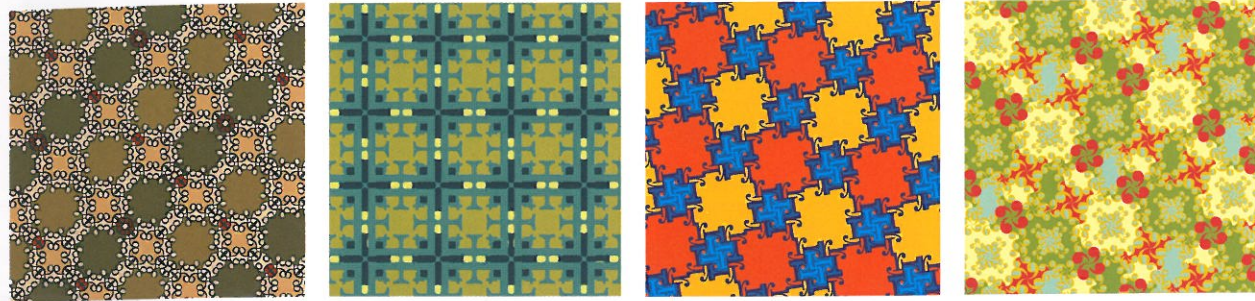
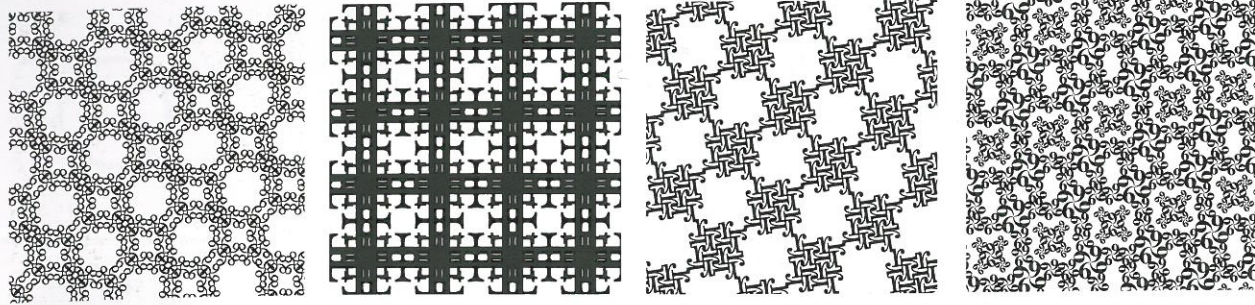


Near Complements



Analogous Colors



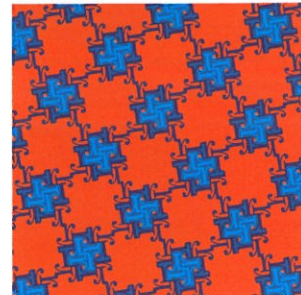


Joanna Marshall

Neutral earth tones combine to make a quiet overall pattern, while a palette with strong contrasts of value and hue yields a more linear effect.

Katie Evans

By changing the colors of background and foreground elements, completely new forms appear and disappear.



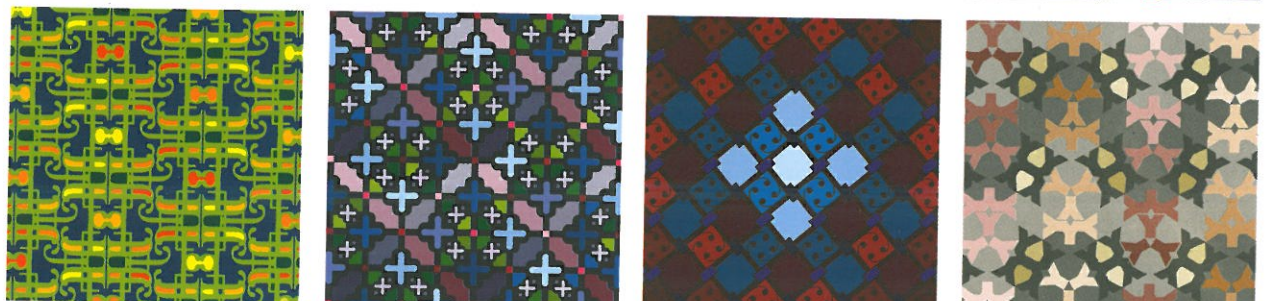
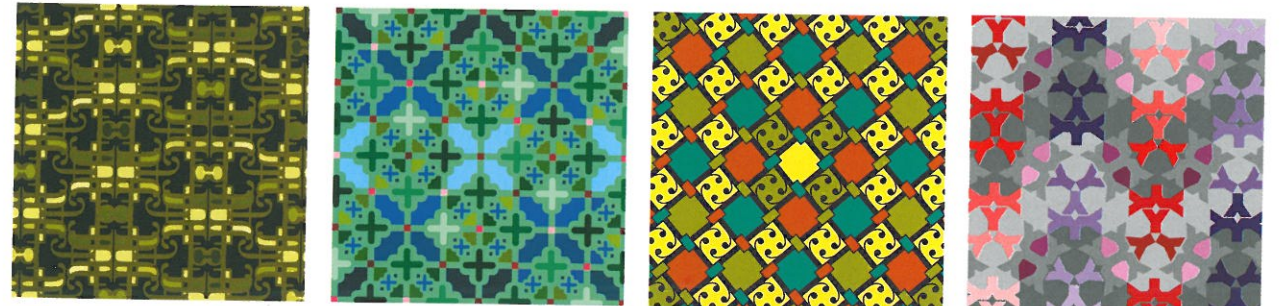
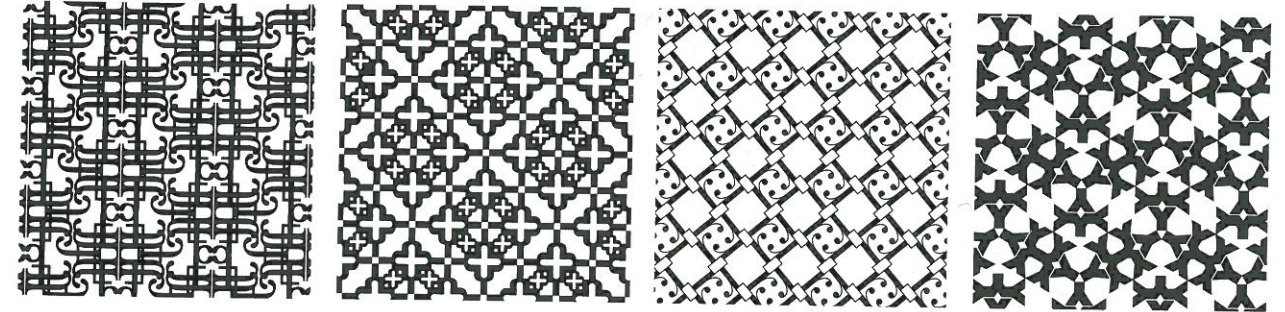
Elizabeth Tipson

Ellen Kling

Colors close in value but different in hue create a vibrant yet soft effect. The effect becomes even softer when analogous colors are used.

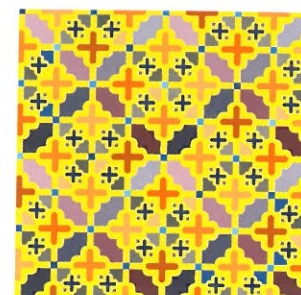
Selective Emphasis These studies use typographic pattern to explore how color alters not just the mood of a pattern, but the way its shapes and figures are perceived. Color affects both the parts and the whole. Each study begins with a black and white pattern built from a single font and letterform.

Experiments with hue, value, and saturation, as well as with analogous, complementary, and near complementary color juxtapositions, affect the way the patterns feel and behave. Through selective emphasis, some elements pull forward and others recede. *Typography I.* Jennifer Cole Phillips, faculty.



Anna Eshelman

The similarly muted hues of olive and brown sit back, allowing a pale yellow pattern to come forward. Next, gradations of yellow, orange, and red weave through a green background of equivalent value, causing the dark blue shapes to command attention.



Anna Eshelman

Julie Diewald

In the first color study above, the complementary orange and blue squares vibrate against each other, while the analogous yellow and green play a more passive role. In the second study, the dark blue and burgundy tones frame and push forward the brighter blues in the center.



Anna Eshelman

The muted neutral hues allow the forms to gently commingle, while contrasting hues and values break the elements apart.



Figure Sky These photographs use urban buildings to frame letterforms. The empty sky becomes the dominant figure, and the buildings become the background that makes them visible. Lisa Rieneermann, University of Essen, Germany.

Figure/Ground

The form of an object is not more important than the form of the space surrounding it. All things exist in interaction with other things. In music, are the separations between notes less important than the notes themselves? Malcolm Grear

Figure/ground relationships shape visual perception. A figure (form) is always seen in relation to what surrounds it (ground, or background)—letters to a page, a building to its site, a sculpture to the space within it and around it, the subject of a photograph to its setting, and so on. A black shape on a black field is not visible; without separation and contrast, form disappears.

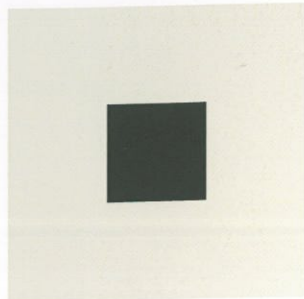
People are accustomed to seeing the background as passive and unimportant in relation to a dominant subject. Yet visual artists quickly become attuned to the spaces around and between elements, discovering their power to shape experience and become active forms in their own right.

Graphic designers often seek a balance between figure and ground, using this relationship to bring energy and order to form and space. They build contrasts between form and counterform in order to construct icons, illustrations, logos, compositions, and patterns that stimulate the eye. Creating figure/ground tension or ambiguity adds visual energy to an image or mark. Even subtle ambiguity can invigorate the end result and shift its direction and impact.

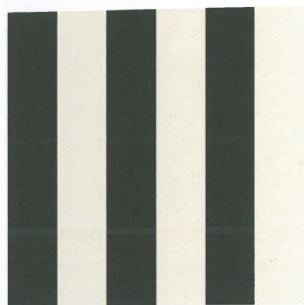
Figure/ground, also known as positive and negative space, is at work in all facets of graphic design. In the design of logotypes and symbols, the distillation of complex meaning into simplified but significant form often thrives on the taut reciprocity of figure and ground. In posters, layouts, and screen designs, what is left out frames and balances what is built in. Similarly, in time-based media, including multipage books, the insertion and distribution of space across time affects perception and pacing.

The ability to create and evaluate effective figure/ground tension is an essential skill for graphic designers. Train your eye to carve out white space as you compose with forms. Learn to massage the positive and negative areas as you adjust the scale of images and typography. Look at the shapes each element makes and see if the edges frame a void that is equally appealing. Notice how as the value of a text block becomes darker, its shape becomes more defined when composed with other elements.

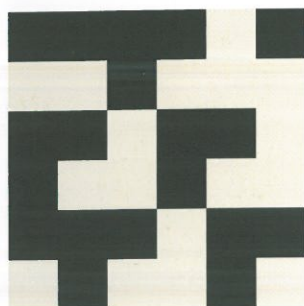
Recognizing the potency of the ground, designers strive to reveal its constructive necessity. Working with figure/ground relationships gives designers the power to create—and destroy—form.



Stable



Reversible



Ambiguous

Stable, Reversible, Ambiguous

A stable figure/ground relationship exists when a form or figure stands clearly apart from its background. Most photography functions according to this principle, where someone or something is featured within a setting.

Reversible figure/ground occurs when positive and negative elements attract our attention equally and alternately, coming forward, then receding, as our eye perceives one first as dominant and next as subordinate. Reversible figure ground motifs can be seen in the ceramics, weaving, and crafts of cultures around the globe.

Images and compositions featuring ambiguous figure/ground challenge the viewer to find a focal point. Figure is enmeshed with ground, carrying the viewer's eye in and around the surface with no discernable assignment of dominance. The Cubist paintings of Picasso mobilize this ambiguity.

Interwoven Space

Designers, illustrators, and photographers often play with figure/ground relationships to add interest and intrigue to their work. Unlike conventional depictions where subjects are centered and framed against a background, active figure/ground conditions churn and interweave form and space, creating tension and ambiguity.



Form and Counterform Sculpture—like buildings in a landscape—displaces space, creating an active interplay between the form and void around it. Here, the distilled shapes and taut tension pay homage to Henry Moore, with whom this artist studied in the 1930s. Reuben Kramer, 1937. Photographed by Dan Meyers.



Figure Inside of Figure This poster reveals its subject at second glance. One head takes form as the void inside the other. The tension between figure and ground acquires an ominous energy. Joanna Górska and Jerzy Skakun, Homework.



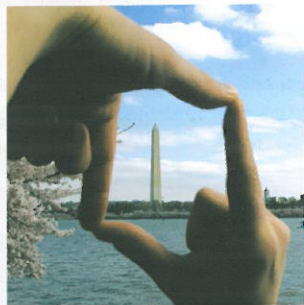
No Entry These crudely punched letters are readable against the sky and sea, whose contrasting value lights up the message.
Jayme Odgers.



Counter Hand The simple device of cut white paper held against a contrasting ground defines the alphabet with quirky style and spatial depth. FWIS Design.

Camera Frames

The mechanical eye of the camera cuts up the field of vision in a way that the natural eye does not. Every time you snap a picture with a camera, you make a frame. In contrast, the eye is in constant motion, focusing and refocusing on diverse stimuli in the environment.



Frames Inside of Frames Frames exist throughout the environment. The photographs shown here use the tool of the camera to create not only the outer frame of the shot, but to discover inner frames as well. Sarah Joy Jordahl Verville, MFA Studio.



Framing and Reframing Here, the artist rephotographed pictures collected from the history and future of his own family in environments that are endowed with both historic and contemporary detail. Jeremy Botts, MFA Studio. Corinne Botz, faculty.

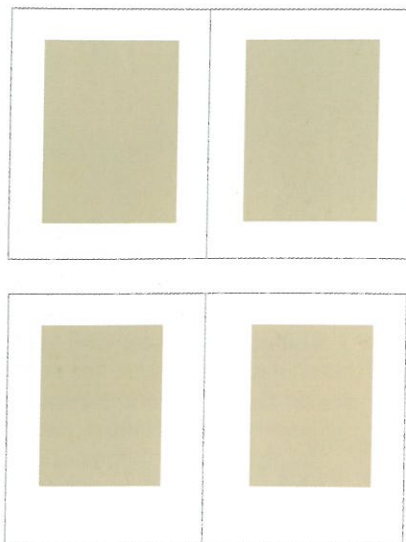


Cropping

By cropping a photograph or illustration, the designer redraws its borders and alters its shape, changing the scale of its elements in relation to the overall picture. A vertical image can become a square, a circle, or a narrow ribbon, acquiring new proportions. By closing in on a detail, cropping can change the focus of a picture, giving it new meaning and emphasis.

By cropping a picture, the designer can discover new images inside it. Experiment with cropping by laying two L-shaped pieces of paper over an image, or look at the picture through a window cut from a piece of paper. Working digitally, move an image around inside the picture frame in a page-layout program, changing its scale, position, and orientation.

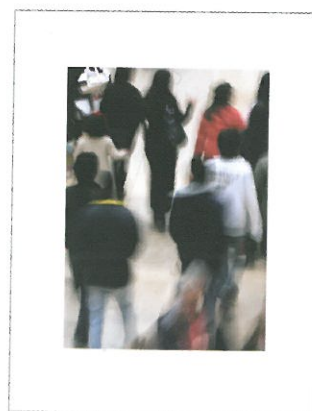
New Frame, New Meaning The way an image is cropped can change its meaning completely. Yong Seuk Lee, MFA Studio.



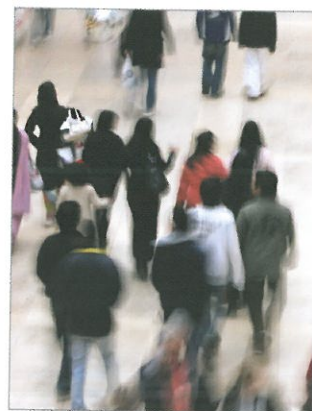
Margins and Bleeds

Margins affect the way we perceive content by providing open spaces around texts and images. Wider margins can emphasize a picture or a field of text as an object, calling our attention to it. Narrower margins can make the content seem larger than life, bursting at its own seams.

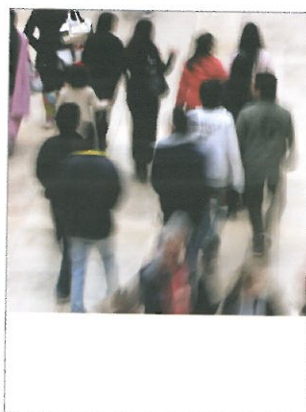
Margins provide a protective frame around the contents of a publication. They also provide space for information such as page numbers and running heads. A deep margin can accommodate illustrations, captions, headings, and other information.



Margin A margin creates a protective zone around an image, presenting it as an object on a stage, a figure against a ground. Margins can be thick or thin, symmetrical or asymmetrical. A wider margin can add formality to the image it frames.

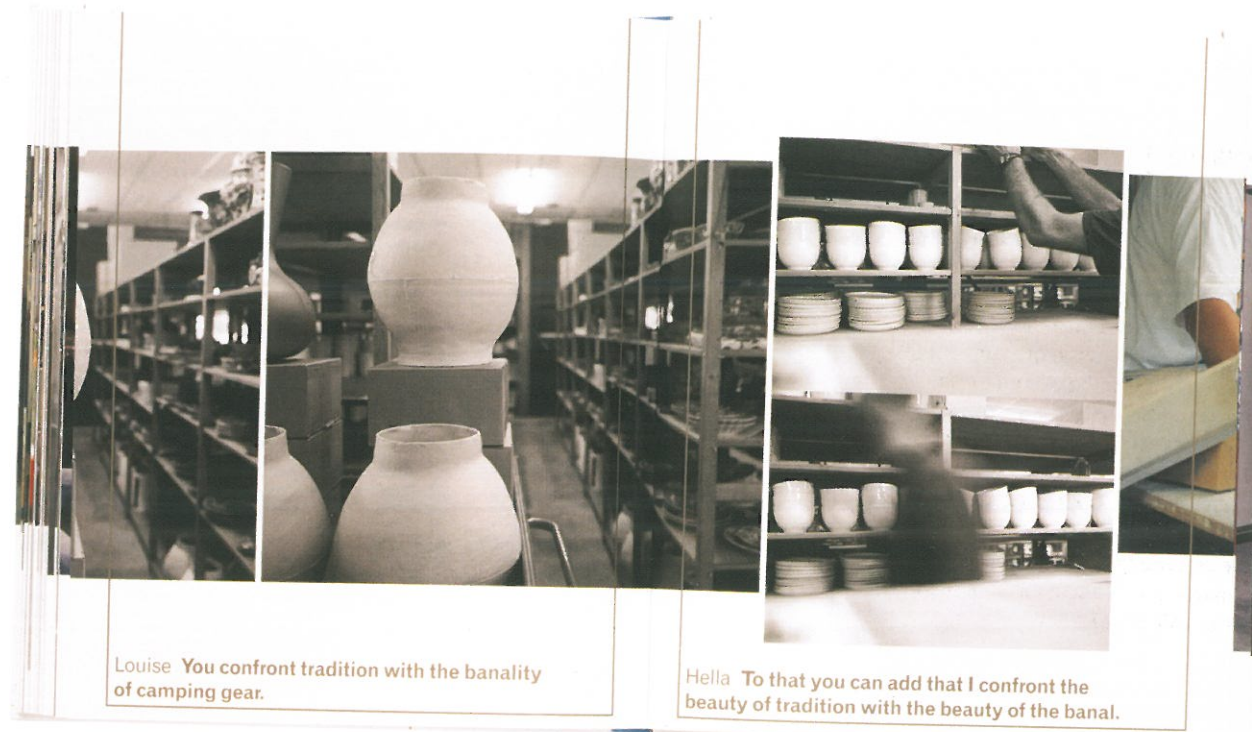


Full Bleed An image "bleeds" when it runs off the edges of a page. The ground disappears, and the image seems larger and more active.



Partial Bleed An image can bleed off one, two, or three sides. Here, the bottom margin provides a partial border, yet the photograph still has a larger-than-life quality.

Bleeds The picture above is reproduced at the same scale in each instance, but its intimacy and impact change as it takes over more or less of the surrounding page.



Using Margins and Bleeds Designed by COMA, this book about the Dutch product designer Hella Jongerius uses margins, bleeds, rules, and other framing devices in distinctive ways. The photographs bleed off the left and right edges of each page, while the top and bottom margins are kept clear as an open territory that sometimes

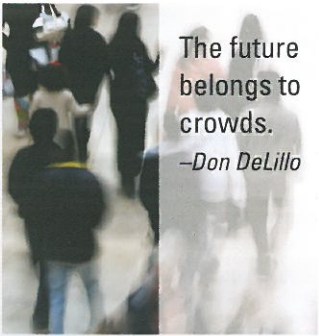
includes text and additional pictures. Tightly spaced together, the pictures create a strong horizontal movement, like a strip of film marching through the center of the book. Countering this horizontal motion are gold boxes printed on top of the pictures. Whereas boxes traditionally serve to neatly enclose an area, these boxes are open at

the top, and their shape doesn't match the pictures underneath. The designers have thus used many of the standard components of book design in an unconventional way. Cornelia Blatter and Marcel Hermans, COMA, Hella Jongerius, 2003. Photographers: Joke Robaard with Maarten Theuwkens.

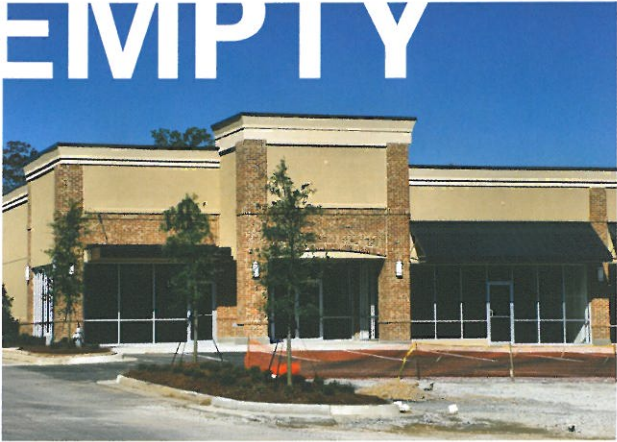
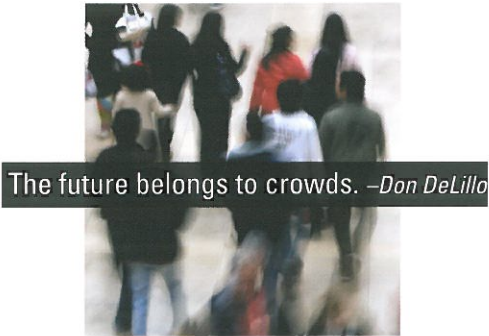
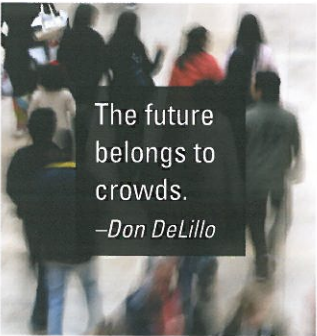
Framing Image and Text

An image seen alone, without any words, is open to interpretation. Adding text to a picture changes its meaning. Written language becomes a frame for the image, shaping the viewer's understanding of it both through the content of the words and the style and placement of the typography. Likewise, pictures can change the meaning of a text.

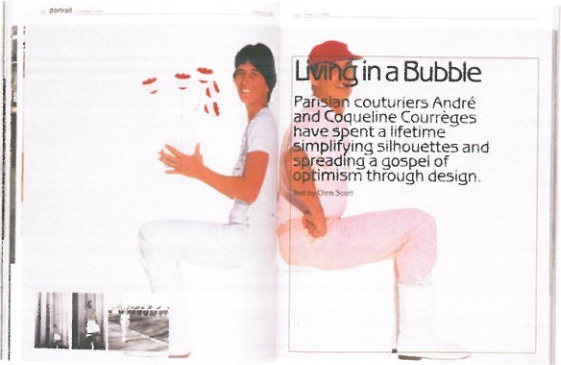
Text and image combine in endless ways. Text can be subordinate or dominant to a picture; it can be large or small, inside or outside, opaque or transparent, legible or obscure. Text can respect or ignore the borders of an image.



Text Over Image Putting type on top of a high-contrast image poses legibility conflicts. Boxes, bars, and transparent color fields are some of the ways designers deal with the problem of separating text from image.



From Caption to Headline When a large-scale word replaces an ordinary caption, the message changes. What is empty? The sky, the store, or the larger social reality suggested by the landscape?



Framing Image and Text Pages and covers from the Dutch magazine *Frame*, designed by COMA, combine image and text in diverse ways. The designers rarely use frames as a closed box or border. Images as well as texts are often cut or broken, bleeding off the edge, or slipping behind other elements. Cornelia Blatter and Marcel Hermans, COMA.

