Chapter Three: Graphic Space

Thoroughly understanding graphic space requires considering the characteristics of the spatial field and the nature of human vision. Every graphic design occurs in an area of space that is usually a flat two-dimensional plane bounded by the four edges of a sheet of paper or other substrate, such as the film, video, or computer image. The designer organizes the visual and verbal components of the message upon this surface and composes unlike elements into an ordered unity. The horizontal and vertical edges of the page determine the area and are the design's first four lines, containing and controlling the composition. Forms can either align with the edges to create stability and order or be composed in opposition to the edges to create an energetic forcefulness.

Every graphic surface has a horizontal axis and a vertical axis. The geometric center where these two axes cross is potentially a powerful focal point. The optical center, which is the point that appears to be the center to the human eye, is slightly above the geometric center, which is the center arrived at by measurement (fig. 3-1).

The human factor
People have a strong horizontal and vertical orientation (fig. 3-2) that is innate to our very nature and experience. The force of gravity—a vertical pull toward the earth's center—and a person's vertical upright posture in opposition to it create a vertical orientation. The horizon line is seen as horizontal because our human scale and height are so small relative to the size of the earth that the curvature of the earth is flattened. Our architecture, furniture design, and city planning all reinforce the horizontal and vertical orientation.

The way human vision works is important to the experience of graphic communications. The human eye focuses sharply upon a very small area. Focus upon a word in the middle of a line of text and notice how quickly the words on either side lose their definition. Toward the end of the line of type, the words become indistinct gray blurs. This drop in sharpness is acute: At two-and-one-half degrees from the point of greatest sharpness, visual acuity decreases fifty percent; at forty-five degrees from the point of greatest sharpness, the acuity has fallen to two-and-one-half percent.

Our vision becomes indistinct and fades at its periphery. Hold your arms outstretched to the side so that they cannot be seen, and then, while slowly moving them forward, observe your difficulty in determining exactly when and where you become aware of them. They appear indistinct until they begin to move in front of the body.

Our eyes are constantly in rapid motion as they scan, shift, and select. Although graphic space is usually fixed and two-dimensional, it should not be thought of as being static, for eye movement generates energy and motion as it traces a kinetic linear path upon the surface. A static line of type is transformed into a dynamic continuum of formal meaning and visual rhythm by the reader's eye. Despite the breaks in the continuity of our visual awareness as our eyes dart from focal point to focal point, we usually consider our vision to be a seamless continuum.

Another visual phenomenon that affects design is the afterimage. After looking at a pattern of bright color and then looking at a white surface, we see the complementary color of the bright pattern. Intense value or color contrast creates a sensation of flickering. The perception of the brilliance, lightness, or darkness of an area is not absolute because it is influenced and determined by the color and value of surrounding or adjacent areas. Under dim illumination, colors and value contrasts dim and fade into nothingness.

Objects appear smaller in the distance, and parallel lines appear to become closer and merge as they move away from us in space. Atmospheric perspective, the tendency of atmosphere to make objects appear cooler in color and lighter in value as they become more distant from our vantage point, alters our perception. All of these visual phenomena have an impact upon the experience of information in graphic space.
By habit and custom going back to the ancient Greeks, written and typographic communications in Western cultures have a sequence of horizontal lines moving from the upper left-hand corner to the lower right-hand corner. This movement is our basic orientation toward graphic space (fig. 3-3).

People seek order and clarity in environments and communication. Anthropologist Edmund Carpenter observes: "Man is the great pattern-maker and pattern perceiver. No matter how primitive his situation, no matter how tormented, he cannot live in a world of chaos. Everywhere he imposes form." The audience's need for order must be addressed and satisfied by the graphic designer through his or her approach to spatial organization.

**Form relationships in graphic space**
Forms establish relationships to one another in space through identifiable principles. These principles are used by the designer to turn disparate elements into a cohesive whole.

Alignment. When forms, their edges, or their central axes align with one another, relationships and connections between them are established (fig. 3-4).

Continuation. Forms generate eye movement on a page. Linear elements, such as a line of type, generate an eye movement that continues beyond the end of the line—just as a boat continues slowly forward in the water after the motor is cut off—unless it is deflected by another focal point. Continuance can create alignments and relationships (fig. 3-5).
Proximity. Forms that are located close to each other in graphic space form a relationship to each other. In figure 3-6, the two numbers in the top diagram form a relationship due to their proximity; however, when other numbers are introduced with closer proximity to the first two numbers, new relationships are formed. The interval of space between the first two numbers—which connected and joined them in the first diagram—now separates them.

A designer has successfully employed the principle of proximity when the reader instinctively reads the correct caption for each illustration on a page. If the reader becomes confused about which caption goes with which illustration, the designer has failed to take this principle into account.

Correspondence. When forms have corresponding visual properties, such as similar size, shape, color, tone, texture, or direction, they develop a relationship or correspondence. In figure 3-7, the three geometric forms in the top diagram are very different and are seen as three dissonant, unrelated forms. In the bottom diagram, similar properties of alignment, size, tone, and texture permit the viewer to perceive them in a meaningful relationship. Like properties attract and unify forms in graphic space, and different properties conflict and repel.
**Completion.** When elements have sufficient relationships through alignment, continuation, proximity, and/or correspondence, a person sees them as a complete form or unified whole. The dots in figure 1-1 became an *H* through the ability of the human eye to perceive implied relationships. The logo for The National Campaign Against Toxic Hazards (fig. 3-8), designed by the author, is composed of twenty separate linear elements. Their similar properties (direction, tone, shape) and alignment enable the viewer to perceive not twenty bars, but a circular configuration. The thick-and-thin areas of the bars are combined by the viewer, who perceives the traditional index signifying poison emerging from the circle.

Audience participation can become a factor in the communications process when the designer provides incomplete information, allowing the viewer to participate by deciphering the message. In Dielmar Winkler’s poster for a brass ensemble concert (fig. 3-9), the viewer combines the left and top edges of a typographic configuration with a stark white line to form the silhouette of a brass horn. Perhaps some viewers will not be able to perceive the image at first glance. The text and the brass color of the type are cues that assist the viewer in completing the image.

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**THE OPENING OF THE FIFTH SEASON OF THE MIT CHAPEL**
**THURSDAY NOON HOUR CONCERTS**
**WITH MUSIC FOR BRASS INSTRUMENTS**
**PERFORMED BY THE CAMBRIDGE SYMPHONIC BRASS ENSEMBLE**
**THURSDAY NOON**
**MIT, CHAPEL**
**OCTOBER 15**
**AT 12:10**
Figure 3-16 provides another typographic, angle
andarts composition. In its typical grid, the column
headings and text are aligned consistently, with a
regular variety of sizes and typeface. The line
compositions are are consistent in their repetitions
and sequences. The visual hierarchy is maintained
throughout the page, with the main headings
appearing larger and bolder than the subheadings.

3.17

Perpendiculars are drawn to form right angles and
parallel lines. The page is divided into columns
and rows, creating a grid-like structure. The
columns are of different widths, and the rows vary
in height. This layout technique is commonly used
in technical and instructional materials to organize
information clearly and effectively.

The page also includes a variety of line styles and
weights, with some lines thicker than others. This
variety adds visual interest and helps to guide the
reader's eye through the text. The page is filled
with information, with no empty spaces, indicating
a focus on maximizing the use of the page.

Overall, the page is well-structured and
professional, with a clear and logical layout that
facilitates easy reading and comprehension.
Modular relationships

A module is a basic elemental unit that can be combined and repeated to become the basis for the whole. The physical world with its molecular and crystal structure, all life with its cellular structure, and much art and design are based on modular relationships. The most frequent use of modular structure in graphic design is the use of a modular grid of horizontal and vertical linear divisions. A grid structure can take many forms: a regular sequence of squares or rectangles; a format of columns for publications design; and complex modular relationships that allow for diverse typographic treatments and a large variety of image sizes and shapes.

A visual program is a system of parameters used consistently to unify a series or sequence of designs. Grid structure, consistent use of type sizes and styles, placement of page numbers, and a color plan are factors that might be included. Russian constructivist designers of the 1920s made important contributions to the development of visual programs. The trilingual 1925 book, *The Isms of Art*, designed by El Lissitzky, is a milestone in the use of a modular grid structure and mathematical measurement to bring order to complex visual materials. Lissitzky carefully planned a visual program that gives order and consistent graphic properties. This book is organized into two sections: an eleven-page typographic section, followed by a forty-eight-page pictorial portfolio presenting major European art movements from 1914 until 1924.

Lissitzky executed his layouts on graph paper, which imposed the order of modular structure into his work. He specified sans serif type, for he and other members of the modern movement believed that it best expressed the rationalism of the scientific and technological era. Pictorial portfolio pages are anchored by heavy black rules in their top outside corners, adjacent to the name of the movement. Page numbers align with the outside vertical grid line. Visual continuity and immediate identification result, for readers quickly learn to look at the outside top corner for this information. By stripping away their backgrounds to silhouette many of the photographs, Lissitzky gives them a strong "Object quality." Picture numbers are large, which makes them concrete forms in the design organization. These numbers are composed in counterpoint to the illustrations. Lissitzky makes generous use of white space as an important compositional element.

Figure 3-16 reproduces major typographic pages above their geometric structure, which Lissitzky emphasized by subdividing the space with black rules. The title page has horizontal bars to create a three-part grid structure for the trilingual text. The contents pages are divided with a central horizontal or vertical bar.

The text pages have a three-column vertical grid containing German, French, and English versions. The two sets of horizontal bars in the top portion of page VIII are important to Lissitzky's program for the pictorial portfolio. The highest set establishes the top of the live area and aligns with the titles placed on each portfolio page. The lower set establishes a flow line. This horizontal grid line is used consistently in many pages, bringing continuity to the format. Figure 3-17 superimposes the grid structures used in the typographic pages. I think that Lissitzky used this grid system from the typographic pages to bring order and structure to the illustrated portfolio.
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Figures 3-18 through 3-21 show double-page spreads from the portfolio with the grid superimposed on the lower reproduction. In page after page, the alignment of images to the grid is unmistakable. Lisztzky was flexible in his attitude toward the system. He would optically adjust images within the grid and even violate it to create a more balanced or dynamic layout.

Figure 3-18 illustrates pages 2 and 3. On page 2, an organic photomontage of a filmmaker, actress, and equipment is aligned in the first column, and two angles created by strips of film are placed in the second column. On page 3, the large halftone image is two columns wide and the smaller one is one column wide. Lisztzky moved them to the right to create a connection between the large photograph and the title and bar and to produce a more balanced page and spread.

One observes that the alignments between the grid, type, and images are not always perfect, and some images are sized wrong. The forms of Art was printed by letterpress, and the printer assembled type and halftone blocks on the press bed according to Lisztzky's layout. Subtle size errors when shooting the negatives to make the halftone blocks and in aligning and placing type, bar rules, and the blocks on the press bed were inevitable considering the exactitude that Lisztzky sought from 1920s letterpress printing technology.

Pages 10 and 13 present the work of Mondrian (fig. 3-18). The large painting is two columns wide, the small painting is one column wide, and the silhouette photograph is optically adjusted, with the arm and coastal extending just beyond the grid line. If Lisztzky had aligned the left edge of the coat with the left edge of the painting, it would have appeared to be too far to the right. Cohesion is achieved by the movement of forms in space, as indicated on the lower reproduction. The figure numbers play an important role as connecting forms.
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On page 14, the diamond-shaped painting is about two columns wide, as is the top painting on the opposite page (Fig. 3-20). Lisitsky made an optical adjustment by allowing the top corner of the diamond shape to thrust up above the top edge of the opposite painting; otherwise, the diamond shape would have appeared too low on the page.

On page 14, the balance and relationship between the painting and the sculpture are carefully considered, as is the relationship of the dark vertical form in the painting to the sculpture.

On page 22, Lisitsky sized and positioned the two paintings on the grid and placed the photograph of Malevich in a balanced relationship with them (Fig. 3-21). Page 23 is typical of pages that reproduce just one painting: Lisitsky centered the images, taking care to use the grid to create alignments with material on the opposite page. Here the top horizontal edges of two Malevich paintings are placed on the flow line. This relationship unifies the double-page spread.

The importance of El Lisitsky to twentieth-century graphic design led typographer Jan Tschichold to write in 1965 that there is a new "generation that has never heard of him, and yet stands on his shoulders." He was truly one of the great innovators of graphic design, for his pioneering work in applying grid structure to visual organization was just one of his many important contributions.
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While Ei Lissitzky’s approach to the grid allowed for a degree of flexibility, the Swiss architect, painter, and designer Max Bill placed emphasis upon absolute mathematical order in many of his graphic designs. In the series of Moderne Schweizer Architektur (Modern Swiss Architecture) follows from the early 1940s, the placement of photographs and typography conforms to a rigid modular system (fig. 3-22). The first grid was used for the photographic pages with two columns for photographs. The left-hand column can contain three photographs that are eight units high, and the second column can hold three horizontal photographs that are twelve units high. This grid accommodates both square format and 35 mm format photographs. The horizontal margins are two units deep, and the vertical margins are one unit wide. The second grid—used for the text pages printed on the back of the photographic pages—is a mirror image of the first: the wider column is on the left.

Figure 3-23 is a typical typographic page in this trimvol publication intended primarily for a German audience. The German text is set in a larger point size on the wider column, and the English and French translations are set in smaller type in the narrower column. Switzerland is multilingual, so formats with a controlled typographic structure were vital and the development of grid formats was hastened. Wherever possible, Bill aligned the top of type columns with the horizontal grid lines to relate text pages to the photographic pages.

Bill’s grid format can accommodate from one to six photographs. The two-unit horizontal margin below the photographs provides space for captions. A ruled line, two units from the bottom of the page, is above the building’s name which aligns with the left margin, and the architect’s name aligns with the grid line for the left edge of the larger photographs and their captions. The six photographs in figure 3-24 fill the grid. The intervals of white space created by unfilled grid sections (fig. 3-25) infuse variety into the folios.

Large images are placed on the grid structure by joining several modules into one rectangle (fig. 3-26). The white space in this layout provides relief for the viewer by rendering the page open and spacious. It separates the images from their environment just as a mat isolates artwork from its background. The placement of the church steeple (on the left in the top photograph, and on the right in the lower photograph) produces a satisfying, asymmetrical balance. If the bottom photograph had been placed to the left, or if the designer had switched the size and position of the two photographs, this balance would have been disrupted.

In response to the subject matter, a systematic departure from the primary grid structure is permitted. In figure 3-27 the top horizontal photograph is twelve units deep, and the two smaller photographs are placed four-instead of two-units above the hair-line rule. This produces better balance on the page. Moving down the page, the mathematical division of space is satisfying. The top photograph equals twelve units; the open space equals six units; the lower photograph equals eight units; and the margin below them equals four units for a 12:6:8:4 ratio. The vertical edges conform to the grid, and alterations are consistently made in two-unit increments. As a consequence, these pages are fully compatible with the overall program.
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Order and clarity are achieved by a grid structure. Attention is focused, not upon the designer's manipulation of space, but upon the content. Over two hundred photographic pages in these folios were designed over several years. The grid structure brings efficiency to the process, for the designer organizes material on each page within established spatial and typographic parameters. Without this graphic program, the designer would have to develop a design plan for each page. Much time would be consumed, and the pages would be inconsistent. Bill achieved tremendous variety within this format. Four other examples from sources of page layouts are diagrammed in figure 3-28.

Even the most rigorous grid is no substitute for the designer's sensitive eye for balance. The grid provides a framework, but the designer still must make careful decisions about the size and placement of the elements and their relationship to one another.

By changing the parameters of the grid, designers can alter the visual properties of the page. By using a very narrow vertical grid with twelve 5-xa-wide columns on a tabloid page, John DiMaggio creates lively and unusual page layouts (fig. 3-29). Typographic units and photographs are one to six columns wide. As the pages were designed, horizontal alignments began to form. The result is informal and dynamic, using the grid as a point of departure. Tom-etched collage elements and initial letters further express the energetic dissonance of modern dance, turning a grid-derived page into a field of tension, as discussed below.

Dance and Choreography

Majors in this department prepare to become performers, choreographers, teachers, or participants in the many fields related to dance.

The Department is housed in a restored building with eight fire stations-one of which is equipped as a performance space. Other campus performances are given in the Mood Bower Hall and in the main auditorium.

Classes are also given in the Empus Theatre. Student and professional and public performances and public exhibits are given in the Richmond area. The VASCAD Workshop for dance and the Dance Department have presented a major collaborative production with the Department of Music, one of which is to be televised.

Admission to the major program is by audition; non-majors are accepted in the student's prevous training and performing experience. The Department also offers a minor in dance, and most of its courses are open to non-majors as well as majors. The Bellingham College curriculum offers T:5, 11 and Introduction to Dance technique courses.
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A daily studio technique class is part of the core curriculum. Ballet is studied concurrently with modern techniques. The choreographic emphasis of this program is on modern techniques. By the second year, students choose among performance or choreography as an emphasis area. The senior project is a culminating presentation of either the performance or the choreographic area.

The Department is housed in a newly renovated building with eight five-plex studios, one of which is equipped as a performance space. Other seminar and rehearsal spaces include the Main Rehearsal Room and the Main Performance Hall. Off-campus performances are given in the Empire Theatre, Dinner in Dell Amphitheatre, and public performances are performed in the Main Performance Hall.

The SC Apollo Dance calendar for 1983-84 will include three major collaborative productions with the Department of Music, one of which is to be presented.

Admission to the major program is by audition, and continuous instruction is in the applicant’s previous training and performing experience. The Department also offers a minor in dance, and majors may elect to combine music as well as majors. The Evening College curriculum offers a full and comprehensive as well as dance techniques courses.
The grid approach is particularly useful when a large number of images and typographic units must be organized in a graphic space. In a one-year timeline for Best Products, designers Rob Carter and Tim Priddy used a vertical grid to divide the space into chronological zones representing twelve months (Fig. 3-36). The grid structure is followed closely by the typography, but it is violated in the lower area where a lively composition of images moving at angles to one another is in contrast to the more structured upper portion.
The grid approach is particularly useful when a large number of images and typographic units must be organized in a graphic space. In a one-year timeline for Best Products, designers Rob Carter and Tim Pridy used a vertical grid to divide the space into chronological zones representing twelve months (pg. 3-30). The grid structure is followed closely by the typography, but it is violated in the lower area where a lively composition of images moving at angles to one another is in contrast to the more structured upper portion.
The discipline and limitations of the grid should not be seen as a creative straitjacket, for designers using it can achieve flexibility and originality. In a Container Corporation of America Annual Report (fig. 3-31), John Massey used a modular grid of at least two hundred half-inch squares to contain twelve color photographs of CCA employees. Careful placement enabled Massey to relate forms, colors, and tones so that the photographs blend into each other along some edges but have abrupt linear edges and corners at other junctions. This graphic vitality combines with the variety of sizes and the dynamic diagonal edges of the overall configuration to create a cohesive and intriguing cover.

**Multiple-image design**

Composing type and images on a grid is but one method for designing complex, multiple-image layouts. Any structural principle can be adopted and used as an organizing theme. In a double-page design presenting "Things to Do and See" (fig. 3-32), Don Trousdell has used a rhythmic alignment of vertical images as a unifying principle by making the vertical axes of the images parallel. From the myriad possible images to signify each of ten activities, Trousdell carefully selected vertical ones: a baseball bat for the Cooperstown Baseball Museum, an ear of corn for the Farmer's Market, an ostrich for the zoo, a doll for antique collecting. Typography is related to the images by carefully aligning type units with an illustration's left edge or a prominent feature such as the fish's mouth or by aligning the central axes of type and image.

Other potential themes might have been the selection of objects that fit within square spaces (a baseball glove, a basket of strawberries, a profile of an elephant, a spoon antique chair), horizontal spaces, or circular spaces. The designer's imagination is the only limitation constraining the invention of an organizational schema and appropriate images.

Establishing a dominant image is another effective method to structure complex pages. Figure 3-33, a double-page spread from a Nature Company catalog designed by Kit Hinrichs and Natalie Kimmura, has no discernible grid. Images are presented in a variety of sizes; some are silhouetted, and four of them overlap the deep navy blue borders. Type units are varied. Some are set flush left and ragged right, some are flush right and ragged left, and others wrap around the photograph. Order is achieved in spite of the complexity of ten images and lengthy captions because a major focal point is created by the dominant African antelope mask. The other images form relationships with this large image and the borders. Through the principle of proxiomity, each unit of type forms a clear relationship with its image.