Toward a new visual vocabulary: a guide to syntactic variables in graphic design

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TOWARD A NEW VISUAL VOCABULARY:
A GUIDE TO SYNTACTIC VARIABLES
IN GRAPHIC DESIGN

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For my parents
INTRODUCTION

The purpose of this thesis is to create, for the student of graphic design, a guide which may be used as an introduction to the terminology which is encountered within the discipline. Specifically, I have provided a repertoire of language syntax variables which are intended to aid students in communicating more effectively about the visual devices which are available to them as graphic designers. By syntax variables, I am referring to the interrelationship of both verbal and visual entities which signify specific qualities related to graphic design.

My motivation for the construction of this guide stems from two primary sources. Foremost is my perpetual observation of students who refuse to employ adequately descriptive terminology when conversing about their work. I must include myself in this category, since, at times, I will discover that I am at a loss for the terms which best describe the work with which I am involved. As an example, witness the student in a critique who offers this reason for certain color choices, "Because I like them." This answer, in a context of personal expression, may be quite suitable, since fine artists have license to make any choices which are to their liking.
Graphic designers, on the other hand, to whom this thesis is directed, must be able to supply reasons for their actions because the underlying schemata will govern the functioning and therefore the success of the work. It is far more appropriate for a student of graphic design to reply in the following manner in order to convey a sense of legitimized reasoning: "I have selected this set of hues which vary progressively in intensity in order to show an illusion of depth in my design." The sentence not only describes the visual elements accurately, but also implies sound reasoning for their use.

Secondly, I was prompted by the teacher of graphic design who, by relying too heavily on indistinct words like "nice" or "good," fails to give adequate criticism of work. For example, an inconclusive evaluation might be the following: "John, you have used a 'nice' set of forms in your composition." The useful content of this statement is virtually nonexistent. It would be a better choice for the teacher, if the word must be used, to qualify it with other syntactic variables suggesting why the forms are nice. A stronger approach might be, "John, the forms you have chosen for your composition work nicely because their irregular shapes tend to enhance the chaotic theme." Overall, this statement provides a much more complete and concise description.

It is my intent that by gaining an understanding of the terminology and their visual references in this
guide, students will subsequently have a better understanding of the visual options that are available to them as graphic designers. With this knowledge, they should then be able to communicate more effectively about the work with which they are involved.
I. BACKGROUND AND DEVELOPMENT

Defining Graphic Design

Upon undertaking the creation of a guide to syntactic variables in graphic design, I discovered that much of this terminology is rooted in the world of mathematics. This situation appears to be due to the fact that graphic design incorporates many of the qualities found in the realm of mathematics, namely geometry.

Another fact of equal importance is that graphic design, as a discipline, unites many of the properties found within the domain of fine art. This reality becomes immediately evident to anyone who examines a copy of a graphic design-oriented publication such as Print or Communication Arts magazines. Leafing through the pages, one is bound to see many artistic styles and uses of media in combination with typography that have been reproduced for printing. The techniques of the painter, illustrator, printmaker, photographer, and typographer are all choreographed by the graphic designer to communicate specific ideas in order to achieve a purposive end. It was at this early stage in my research that I felt the necessity of finding a working definition for the term "graphic design." I felt that this
definition would be helpful in governing the content of my list of syntactic variables. The simplest definition says that the word "graphic" means "formed by writing, drawing, or engraving,"¹ and that "design" means "an underlying scheme that governs functioning, developing, or unfolding."² Roger Remington, a contemporary designer and professor of graphic design at Rochester Institute of Technology, defines the discipline as "combining the informational with the aesthetic."³ These definitions proved to be quite useful throughout various stages of my research involving the compilation of data.

²Ibid.
Compilation of Data

The next phase of the development process involved the collection of syntactic variables which were appropriate to the field of graphic design.

My first bit of data consisted of the fundamental principles I had learned as an undergraduate in terms of understanding art. Art and design concepts were explained quite simply as three interrelated levels, each of which had a profound effect on the other two when combined. These levels are line and form, color and texture, and space and time. When combined with one another the result is this: A simple element, such as a line, becomes more complex as it acquires characteristics such as color and/or orientation in space. In other words, the more characteristics an element such as a line possesses, the greater is the range of syntactic variables for describing that line. Therefore, it is my hypothesis that the more syntactic variables used in a description, the clearer the image will become to a listener. For example, I may say, "I have drawn a line on my paper." If I wish to be more accurate in my description, I might say, "I have drawn a curvilinear line of varying width beginning at a low position on the left side of my paper and, continuing in an upper right direction, I have ended the line an inch from the edge of the paper." The latter is,
inarguably, a more accurate account of the events which occurred on the paper's surface. This accuracy is a result of simply selecting the proper syntactic variables and plugging them into a sentence structure.

At this point, I find it necessary to clarify and reiterate my intent. Since graphic design is the presentation of information in a graphic manner in order to achieve a particular end, we may assume that a competent graphic designer be able to do so with the greatest possible efficiency and expertise. Because designers are dealing not only with themselves, but with clients who expect the best possible results, it is the duty of the graphic designer to be able to communicate thoughts as clearly as possible concerning the work. Therefore, I have created this guide for the purpose of giving students of graphic design exposure to terminology which enables them to communicate as competent graphic designers.
Traditional Variables

Before beginning my compilation of a list of syntactic variables, I asked myself a series of questions. The first of these was, "What variables does my personal syntax list include?" In order to assess the breadth of my personal repertoire, I examined a series of design-oriented books and attempted to verbalize as many visual elements as possible. This situation became a kind of associative process whereby I would examine a design and attempt to assign a word to every piece of visual information contained within that design. After having repeated the procedure several times, I began to notice extreme repetition in the adjectives I had selected. This repetition indicated that I had a somewhat limited design vocabulary.

The next question which I posed to myself was, "Where is the terminology most commonly used, and where would I find first-hand examples of it in use?" It was quite apparent that the best source of this language in use was in the usual critique between students and teachers of design. I listened to several critiques in the College of Fine and Applied Arts at Rochester Institute of Technology, with students ranging from the sophomore to the senior level. The most important
observation I made concerned the amount of dialogue and the specificity of the terms used. It appears that, overall, the teachers were better equipped in terms of the variety of the variables they used. This, of course, may be viewed as a healthy and normal teaching situation, since any competent teacher should be more able than the average student. The frequency of descriptive variables between the sophomore and senior classes generally showed a great deal of contrast and was coupled with the fact that senior students often provided more specific reasons for their selections of typeface, color, or line weight.

Still further examples of visual syntactic variables were listed in a basic design glossary provided to me by Roger Remington from his file entitled "Visual Formalism."

After compiling many variables with inherent similarities in quality, I asked the following question: "Does the body of variables, in its entirety, have an underlying structure which defines a system or process in terms of the interrelation of its components?" My process for determining this phenomenon was a deductive one based upon a simple premise. If one dissects, visually, a given piece of work, each form, color, or line network may be broken down into simple elements that exhibit properties reminiscent of basic geometry. One becomes aware that lines are formed by the connection
of two points, and that planar forms are bound by lines. It appears that almost any visual array may be broken down into conceptual elements based on the point as the simplest atomic structure. This, of course, is commonly known by anyone who has had a course in geometry. It may not, however, be realized by every designer of graphic images. It is for this reason that I have included this concept here as a valid one in the extraction of visual entities from designs.

Using the above concept, I have deduced that there is a creative hierarchy inherent in each and every piece of design work. It may be viewed as a visual building process of elements upon a field. This assumption may be easily proven by placing a blank piece of paper on a desk top and attempting to render spontaneously a complex design with a single stroke of the stylus. It is an impossible task. One might, however, find it completely normal to go through a process like the following:

1. Placing the pencil at a starting position,
2. bringing the lead into contact with the surface at a given point,
3. moving the pencil horizontally to create a line,
4. repeating the line in vertical or horizontal directions resulting in an enclosed shape,
5. repeating the shape at various intervals resulting in a pattern,
6. adding translucent or opaque color to the shapes for a sense of visual texture,
7. or subtracting any of these elements.
The process above is a simple, but effective way of proving that an additive hierarchy of visual elements does exist in the creation of any given design. The visual decisions involved may be many and terribly complex; so for this reason, it cannot be a helter-skelter thought process when the creative problem being addressed is graphic design.

These are the categories which I have used to divide the syntactic variables contained in the following guide: Shape, Size, Position, Direction, Texture, Motion, Density, Color, Number, Interval. A complete listing of this set of variables, along with their definitions, can be found in appendix A.
The Role of the Computer

It was not until entering the program in graphic design at Rochester Institute of Technology that I began to notice a deficiency in my vocabulary when attempting to communicate about design work. This was due, not to a change in geographical location, but to a change in the means by which I would create. It was not until 1983 that I had come in contact with a computer which was equipped to aid a designer in his work. With this change came a number of realizations. I was no longer confined to the traditional implements of the design field, such as wet media which was laboriously applied to a surface to achieve a desired effect. I now had a choice between the painstaking traditional means of design to which I was so accustomed or the electronic means which lent itself to rapid and seemingly endless color changes and image flexibility. I also had new possibilities at my command in terms of how the "look" of the finished imagery would result. The "computer look" is a timely application in many forms of graphic design today and is viewed by many as an advantageous alternative to traditional styles. This new form is particularly desirable and effective for designs requiring high-tech characteristics.
It seems apparent, however, that the computer is much more than just a new tool for the designer. I feel it is important to note that with the advent of the computer in the world of art and design, subtle changes have begun to occur in the structure of the designer's vocabulary. While many designers, firmly rooted in the methodology of the past, tend to shun the notions of pixels and pucks, others find a great deal of relevance in statements like the following: According to Professor Robert P. Keough, the past few years have shown that a number of computer-related syntax variables have begun to take on an increasing importance to the contemporary student of design. These variables are not extreme departures from the proven ones of the traditional schools, but rather terms of similar or synonymous meaning which have evolved with the ever-increasing presence of the new machinery. This new group of variables represents the first major change in the designer's vocabulary since the recognition of design as a discipline. Styles associated with design have certainly changed since its origin; yet the way in which designers, teachers, and historians describe the visual entities which comprise the designs has not been altered until the appearance of the computer.

Let me attempt to clarify the above statements with the following information. Since computer
technology has arisen out of the mathematical sciences, the terminology carried over to the designer is steeped in connotations of mathematics. This situation became immediately apparent to me during my initial encounter with a computer at an introductory lecture concerning the Genigraphics system. Terms such as "plot," "radius," and "vertex," harkened me back instantly to classes in math that I had completed in high school. I realized that working on the computer was not a means of designing which had an air of cut-and-paste, but rather a quasi-numerical atmosphere of calculated mechanical rendering.

I have developed an analogy which I feel is indicative of the kind of change that has occurred with the presence of the computer in the designer's workplace. In the span of time immediately preceding the Post-Gutenberg age, the language heard in and around the typical printer's place of work was not extremely different from the language used by printers a century earlier. Terms like "leading" and "galley proof" had their origin in the early years of printing technology and were derived from the nature of the materials used. It was with the onset of phototypesetting that changes occurred in the way printers described their endeavors. It was this Post-Industrial era of technological advancement that brought with it terms like "linespacing" and "photoproof."
I feel that the above situation in the printing industry is directly analogous to the increasingly important role of the computer in our lives today. While at the turn of the century, the word "disk" gave immediate connotations of flat, circular, metaloid objects that were found attached to plows, the connotation of the same word in a computer-oriented society is very different. I am, of course, referring to the fragile disks which are encoded with digital information in computer peripherals.

For the designer of computer imagery, many words have been given new connotative weight. Examples of these are "mirror," "flip," "flop," and "address." Upon hearing terms such as these in normal conversation, I relate them immediately to their computer meanings. I feel that this type of association is due to the fact that I have had extensive exposure to these terms in a computer environment.

After making the transition from what I will refer to as the traditional way of communicating about graphic design to the high-tech, I have arrived at the following conclusion: If I am to construct a guide which reflects accurately the current state of affairs in graphic design, I must include a way of referencing the traditional syntactic variables to their technological counterparts. As will be seen in the section entitled "Designing the Guide," I found a substantial
amount of terminology that plays an important role in the way computer graphics designers communicate about their work. A listing of these terms and definitions is included in appendix B.

Because a definition of graphic design is included in the first part of this section on Background and Development, I feel it is necessary to provide a definition for the term "computer graphics design." Professor James VerHague offers the following definition:

Computer graphics design is the controlled use of typography, symbols, photography, color, spacial relationships, and temporal sequencing for simple, clear, appropriate, legible, direct, efficient, and memorable visual communication of concepts, ideas, and information to meet human needs through the application of digital electronic media.  

The Role of Visual Semiotics

During the collection of my list of syntactic variables, it became increasingly apparent that because graphic design is a visual discipline, mere words, spoken or written, were not an adequate way of depicting the visual qualities for which they stand. The main reason for this condition is that words, in their typographical form, have little or no visual relationship to their meanings. Only in special cases, such as those cited in figure 1 of appendix C, do words amplify their meanings via their structural characteristics. Words must be learned in terms of pronunciation, meaning, and association in order to function effectively. The physical construction of many typographical combinations may also tend to bias the reader's connotation and subsequent understanding of the word. The word "Wednesday," for example, is composed of three primary substructures. These are "Wed," "nes," and "day." Any of these three, if noted independently of the others or in pairs, may connote imagery unrelated to the actual meaning. It appears to be logical that a more efficient approach to the depiction of graphic design syntax variables would be not the typographical representation, but
rather the pictorial. Karl Gerstner, in his book Compendium for Literates, supplies a synonymous example concerning language:

Language and writing are two different systems of signs; the only purpose of the latter is to represent the former. Linguistics is not concerned with the connection between the written and spoken word, its sole object is the latter, the spoken word. But the written word is so closely bound up with the spoken, whose image it is, that it is increasingly arrogating the main role to itself. Ultimately the point is reached where more importance is attached to the representation of the spoken sign than to the sign itself. It is like thinking that to know someone, it is better to look at his photograph than his face.  

My exposure to the field of semiotics at Rochester Institute of Technology led me to investigate a more streamlined approach to the problem of representing graphic design syntax variables. During the winter of 1984, under the auspices of Professor Mihai Nadin, I learned that semiotics is, essentially, the doctrine of signs. According to Gerstner, a sign is "a pictorial mark referring to an object (that which is signified) . . . can be heard (spoken language, music), or seen (letter, gesture, semaphore), felt with the tactile sense (knocking, Braille), and smelt (olfactory marks to distinguish an animal's territory).  

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6 Ibid., p. 20.
Because graphic design is the aesthetic representation of information and concepts, I feel that the study of semiotics is vital to gaining a better understanding of the visual components found within the discipline. Nadin demonstrated the functioning of the properties of semiotics in the following way. First a word is selected, and then a diagram is constructed like the one in figure 2, appendix C, to illustrate its semiological properties. Let us, as an example, examine the word "paper" within this context. We must understand that the word "paper," like any word in its typographical form, is merely a signifier for the physical entity known as paper. Semioticians have assigned specific terms to the signifier and that which is signified. Because signifiers simply represent something, they are referred to as a representamen. The physical entity, in this case, the actual piece of paper, is known as the object. It is called the object simply because it is the object of the representation. Therefore, it is important to note that, like the man's face in the photograph alluded to by Gerstner, the object is the purest form of representation, with any others being secondary in importance. However, in order for a signifier to be recognized as a sign, it must be interpreted by some means, namely one of the senses possessed by the interpretant. The interpretant is the means by which signs are recognized as
signifying something, in this case, an object. When the interpretant understands the signifier as being a representation for a particular object, a semiosis is said to have occurred. When the interpretation is a correct one, it is known as a complete semiosis. However, when the signifier is vague or unfamiliar, the result may be an incomplete semiosis. If the margin for error is extremely great, such as the interpretation of a scrawl on a wall, which might be representative of nearly anything, then an infinite semiosis may be the result. In this case, a correct association between the signifier and the signified may never occur.

Because this thesis is designed to help overcome inexact and unclear communication in relation to graphic design, it is imperative that I include another aspect of semiotics that details a method of evaluating the work itself. In order to avoid such words as "clarity" and "legibility," which are somewhat indistinct in terms of meaning, the semiotician prefers to employ words such as "syntactic," "semantic," and "pragmatic" when describing a piece of work. Syntactic refers to "the relationship of one visual image to another." The semantic dimension refers to "the relationship of a

visual image to a meaning."\textsuperscript{8} If an image successfully represents the message it was designed to depict, then it is said to be semantically effective. "The pragmatic dimension refers to the relationship of a visual image to a user."\textsuperscript{9} Do conditions such as lighting, viewing angle, or distance impede the function of the design?

Thus with my knowledge of semiotics and a list of traditional as well as computer-related syntactic variables in typographical form, I became increasingly aware of an important objective in the creation of the guide. A visual link must be created between the typographical representations and the objects for which they stand. This premise is supported further by deSaussure when he states, "It is not a spoken language that is natural to man, but the faculty of constituting a language, that is, a system of distinct signs."\textsuperscript{10}

\textsuperscript{8}Ibid., p. 20.
\textsuperscript{9}Ibid., p. 20.
II. DESIGNING THE GUIDE

System

In attempting to define a logical system for ordering the guide's structure, I was referred by Roger Remington to information concerning the definition of fundamental design principles. The information states the following:

Depending on the requirements of specific problem needs, the varied aspects of design can be reduced to three interacting, fundamental principles—function, flow, and form. These may be defined as follows: Function is the quality which satisfies utilitarian needs by meeting a specific purpose or goal. Flow is the quality which satisfies logical needs by providing a space-time sequence relationship of events. Form is the quality which satisfies aesthetic needs with respect to the basic elements of size, blank space, color, line, and shape.11

The above information served as a building block for the system which I will detail here. The syntax guide is divided into three interactive panels which are labeled "Function," "Flow," and "Form." These panels are depicted in figures 3, 4, and 5 in appendix C.

The first panel, labeled "Function," is designed to satisfy utilitarian needs by providing a typographic introduction to the lists of syntactic variables in graphic design. These variables are categorized in the

following manner: "Shape," "Size," "Position," "Direction," "Motion," "Texture," "Density," "Color," "Number," and "Interval." Within each of these headlines is a list of variables which describe the visual qualities contained within that category. The following is an explanation and summary of the first panel which bears the title "Function." This explanation is directed toward those who are being exposed to the panels for the first time.

The primary function of graphic design syntax variables within a language is to provide a means by which a designer may be articulate to others concerning imagery. Perhaps the most common use of this type of communication exists between the teacher of graphic design and the student. In terms of semiotics, the syntactic variables contained within the language must function as efficiently as possible in order to convey best the the semantics or meanings of the individual concepts.

Inherent in every learned language, however, is a threshold of comprehension which is directly related to several factors. These include previous exposure to the terminology, false preconceptions about their meaning, or connotative biases which exist outside of a design context. The object of this system is to provide the graphic designer with a language bridge between the verbal and the visual which will serve as a primer for
those entering the field.

The upper blue level serves as a stratified representation of traditional graphic design syntax variables in their typographical form. During any discourse concerning graphic design, these variables will be included in the syntactic schemata in order to express a given idea related to the topic.

The lower black level consists of esoteric variations on the traditional variables which have come about with the advent of the computer in graphic design. While the traditional variables may pertain equally to the design of a printed page or an array on a cathode ray tube, designers in the computer field often elect to use alternate terminology which is indigenous to the media.

The next series of paragraphs are intended to provide an explanation of the second panel which deals with the concept of flow as it pertains to design. This panel's content is indicative of the visual building process of elements mentioned in the section on Background and Development.

Flow, in relation to the syntactic variables contained within the language of graphic design may be viewed as the quality which satisfies logical needs by providing a space-time sequence relationship of elements.

The syntax sphere, represented below in two dimensions, is a device which allows a designer to view morphologically the additive effects of the design
process.

Beginning at the polar regions with the conceptual elements of point, line, and plane, variables are added to a design that cause it to increase gradually in complexity. The more variables from each category which a particular design possesses, the more complex it will be.

Essentially, the second panel is simply a means of identifying the complexity of a given design. The more variables from each category which a design exhibits, the farther toward the equatorial zone of complexity it will be found.

The third panel serves to satisfy the aesthetic need as well as providing a visual link to the typographic variables on the first panel. A brief explanation of this panel's function is as follows:

Form is employed to overcome the barriers inherent in a spoken or typographical representation of a graphic design language. Whenever a transformation occurs from a written language to one which utilizes line, shape, and density, these forms become an iconographic representation of that language. While both the visual and verbal representations function as signifiers for a particular group of ideas or qualities, the pictorial representations tend to be more efficient since they (1) overcome discrepancies in dialect and are therefore more universal, (2) satisfy the aesthetic
sensibilities, (3) support the importance of developing a theory in graphic design, and (4) perpetuate the quest for a universal language.

When the three panels are displayed simultaneously, they serve as an interactive triptych which allows the viewer to scan back and forth, assimilating information. Strong horizontal lines provide a clue to the interrelationship of the three panels.
Design Considerations

The design of the first panel in the series is based upon a grid system having two distinct parts. These parts may be viewed in figure 6, appendix C. The first part is a typographic unit grid known as a type A grid. Its construction is based on a unit size of twelve points, into which the entire panel is divided. A size of twelve points was chosen because type of this dimension is quite comfortable and easy to read at a distance of three feet. Superimposed over this structure is a type B grid which defines the columns and rows into which the information is placed. The width of the columns is determined by the length of the longest term, in this case, "optical center," which has a length of nearly six picas, or six type A grid units. The height of the row divisions is determined by the longest set of variables which are found in the lower half of the panel. This set is composed of three related words that are spaced one unit apart. They are "smooth," "curve," and "tesselation."

Typographic variables are set in twelve-point Helvetica regular with twelve-point Helvetica medium used to accentuate the main headings. All explanatory text is set in Helvetica regular for clarity and
legibility. Helvetica was selected for its timeless appearance and clean structural characteristics.

Traditional syntax variables are separated from computer variables through the use of color coding. Blue, the lighter color, is situated at the top because it has less visual weight than black. Horizontal lines are employed with full bleeds on the edges nearest an adjacent panel. This use of line accentuates the horizontal movement of the eye and provides a logical left-to-right progression through the information contained in the guide.

The second panel in the triptych is based on the same grid used in the first panel; however, the major portion of the panel is free of typographical information. The concepts of simplicity and complexity are shown quite simply by an increase in the amount of positive area between the lines of the variable rows. The simplest of designs have less visual complexity and are therefore oriented to the lighter areas on the scale of complexity. Complex designs fall nearer the center where they can be referenced to the heavier areas on the scale. The continuation of the horizontal lines enhance the visual flow from panel to panel.

The third panel, like the two which precede it, is also based on the pica-unit grid system. One alteration was made, however, to account for the size of the syntactic variables which reside on the panel. The
columns were made narrower to allow the symbols to fall closer to each other. If the spacing of the symbols were based on a flush left orientation as was the type on the first panel, the symbols would have large gaps between them which would disrupt the horizontal movement of the eye from image to image. This kind of open spacing would tend to make the imagery seem less visually effective and cohesive.
Symbol Construction

The symbols located on the third panel of the triptych are constructed within a square format because a square is a relatively stable form. The grid used for the construction of the symbols may be seen in figure 7 of appendix C. With the square as a base, there is virtually no vertical or horizontal stress within the image. A rectangular form of any dimensions other than those of a square would require a specific vertical or horizontal orientation within the grid structure. Circles were ruled out as a format because they tend to be less visually stable than the square form. While the square appears to rest firmly on a horizontal baseline formed by the grid, this quality is not as apparent in the case of the circle.

The internal organization and content of each variable is based upon a unit-grid structure which is located within the square framework of the symbol. As may be seen in figure 7, the actual image area of each symbol is surrounded by a buffer area of constant thickness. This division is indicated by a heavier line weight in the illustration of the grid structure. The importance of this buffer zone is to ensure
consistency in the image size from symbol to symbol. If this consistent appearance were not evident to the viewer, the panel as a whole would not seem uniform or homogeneous.

Within each variable, the weight of the contents is accentuated by a line width equal to one grid unit. The reason for this is that the relatively heavy weight of the image tends to separate it from the surrounding frame. This feature also tends to place more importance on the contents of the symbol rather than on the surrounding structure. This may be viewed as a small, but important hierarchy of visual distinction.
III. CONCLUSION

Perhaps the most important realization for me during the construction of this guide was that the resulting product was extremely different from what I had originally foreseen. In the earliest stages of my research, I had viewed the guide as being a standard, manual-like document which one would simply read for the purpose of being enlightened. If I had remained loyal to this concept, the resulting document might be, at best, enlightening.

By combining the field of semiotics with the discipline of graphic design, I was able to produce a major change in the way I viewed the concept of the guide. Rather than being purely typographical and informational, semiotics allowed me to show a transition from the verbal to the visual in an aesthetically pleasing way. The beauty of this semiotic system is that each typographic variable is supported by a symbol which represents the same concept. This condition serves to enhance and clarify the meaning of each variable. With purely verbal or written variables as the only means of signifying a concept, the odds are greater that the concept may not be understood as clearly.
As I stated in the introductory text of this report; my objective was to construct a guide to the syntactic variables which are encountered by students in the field of graphic design. I feel that I have successfully completed this objective, and have supplied, in the following paragraphs, information which supports this statement.

Because the purpose of graphic design is to combine the properties of information with those of aesthetics, I chose to design the guide in such a way as to accentuate the marriage of these properties. By reviewing the guide in a semiotic context, a critical evaluation may be made concerning the syntactic, semantic, and pragmatic aspects of the guide.

When examining the syntactic state of the guide, we are involved with the relationship of one visual image to another. In this case, the imagery and the type are carefully placed into a grid system which has been specially designed for this particular application. This aspect ensures that all elements in the design are spaced and aligned properly. The typographic grid promotes consistency in the use of typography throughout the entire guide. The grid used in the construction of the symbols serves to regulate the consistency of figure/ground, orientation, format, and scale.
How well does the guide represent the semantic dimension, or the relationship of visual imagery and meaning? Typographically speaking, the content of the first panel may, in many cases, be sufficient for the conveyance of ideas about basic design principles. However, in a learning situation, an insufficient development of an idea is neither admirable nor acceptable. Therefore, I elected to provide a visual link to the concepts which are being signified typographically. This link is, of course, the collection of symbols contained in the third panel in the series.

If one has a question concerning the meaning of a word on the first panel, they need to look only as far as the third panel for clarification. This is quite an efficient process because the symbols are simple and contain only those elements that are related to the message in question.

In terms of pragmatics, we must assess the relationship of the guide to a user. Is the guide easily read? It is easily read because such items as type style and size were taken into consideration. Helvetica was selected because of its excellent legibility which is due to a large x-height. At a normal viewing distance of approximately three feet, twelve-point type is extremely clear to the average viewer.

The format of a triptych display was chosen because it is easily viewed by several students.
simultaneously. This feature is a definite advantage for any teaching situation. Because all typographical and pictorial information on the panels is rendered in black, it is easily reproduced photographically. This condition is especially favorable for the enlargement and reduction of selected elements on the panels.

I feel that with the completion of this project, I have been greatly enriched as a graphic designer. By investigating the intricacies of design methodology, one becomes aware that supporting knowledge from other disciplines is helpful in the successful resolution of problems.
APPENDIX A

Traditional Variables

It is important to note that the list of syntactic variables contained in this appendix arranged by category. The order of the categories and the items contained within them correspond exactly to those found in figure 3 of appendix C.

Shape

Shape: The outline or characteristic surface configuration of a thing; contour

Rectilinear: Bounded by or characterized by straight lines

Curvilinear: Formed by curved or curving lines

Circle: A plane curve, everywhere equidistant from a fixed point, the center

Ellipse: A plane curve formed by the locus of points the sum of the distances of each of which from two fixed points is the same distance

Organic: Bounded by free curves, suggesting fluidity and growth

Angular: Having an angle or angles

Irregular: Not straight, uniform, or symmetrical

Symmetry: Correspondence of form and arrangement of parts on opposite sides of a boundary

Asymmetry: Not symmetrical

Letterform: A symbol representing a speech sound and constituting a letter of an alphabet
Size

Size: The physical magnitude, dimensions, or extent of something

Large: Of a size or amount greater than average
Small: Of a size or amount less than average
Increase: To make or become greater or larger
Decrease: To make or become lesser or smaller

Position

Position: A place or location
Focal point: A place of optical concentration
Center: A point equidistant from all points on the sides or outer boundaries of something
Optical center: Exists just above the mathematical center of a layout or design due to the phenomena of the eye
Upper right: The top portion of a side which is opposite the left
Right: A side which is opposite the left
Lower right: The bottom portion of a side which is opposite the left
Bottom: The lowest or deepest part of something
Lower left: The bottom portion of a side which is opposite the right
Left: A side which is opposite the right
Upper left: The top portion of a side which is opposite the right
Detachment: Separation
Touching: To be or come into contact
Overlapping: To extend over and cover part of
Penetration: To enter into; permeate
Union: The condition of being united

Coinciding: To occupy the same position simultaneously

Parallel: Lying in the same plane, always separated by the same distance, and not intersecting

Intersecting: To cut across or through

Motion

Motion: In a design, the illusion of action or change in position

Horizontal: Parallel to or in the plane of the horizon

Vertical: Perpendicular to the plane of the horizon

Diagonal: Having a slanted or oblique direction

Radial: Characterized by parts radiating from a common center

Spiral: The two-dimensional path formed by a point moving around a fixed center at an increasing or decreasing distance

Advance: To move or bring forward or onward

Recede: To become or seem to become more distant

Texture

Texture: The composition or structure of a substance; grain

Fine: Consisting of extremely small elements

Coarse: Consisting of large elements

Pattern: A design formed by the repetition of an element or component part
Direction

Direction: A position to which motion or another direction is referred

Stationary: Without motion or direction; fixed; unchanging

Up: In or toward a higher position

Upper right: In or toward a higher position which is opposite the left

Right: In or toward a position which is opposite the left

Lower right: In or toward a lower position which is opposite the left

Down: In or toward a lower position

Lower left: In or toward a lower position which is opposite the right

Left: In or toward a position which is opposite the right

Upper left: In or toward a higher position which is opposite the right

Density

Density: The amount of something per unit measure

Positive: Having the areas of light and dark in their original and normal relationship; as they would occur in nature

Negative: An image in which the light areas of the object rendered appear dark and the dark areas appear light

Transparent: Capable of transmitting light so that objects on the other side can be seen clearly

Translucent: Transmitting light, but diffusing it sufficiently to cause images behind to become blurred

Opaque: Impenetrable by light
Gradation: A series of gradual, successive stages in visual tonality

Screen: The finely cross-ruled glass plate or film placed before the lens of a camera to break up continuous-tone copy into dots for reproduction as halftone or line copy

Chiaroscuro: Italian; literally light/dark; the distribution of light and dark to render volume

Subtraction: To take away or deduct

Color

Color: The aspect of things that is caused by differing qualities of the light reflected or emitted by them

Hue: The property of color that is perceived and measured on a scale ranging from red through yellow, green, and blue to violet

Chroma: Pertaining to colors or color; intensity; saturation

Value: The relative darkness or lightness of a color

Light: Not dark; mixed with white

Dark: Not light; mixed with black

Warm: Emitting a sensation of brightness or heat

Cool: Emitting a sensation of dimness or cold

Brilliant: Very bright and vivid in color

Dull: Very dim and lacking in color

Number

Number: A member of the set of positive integers

Specific: Explicitly set forth; definite

Infinite: Having no bounds or limits
Interval

Interval: A space between two points or objects

Regular: Evenly spaced; periodic

Irregular: Of uneven rate, occurrence, or duration

Progressive: Proceeding in steps or by stages
APPENDIX B

Computer Variables

It is important to note that the list of syntactic variables contained in this appendix is arranged by category. The order of the categories and the items contained within them correspond exactly to those found in figure 3 of appendix C.

Shape

Shape: The outline or characteristic surface configuration of a thing; contour

Curve: A line that deviates from straight in a smooth, continuous fashion

Smooth: Free from irregularities, roughness, or projections

Tessellation: The ordering of picture elements into a recognizable array

Trace: To delineate or sketch

Angle: The figure formed by two lines diverging from a common point

Flip: The repetition of an image to produce a correspondence of form and arrangement of parts on opposite sides of a horizontal boundary

Flop: The repetition of an image to produce a correspondence of form and arrangement of parts on opposite sides of a vertical boundary

Fonts: Plural; complete assembly of all the characters of one size of one typeface

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Size

Size: The physical magnitude, dimensions, or extent of something

Grow large: To increase the size of something

Grow small: To decrease the size of something

Position

Position: A place or location

Default: A position on a computer display which is automatically assigned in the absence of user specification

Vertical: Perpendicular to the plane of the horizon; specified on the y axis

Vertical/Horizontal: A position of an upper right, lower right, upper left or lower left orientation specified with a combination of x and y coordinates

Horizontal: Parallel to or in the plane of the horizon; specified on the x axis

Justify: To be or come into contact; touching

Overlay: Elements within a visual array which are overlapping

Align vertical/horizontal: Elements within a visual array which coincide

Texture

Texture: The composition or structure of a substance; grain

Pixelize: To cause the picture elements of a computer image to become more prominent

Posterize: To cause extreme emphasis of the picture elements within a computer display

Imprint: To produce or impress a mark or pattern within a visual array
Direction

Direction: A position to which motion or another position is referred

Vertical: In or toward a position perpendicular to the horizon; specified on the y axis

Vertical/horizontal: In or toward a position of an upper right, lower right, upper left or lower left orientation; specified with a combination of x and y coordinates

Horizontal: In or toward a position parallel to or in the plane of the horizon

Density

Density: The amount of something per unit measure

Overlay: A visual element of a prescribed density which overlaps other elements

Solid: A visual element of a uniform density

Fill: To occupy an outlined visual element with a pattern or color

Shade: A series of gradual, successive stages in visual tonality

Space color: A series of gradual, successive stages in visual tonality and/or hue

Delete: To take away or deduct

Erase: See delete

Interval

Interval: A space between two points or objects

Object space: Visual elements which occur at regular or progressive intervals
Figure 1. Word Meanings Signified by Structure

CONDENSED

EXTENDED
Figure 2. Object, Representamen, Interpretant

REPRESENTAMEN

"Paper"

OBJECT

INTERPRETANT

The means by which a sign is recognized
Figure 3. Function: First Panel in Syntax Guide (Overleaf)
Figure 4. Flow: Second Panel in Syntax Guide
(Overleaf)
Figure 5. Form: Third Panel in Syntax Guide

(Overleaf)
Figure 6. Type A and Type B Grids

TYPE A GRID

TYPE B GRID
Figure 7. Grid Used in Symbol Construction
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American Heritage Dictionary. The, 2d college edition (1983), s.v. all terms contained in appendixes A and B.


File entitled "Visual Formalism."