The Grid: Toward a Design Methodology

Robert Shaffer Kerr
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Toward a Design Methodology

Master of Fine Arts Thesis of Robert Shaffer Kerr

Communication Design

College of Fine and Applied Arts Rochester Institute of Technology
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College of Fine and Applied Arts Rochester Institute of Technology
A Thesis Submitted to the Faculty of the
College of Fine and Applied Arts
in Candidacy for the Degree of
MASTER OF FINE ARTS

THE GRID:
Toward a Design Methodology

by Robert Shaffer Kerr

August 1, 1980
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With special commendations as recommended by Professor Fred Meyer.

An excellent job!

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Robert Shaffer Kerr

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Communication Design
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DEDICATION

Many years and a lot of thought has gone into this work. It looks so minimal now that I wonder what took me such a long time to complete. Each time I went back to it the work grew and the ideas and thoughts changed. This has been a process of growing and experiencing. I owe a great deal to the many people who have assisted with this in many ways and I would like to recognize them here.

My wife and partner, Lucia, who has had the task of putting up with my frustrations when things did not go quite right. She has helped by mounting numerous slides that go with the video taped portion of this work. Without her support over the years this would still not be done.

Professor Elizabeth Lunn, emeritus of Lake Forest College, Department of Biology who went over my draft and provided corrections of grammar and syntax that improved the quality of this paper, making it clear and understandable. If there are any errors remaining it is because I have rewritten several portions. I owe Dr. Lunn many, many thanks for her help and support.

To the members of my committee I would like to say thank you for waiting on this product and helping me with useful information and comments. Roger Remington has been especially supportive by offering me his summer class to try out the first public presentation of this information.

Ms. Jean Ryan who put this all into typographic form has been helpful by her willingness to do this job for me.

I hope that anyone who reads this work will realize that it is the composite of my thinking and research but that I expect to add more to this work by practicing some of the things that I have learned.
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The Grid Toward a Design Methodology

The grid as used here is any network, series of points, or coordinates that serve as a structure for a graphic designer's visual information. Karl Gerstner says, "...if the grid is considered as a proportional regulator, a system, it is a programme par excellence." The grid may also be thought of as a matrix about which the elements in a design are molded or formed. In this sense, it is not really rigid but to be used as a guide. It is a tool that a graphic designer uses to aid in controlling the many visual elements that may be required in any design project or series of related projects. It is developed to accomplish a design task or series of tasks.

A grid may help to reduce the frequency of poor design, but it will in no way assure good design. The perception that the design is good will be a direct result of the viewer's being able to proceed through the information or content of the specific design piece with a sense of order and logical sequence. This ordered plan will contribute to reader communication. It will not assure it, but it will enhance it.

As a methodology, grids, matrices, or screens represent a fundamental and necessary way of ordering typography, photography, and art. One finds that using a grid requires seeking logic in the material: reasoning and consulting with the client about the information to be communicated; developing and understanding all aspects of the assignment. Grids open up many new and interesting possibilities for the designer who is willing to use them with inventiveness. There are many common grids, but there is no limit to the number or kinds of grids that can be developed. A grid is the skeleton upon which the creative process builds a solution to a problem. A grid may be simple or complex and be composed of many grids, each with a specific task or function assigned to it.

It may be common opinion that grids and grid systems are new to the design profession, that grids are a unique contribution imported to this country from Switzerland. Swiss and German designers and design schools like the Gewerbeschule in Basle and the Hochschule fur Gestaltung in Ulm have contributed some interesting innovations to graphic and communication design. We will see, however, that the use of grids pre-date by many centuries their use as a contemporary graphic design method.

Early History

Erwin Panofsky provides a record of a grid or network used by Egyptian artists in two and three dimensions. He notes that these networks, while deceptively similar to our method of transferring compositions from smaller to larger surfaces, precede the design and determine to a large extent the final product. The network is therefore seen to be a design control mechanism. It is constructional and its usefulness extends from establishing dimensions to defining movement.

The stereotypes used by the Egyptian artists could adequately project movement by a fixed set of rules which were followed. A figure quietly standing was set at 4½ or 5½ units between the feet and one which was to be seen as lunging would have 10½ units. This system of network proportions was well established by religious canon so that the task of the artist when representing a standing, sitting, or striding figure was carefully prescribed once the figure's absolute size was determined. In a preparatory drawing for a sculpture of a sphinx there were three different grids used. Each was required because the sphinx, holding the small figure of a goddess between its paws, is composed of three heterogeneous parts, and each required its own system of construction. The body of the lion has proportions adhering to the canon suitable for this animal. The human head is subdivided according to the scheme of the Royal Heads, and the small goddess is based on the customary canon of twenty-two squares used for the whole human figure. This seems to prove that the network of equal squares was not used for the purpose of transferring but as a rule of proportion and design. If it had been intended for transferring, the grid would most certainly have been uniform in nature.
The Greeks

The Egyptian unit square as a design control and proportioning aid was dropped from use by Greek artists. They used a more organic and observational method when drawing and sculpting the human figure. The Greek architects, however, responded to numbers and modules. The Parthenon, once the triangular pediment is restored, is supposed to fit into a Golden Section rectangle. It is interesting to note that a statement traced back to Polyctitus says: "the beautiful comes about, little by little, through many numbers." So there seems to be some feeling that a law of aesthetics is expressible in terms of number relationships.

It is appropriate to mention here the work of the twentieth century architect, Le Corbusier. He became aware of the need for a visual unit of measure that could be applied to forms of creation. Le Corbusier returned to the architecture of the past (i.e., temples, cathedrals, huts, and houses). He began with the Golden Section and using a human figure of a man with arm raised, 2.20 meters high, he placed the figure inside two squares, 10.10 meters. Superimposed on these was a third square. The initial scheme was drawn by Hanning, a colleague, and was presented on August 25, 1943. An improved version was completed on December 26, 1943. Le Corbusier says, "And so the grid was born (not without some uncertainty as regards points 'i' and 'j'): a proportioning grid meant to be installed on building sites in order to supply an abundance of harmonious and useful measures for planning of rooms, doors, cupboards, windows, and so on and so forth: to lend itself to minute combinations of mass production, to take in the elements of pre-fabricated buildings, and to join them without difficulty." So we can see that the modular was developed out of a need to order complex elements into an environmental and humanly scaled creation. It can be said that the grid is a way to control the proportion of a design area or field in complex situations. It does not determine the beauty or aesthetic of

The content, but it does help to ensure its practical realization.

Albrecht Dürer

With this digression to show how the past and the present are interwoven to lay the ground for the future, let us return to Panofsky who says of Albrecht Dürer, "...modern cubism and Dürer's (grid structures) have one thing in common: both are not only a matter of aesthetic preference or taste but reflect a reasoned theory." He goes on to say that where the cubists used their reasoned approach to break away from accepted standards of reality, Dürer used it to aid in clarifying and mastering that same reality. In looking at his life studies, we can see their relationship to the earlier Egyptian grids. Some of his earliest studies date from 1191. He was probably influenced by his many trips to Italy. Many Italian archeologists and artists were familiar with these methods and grids. Dürer was exposed to the ideas of Leonardo Da Vinci and Leone Battista Alberti. He fused these ideas and experiences with his Northern German training and became a change-agent on his return home.

In his Third Book, Dürer made the Northern European's familiar with yet another secret of the Renaissance, the geometrical construction of Roman letters. His designs predate Geoffroy Tory's Champ Fleury by four years. When drawing the Roman letter, Dürer was only a transmitter, but when it came to Gothic letters, or to use his own expression, Textur type, he constructed on a principle not to be found in any earlier source. He built up the letter using a series of squares, triangles, and trapezoids. This grid system is not related to Italian calligraphy but reminds us of Arabic writing in its construction. The structures and grids used for both human form and letters were guides in the creation of unique visual statements or compositions.

Similar in nature is a drawing for a head by Villard de Honnecourt. And while not related in a geographic or time sense, a lattice system used for the design of Byzantine masons' marks seem similar. The results pro-

9. The Parthenon is said to fit the Golden Section rectangle once the pediment is restored.
10. A drawing of Le Corbusier's Modulor which begins with the Golden Section. Le Corbusier adopted this unit of measure as a way of introducing the elements into his architecture.
11. The letter "d" as drawn by D Textur Type.
12. A scheme used by a Byzantine mason's guild to make unique symbols for each master mason. Notice the similarity between grid and picture number six.
The underlaying geometry has always been important when looking at pictures as a whole and the specifics within a picture or frame of reference. At times it has been of more importance than other times, but in the forming of letters, the basis of good letters has always been their relationship to the geometry of form.

Geofroy Tory begins Book I of Champ Fleury with the title: "The Art and Science of the Proper and True Proportion of the Attic Letters, Which Are Otherwise Called Antique Letters, and in Common Speech Roman Letters." In the second book he describes the construction of the letter beginning with 'A' and uses a square in which all of the letters are constructed. He shows the making of the letter 'I' and says: "for the making of our letters, I divide by eleven straight horizontal lines and (an) other eleven straight perpendicular lines, so that the large square will contain a hundred small squares, which I shall call units because the length of the 'I,' which will be of the same proportions as all the other letters, will be contained in one of these small squares, as is shown in the following figure.

I have left in the middle of this figure a small white square which is the unit of the said letter 'I,' and which I shall call the unit of each letter, saying 'this letter' or 'that letter' has so many units of height and so many of breadth.

The sub-structure of geometry remains with us and the breaking up of surface as a design device is constant, but mostly invisible.

The Arts and Crafts Movement as a Preface to the Revolutionary Spirit in Design

The biggest obstacle to new directions in the applied arts was the strong influence of the Arts and Crafts Movement. While it had laid the foundations for a simpler and more honest approach to the use of materials, its effect was to stagnate the newly emerging area of graphic design in a decorative mold. It can still be seen in the way typography is occasionally revived. As recently as 1970 and 1974 the use of Copper Black and other typefaces and designs based on the ideals of William Morris were very much in style.

The mark of the Kelmscott Press and the three type fonts used by the Press are examples of this attempt at honesty. It was from these designs that the later and significant works of Frederick Goudy were to come.

The Arts and Crafts Movement did a great deal to improve the standards of craftsmanship but it also imposed preconditions on applied design (i.e., graphic and industrial design). It encouraged the use of decoration that was not in keeping with the message of the industrial age of which it was a part. Its visual forms looked back to the images and forms of the Greeks and Romans.

The machine age message was one of emphasis on the useful and undecorated. The new arbiters of taste, however, did not have confidence in the functionalism of machine-made products as they had in the machines themselves. So they turned to craftsmen to imitate the forms of handcrafted products. Even though they were no longer economically or socially valid, houses, furniture, and art objects tried to imitate the property of princes and kings. The industrial princes and kings required that culture and the physical trappings of royalty be produced for them. It was only in functional machines and simple equipment for factory and kitchen that works were created of lasting beauty and value. In these, engineers and designers believed in the functional. When it was not a prime concern the industrial princes turned to painters and sculptors to put beauty into products and advertisements. This was the beginning of applied design as it has become known, commercial and industrial art. This art for commerce was a service provided by artists and sculptors who decorated the products of the industrial age.

These machine-made wonders were being sold in increasing quantity.
through the use of mass advertising and merchandising techniques. A look at the early Sears Roebuck and Montgomery Ward catalogs show a vast array of goods that were being offered to buyers both in this country and abroad. The United States was in its youth and looking to emulate the British as a democratic empire builder and shopkeeper to the world.

**A Century of Political and Social Revolution: 1850 to 1950**

The social and political forces that were set in motion as a result of the industrial revolution, and what we have come to call post-industrial society, affected the arts greatly. Of specific interest was the re-emergence of grid structures in the works of the Cubists, first, and then in the Dadaists, and Constructivists. It is most notable in the formal and structured studies of Piet Mondrian and in another way the paintings, prints, and drawings of Paul Klee. In both of these the structure or grid becomes the picture content.

The revolutionary art movements of Constructivism, Dadaism, and De Stijl rise, fall, and merge into new forms and movements with the rapidity of the social and political unrest of the times. These movements appeared to be intent on the destructions of the arts. They were determined to attack the establishment and its leaders who prescribed what was good and bad cultural taste. The artists would take their case to the people in word and picture as manifestos that set into motion actions and reactions that we are still deliberating today.

One aspect of Dadaism, and to a more or lesser extent all of the movements from 1911 to 1939, was the emergence of a concern with both verbal and visual relationships. Words and pictures merged first in collage and then in whole concrete statements. Guillaume Apollinaire adopted the word ‘calligram’ for certain of his drawn works. Two other examples, one by Apollinaire and a poem by Hugo Ball, done in 1917, will demonstrate this idea of words as picture. This concept has become part of the resources of all artists. A work from a children’s book, *I Know a Lot of Things*, designed by Paul Rand in 1956 bears a direct relationship to these earlier experiments.

In 1928 Jan Tschichold published, *The New Typography*, the first complete work on the subject of verbal and visual communication. In it he said that the function of typography is to express ideas quickly, simply, and forcibly. The objective is to make what should stand out do so and to subdue all else. Copy should dictate its own layout and must not be forced into preconceived arrangement. This had been the case in the earlier centered style.

As with any new concept the early exponents of this new typography were not able to produce products from the theory that measured up to the more conservative and dated methods of the day. They produced works that were more revolutionary than evolutionary. There was a preoccupation with emotional concepts. Movement, dynamism, and geometric shapes often resulted in a meaningless jumble which was almost as bad as the decorative traditions being condemned.

The advent of photomechanical methods of reproduction freed the artist from typographic convention and craftsmanship. This ignorance of the way that things were done, a lack of concern about the practical aspects of the practice of typography, placed no restraint on the commercial artists. He placed importance on movement and the same forms as were evident in Cubism, Dadaism, and De Stijl. His advertisements and exhibits used oblique axis and crude distortions of classic typography. He distorted subject content into triangles, trapezoids, and inorganic shapes. The new perspective of the camera showed him the possibilities of distortion which seemed in tune with the spirit of the age. He arranged word and picture into angles to generate dynamic forces and used them to make social statements. Smoke trails, extreme perspectives, liquid shapes, and shocking spots of pure, fluid color were employed by the liberated artist of commercial application. All he had to do was throw his inhibitions to the wind, trust his intuition and other people.
Gyorgy Ladislav Sutnar made the twentieth chair. Marcel is a Corporatist in etched ble-layer still being made. Moholy’s Stijl picture, Wall 958, became an achievement of classics in Albers of Enamel Technology. Moholy-Nagy’s Design Institute in Illinois now designed the Bauhaus. Gropius, as the director of Walter Gropius, worked at the Bauhaus in Germany. Gropius was concerned that the Bauhaus practice what it preached. He saw a common citizenship in all forms of creative work. He saw their logical interdependence on one another in the modern world. He felt that design is neither an intellectual nor a material affair, but it was simply an integral part of the stuff of life, necessary for everyone in a civilized society. He was concerned that mankind, rather than becoming the master of the machine and machine production, was suffering from its products and by-products. This is still the concern of many contemporary designers.

In seeking to bring art and industry together Bauhaus teachers experimented with new materials and educational methods, trying to agree on the basis for a new formalism. The Arts and Crafts Movement had succeeded in awakening a sense of honesty about design and the Bauhaus was an organized attempt to come to terms with the new conditions of society being changed by industrial technology. It renewed a respect for materials and simple forms as they had existed before the industrial revolution began. The Bauhaus attempted to find a way out of the intuitive expressionism that had thus far been the main alternative to the old tradition. It tried to bring together art, science, and technology as an effective and meaningful part of the fabric of society. The goal was to discover how new materials and processes of industry might be used to the best advantage. Bauhaus designers and students set about testing and discovering more rational design methods suited to an industrially based social environment.

The forced closing of the Bauhaus by Adolph Hitler’s Nazi’s in 1933 scattered the faculty and students to other countries. This exodus stimulated further experimentation in design education. The influence on design of the immigrant innovators in the United States was far reaching. The impact of Laslo Moholy-Nagy, Joseph Albers, Ladislav Sutnar, and Gyorgy Kepes was immediate as they began to teach and practice design here. The students of these teachers were soon making an impact on the advertising of this country and in Great Britain.
Generally speaking the students who entered art schools after the
second world war were not fortunate enough to study in the few programs
that grew out of the Bauhaus. Some were lucky and found teachers who
couraged them to think for themselves; teachers who were aware of
the needs of the new society. Others found themselves in trade schools or
newly emerging university programs modeled after the academy. In both
the student was taught to use fine arts
techniques as the solution to prob-
lems. Education was for the ‘bull pen’
common in most studios and agencies
so that technique was central to the
training rather than the process of solving communications problems using visual
tools.

The Emerging
Graphic Designer: 1950 - 1960

There emerged between 1950 and
1960 a new concept of the graphic
designer who uses hand skills
matched by head skills to inform and
persuade. It is not easy to formulate a
precise statement of purpose for any
medium be it print, television, radio,
point-of-purchase, etc. but commu-
nication teams of marketing, copy,
and design were attempting to do just
that. Management’s concern with
prestige value, emotional response,
and personal attitude were usually
perceived as being at odds and
opposed to the interests of the crea-
tive team. The graphic designer was
given a list of psychological and
sociological customer needs to weave
into the fabric of something called
advertising design. Under these con-
tions the designer was rarely
c Leo Magen to question the nature of
the information he was given.

The new graphic designer did ask
questions. He followed the problem to
its roots. This took him beyond the
layout into sales, marketing, and cor-
porate philosophy. The communica-
tion task forced him to deal with the
problem before choosing a medium or
solution of communication. He was
alert to the superficially presented
problem. This is a problem in which
the client tried to give him a partial
solution in the form of budget, copy, or
format which determined direction
prior to his looking at the problem. In
such situations his solutions were
likely to be incorrect since he was pre-
vented from understanding the
problem and consequently he arrived
at a solution based on the imposition of
illogical requirements.

Jan Tschichold in his book, Asym-
matic Typography, clearly estab-
lished the need for the designer to look
at typography as a visual and percept-
tual phenomenon along with certain
historical typographic conventions.
These are learned practices that can
be tested and amended by the
designer when he judges that this
should be done.19

Tschichold is the historical bridge
between the typographical experi-
ments of Dada, De Stijl, and the
Bauhaus groups. In his work the grid is
clearly the metal type that was in com-
mon use. He was influenced in his
work by Moholy-Nagy and El Lissitsky.

“Form follows function”20 is not a
very helpful guide in everyday practice
since actual function may be obscured
by the client or associates in sales,
marketing, and production. It must be
the designer’s basic premise, however,
if he is to attain valid results. Func-
tional requirements will dictate the
limits and choice of solutions, but in
general will only suggest broad
approaches to problems.

A new formalism was required to
replace the restrictive formalism of
classical symmetry on the one hand,
and the anarchy of intuitive positioning
on the other. As a basis for explaining
some of the more successful practices
used by designers the theories of
Gestalt psychology can be applied.
This school of psychology asserts that
an organism’s response to a situation
is a complete analyzable whole
rather than the sum of the specific
responses to each element. The most
useful aspects of this branch of psy-
chology for the graphic designer are
available in the book, Perception and
Photography, by Richard D. Zakia.
These principles of visual perception
were also formulated in the early
1900’s as were the leading design
principles used by contemporary
graphic designers.
A Classical Basis for a New Formalism

The strength of classical formalism is the stability of the invisible line of centered balance. It is a natural extension of this principle that allows asymmetrical balance about an implied center axis. It follows that another step is the creation of several vertical axes or interlocking arrangements made by aligning edges of elements. In this system the elements are connected by implied lines from their edges thus forming an invisible network across the page. The flexibility of the system gives great freedom to the designer but it also calls for a high degree of skill and discrimination in its use. It can be taught because it is a method which logically comes from the elements themselves. Much good work has been produced with this method. This invisible network aims for a stable set of relationships and here edges and particularly corners, of the page are of great value since they are regarded as being positive and fixed.

In both symmetrical (centered) and asymmetrical off-centered balance the page is regarded as the limits of the frame of reference for the design elements isolated from the page edges. If the page is considered to be the limits of available space, then edges and corners can be used as part of the structure of the page. This opens a further set of element positions and relationships for the designer to use. Elements can be related to the edges, as well as the imaginary center line, as is the case with symmetrical balance. As soon as this formal structure is accepted it is then possible to perceive the edge of the page as a positive element and still imply existence beyond its limits by suggesting that some elements go beyond the page.

Four methods for organization of visual and verbal information are available to the graphic designer. Each can be used with the other to make new combinations and variations:

1. Intuitive structure
2. Balance structure on an implied axis
3. Edge structure using multiple axes
4. Positioning related to the edge of the page

These methods permit the utilization of a new formal structure but the designer is still required to use a great deal of judgement and selection.

A fifth method of dividing and organizing space is the grid, in which elements are positioned in relationship to a series of designer imposed divisions. These divisions are established by using typographic units out of which many modules may be selected to meet the design criteria. The modules can be simple or complex as may be required.

Early examples of the grid can be seen in newspapers as they derive their layout or imposition from the requirements of production limitations. They are practical, simple, and rely on the natural horizontal and vertical divisions of metal type. The basic unit was, and is today, the column width. Larger units, when required, were related to two or more column widths. This provided for some sort of visual order. Production was simplified by allowing elements to be repositioned as required by the demand of editorial matter. It had the added advantage that once a simple set of rules were established it allowed sub-editors and layout men to compose the page using this list of criteria. Once established, routine matters did not require the editor’s direct input. It assured consistent editorial appearance from issue to issue.

Books, catalog pages, brochures and the like are suited to the use of a grid. The designer, once he designates the correct grid or series of grids, can leave routine choices to subordinates. This does require that he become sufficiently organized in his work habits so that a useful set of guidelines can be set out for others to follow.

Grids are not just for use in complex or repetitious work. They can be useful guides in positioning anything within a shape or page. The benefit to the designer is that should there be a need for other similar pieces a structure exists for a related series. More importantly, when the designer is working for a client he can develop a logical visual appearance based on similarity...
of purpose and function. This produces a visual identity or look for that client.

Simple grids can be made of equal divisions with as few as one or many dozens of different horizontal and vertical divisions. The untrained eye is able to appreciate a gridded design because of its natural ordering of information. Using a grid permits the designer to establish position, size, and the relation to the page of all elements to be included in a given work. He is freed of the need to make routine time-consuming decisions over and over again. The divisions can be mathematical, intuitive, or subject based. A catalog might use the dimensions of the most common shapes of a product line as the grid unit. The shape of photographs or illustrations can also be used and the grid designed to suit these.

A fluid grid may even be used. Using circular or non-rectangular modules the designer can join these from edge to edge creating shapes by random selection of intersections. While it might be possible to use the fluid grid for typography, it is much better suited for working out a variety of visual forms based on a common structure.

A grid, while helping the designer determine position and size of components within a design, need not limit flexibility. It can be used in conjunction with all of the methods mentioned earlier. The grid is a valuable asset in tightening up relationships once a general layout has been achieved. It is a way of cataloging and organizing information in a way that the reader will be helped rather than hindered. There is great variety to how each page may be treated within the design, but it is the reader who is the ultimate beneficiary of the grid. The designer is given more time to consider the specific task of helping the communication process and the work is more consistent.

42. The designer may use few modules or divisions.
43. Many modules or units can be used if the design demands it.
44. Karl Gerstner’s fluid grid.
45. The fluid grid used as an element for a soap package design.
The Mobile Grid

Many publications have a structure or grid that functions as a control device. In some cases it is relatively easy to determine the grid and in others it is more difficult.

Albert Einstein said of Le Corbusier's module: "It is a scale of proportion that makes the bad difficult and the good easy." This quotation appears in Karl Gerstner's book Designing Programmes and is an excellent place to begin with examples of current practice. Gerstner developed the mobile grid. It is composed of 10 point em units, 58 on each side of the square. It is then divided into three sub-grids that when overlayed form a complex series of intersecting and overlapping lines. It is complicated only when viewed in its multiple overlays. Gerstner attributed to this grid almost unlimited combinations. It allows for a 4 x 4, 2 x 2, 8 x 8, and 3 x 6 column combination of modules. These can be divided into many more combinations that allow layouts with the same basic grid structure.

The Westinghouse Grid

The Westinghouse grid was designed by Ken Hiebert under the direction of Paul Rand, corporate consultant. This system like many corporate systems is defined in one of their corporate graphic standards manuals. The manual begins with the basic explanation and demonstration of the grid. The introduction, written by Paul Rand, outlines the reasons for the system:

"...provide a sequence of procedures for exploration and selection; help minimize the period of trial and error of conventional design methods; provide a convenient means of relaying instruction to typesetters, etc."

It goes on to say that the individual designer's background and his preferences will effect the way that he uses an established grid. His intuitions and the way that he sees the material content and how it is to be laid out will also effect his judgements. The grid provides only the broad structure for each designer's creative innovation.

Rand also says: "In working with any grid one should always look at the content, what is to be and must be included in the work.

1. number of elements
2. style and quantity of text (legibility)
3. size and quantity of pictorial matter (mandatory or optional)
4. kind of pictorial matter (photos, drawings, etc.)
5. mandatory sizes and shapes

Functional considerations for the designer include:

1. purpose and media
2. audience reading habits
3. adaptability of design
4. manufacturing process (printing, binding, etc.)
5. distribution

The modular grid is not a substitute for designer knowledge and inventiveness. If used as a magic formula without proper priority being given to the form and content of the work, the results will be, at best, dull. Designers will only have a sense of order without imagination. They will communicate, provided the verbal aspect of the communication process has been taken care of by a knowledgeable writer, but that is only half the job that any client should expect. The use of any grid requires that the designer have a working knowledge of basic design, geometry and psychology of perception according to Rand. "In particular, it requires a knowledge and a consideration of:

1. subject matter in hand
2. typography
3. picture editing
4. methods of reproduction
5. media

The units of the Westinghouse grid are based on the typeface body plus leading. When the units fill the sheet of paper from trim edges to binding edge it is called the unit grid. It is a series of 'x' and 'y' coordinates which designate the horizontal and vertical divisions of space on the page. The detail of an 11..."
em or 11 unit or 11 A-unit show the relationship of the type to the units.

Grid 'B' is composed of 19 A-unit by 9 A-unit modules. Specific sequence for filling the grid modules with type are set out. The grid 'B' also has an auxiliary grid that can be overlayed to allow for tabular information layout.

A picture scale, grid 'D', is used to aid in the positioning of pictorial elements. Other specific elements such as rules are specified as to weight, position, and on what grid they can be used.

Your Westinghouse Career Booklet

The grid used on this booklet is composed of 12, 10-em square modules. It is four modules wide by four deep. A 2 unit line is established from the top trim margin as a place for headings.

On the cover the heading appears to disregard the grid, but there is a secondary grid line that indicates a smaller module based on a 6 unit square. This would suggest the placement of the heads as they appear in the booklet and the placement of the other headings.

The page showing pictorial elements and type show the flexibility of a simple grid. At the same time there is ample white space, a lack of crowding and straining out of elements. The individual bits of information are comfortably connected into a whole. The designer has chosen to inject a column of white between copy that is unrelated as in the case of the main text and a footnote Boldface headings and subheads are used to relieve the grayness of the text. The fourth column of type falls short of the companion column and is left short rather than leading the type to force an unnatural justification of the columns. Upon occasion the space can be used to give importance to information by placing it in the same location. This uses the Gestalt principles of similarity and repetition to provide perceptual focus.

Westinghouse ASD Group

This catalog breaks in appearance with the Westinghouse Career Handbook and the Graphic Standards Manual in the way that headlines are used. The particular placement of the 3-hole punch does not seem to be a planned part of the grid. It is possible that this catalog was originally planned to stand alone and that punching for a binder was an afterthought. This is especially noticeable on a number of pages in the way that type matter comes uncomfortably close to the holes.

The unit grid is based on a 12 point em unit using 10 point type, leaded 2 points. There is a 3 unit margin from the top trim edge used in positioning the major heads. Intermediate lines are drawn in for easier reference. Inconsistent picture sizes are designer changes. A secondary grid line is shown to justify the placement of subheadings (dashed line).

Corning Glass Works 1969 Annual Report

This report utilizes a two column, variable width grid and a three column equal width grid. The type is set in 10 point Palatino with 2 points of leading. The grid uses an arbitrary, or intuitive plan for the placement of photographs. The shape of the report is based on the common 8½ x 11 inch page but with two inches trimmed from the 8½ dimension the shape is very elegant and easy to handle.

Corning Glass Works 1973 Annual Report

This report uses a two column grid except for the listing of corporate office locations. The list is broken into a three column grid. The columns are not of equal spacing because of one particularly long office address and so they are balanced visually.

In both of the reports from Corning the grid is neither unit or modular since divisions of space are made arbitrarily.

Monotype Newsletter 91

This is a two, three and four column grid. The pictorial element of the left page fits, but is not confined to the grid. The page showing a four column layout is overlayed with a three column grid for comparison. When using
any grid you will find that the left margin demands more conformity than the right. This is due to a Western cultural bias and is reinforced by typographic custom and convention.

**The Herald**

A New York City weekly, *The Herald*, in 1971 was a bright direction in the dull gray visual aesthetic of newspaper publishing. It was reported in *Graphis* and *Industrial Design* magazines as being a fresh breath in the area of communication that has not changed or been influenced by current design innovation. A study done at the time of the appearance of the Herald by MGD Graphic Systems and the Battelle Memorial Institute concluded that, "The Newspaper as a mass-produced medium of news and advertising would continue to exist through 1991, essentially unchanged in format." A sad postscript is that while Massimo Vignelli’s concept for the Herald was visually elegant and avant-garde it was not able to save the financially pressed publisher. Quality Publications, from bankruptcy.

Vignelli’s design was done with an eye to the reader’s sense of convention. He used Press Roman, an IBM automated offspring of Times New Roman, for the text. It is well leaded for ease of reading. The distribution of white space is refreshing as you look at existing examples of newspaper design. Rules are used for visual effect and have interesting and definite priorities set for them.

Pictures are given definite priority and drawings are used similarly to those produced in the *National Observer* which is also no longer being published.

**Geschaftsbericht 1969**

This report for Rosenthal Aktengesellschaft, Rosenthal Glass and Porcelain AG, and Thomas Glass and Porcelain AG is brusque and bold. It is grided in one and three columns. The page showing multiple photographs and text uses an interesting variation of the grid. The right hand photography allows the space between to duplicate the space horizontally between photographs rather than following the grid exactly. The picture follows the indented matter. The designer chooses to use a two column and one column text arrangement in this interesting example of photograph and text together.

**IBM Employment Fact Sheet**

This newsletter for IBM uses a three column grid. This is another of Paul Rand’s clients. It is interesting to compare this work with the work done for Westinghouse. Each corporation maintains its own identity and visual difference even though they use grids under the direction of the same designer. On the back of the Newsletter the text is permitted to use the full column from headline to bottom of the page.

**Herman Miller**

This corporation is almost totally identified with design and designers. Herman Miller has set high standard of design excellence for over three decades in both products and corporate communications and advertising. Among the many prominent designers associated over the years for them are: Isamu Noguchi, Paul Laszlo, Fritz Haller, George Nelson, John Massey, and Massimo Vignelli. It is a testament to formal design quality that with all of these individual designers the corporate look of Herman Miller has been constant and yet it has grown naturally without losing visual continuity.

The catalog sheets shown here attest to the flexibility of the grid. Only the 14 unit columns are shown, but there is a module of 10 em units by 14 em units wide used. Both square and outline halftones are used.

**Braun**

This West German company changed its total visual look soon after 1951 when the brothers, Arthur and Erwin Braun, took over the company at the death of their father. The company produced a quality product line but was having trouble marketing its items.
until they brought in Dr. Fritz Eichler who gave management the stimulus to change and develop a design concept that the owners "understood that good design is not so much aesthetically beautiful but, what is far more important, is that it is appropriate to the use of the product and is purposeful and honest. 28 Under Dr. Eichler's direction Braun designers are dedicated to bringing a multitude of elements into clearly arranged order.

Braun designers utilize a grid in ordering the surface of their product graphics as well as that of sales and marketing materials. The use of screens or grids is always to be seen as an auxiliary aid to the designer and not as some fail-safe formula. To be effective the grid must be task oriented. 29

**Further Developments**

This research would not be complete without mentioning of the work done by Gui Bonsiepe and published in the Ulm Design School Journal and the Journal of Typographic Research (now Visible Language). 30 In this study Mr. Bonsiepe introduces a mathematics of aesthetics in which he has taken the elements of the old design and those of the new and established a priority of elemental description for each element in the two designs. He has then statistically quantified the elements based upon their frequency of repetition. He makes a clear distinction between two kinds of order:

a. The order of system (systematic order)

b. The order of arrangement 31

The order of systems is concerned with the typographic elements (i.e. heads, subheads, page numbers, illustrations, tables, footnotes, etc.). These are the data that must be considered along with their frequency of appearance in the work and the dimensions of each visual element. The order of arrangement is based on the relation between the items in the work. This takes the form of horizontal and vertical reference lines on the page and the number of times that each corner is repeated.

This method of analyzing might be used by any designer by contouring all areas of visual and verbal information. This would show the relative complexity of the planned layout. The simpler the solution the more visible will be the order to the reader. Assuming that the content of the verbal message is already complex it is the designer's task to order the visual communication so that the reader will be aided in understanding the content of the communication. All methods of ordering and setting priorities for information should be used and one of the most useful is the grid.

Anton Stankowski also affirms that the designer's chief task is to make visible to the reader the invisible processes of the communication. 32 For this the grid is a valuable tool.

**Design Methodology**

If we can formulate some general principles of order and arrive at a sense of designed beauty as the function of designed order, then maybe we will be able to quantify what is at present an intuitive methodology into a formal tool that can be programmed into a computer. This would permit the designer to produce more choices from which to make reasoned design decisions. The grid and the computer as tools will never change the nature of a designer's role, visual communicator. The designer as communicator will always be the creative person who sees the solution and is able to synthesize it. Good design is not self-evident. It must be made meaningful by the enlightened and dedicated visual communicator.

**Conclusion**

In looking over the history of the grid and its development as an early design tool we find that we do have a methodology of design, a way of ordering and setting priorities for verbal and visual information.

The thread of mathematics and number relationships run through this study. In many ways the natural...
aspect of numbers as a way of keeping track of elements and naming them is appropriate and not unnatural or restrictive. All of this is not an end but a means intended to achieve an end. All is still within the power and scope of the enlightened and creative visual communicator.

From the Egyptian network to Tory's unit, to Rand's unit and module, to Gerstner's mobile grid, to the computer's bit, I have made a loop. The loop is the completed cycle in the computer program that allows the programmer (designer) to go on to the next major statement. The grid, like a program, exists as a tool for the designer to use or misuse based on his or her own ability to be creative.

Grid is method

-Grid-

71. The Egyptian unit square.
72. Tory's unit square
73. Rand's unit grid.
74. Gerstner's mobile grid.
NOTES

Section Three


3. Ibid, p. 60.


5. Ibid, p. 61.


9. Panofsky, p. 64.

10. Ibid, p. 68.


26. Ibid, p. 70


29. Ibid, p. 45.


Bibliography


