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Graphic Cueing of Text: The Typographic and Diagraphic Dimensions

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Introduction

A new theoretical schema is proposed for classifying the myriad of graphic cues available to modern writers of visually informative text. A comprehensive taxonomy of graphic cues must cover three basic forms: typographic cueing, spatial cueing and mark cueing. Previous approaches have focused on typographic and spatial cueing (Spencer, Reynolds and Coe, 1975; Foster, 1979; Hartley, 1980; Bernhardt, 1986). But none have formalized the concept of mark cueing. Mark cues are lines (guides, links and dividers) and visual tags (bullets and enumerators). While these cues are frequently discussed in the literature, I have not found them to be formally named and conceptualized within a comprehensive schema of graphic cues. From the outset, let me clarify that no new graphic cues are introduced here. Instead, the novelty lies in the schema organization and subsequently in several resulting concepts and terms. This can be seen as a new ensemble of old cues.

Structure. This paper has three main parts. Following the introduction is a background section covering certain basic issues. The second part covers the schema of graphic cues, and the third briefly surveys the products of such cueing, namely: graphic typography, diagraphic displays and text labels.

Terminology. To clarify some of my terminology, *schema* has the same meaning as classification system, taxonomy, typology, etc. *Graphic cues* mean textual graphic cues — which mark, organize or modify text. Spatial and mark cues are also used in nontextual displays (maps, drawings, arrays of non-verbal images, etc.), but these applications are not considered here. Although punctuation marks have the form and function of mark cues, their use in ordinary prose is not considered here as graphic cueing. Several new terms are introduced. *Diagraphic* and *monographic* are established words but are given new meanings here and are the basis for a number of derivative terms. Also, one neologism is introduced: *graffix*. The meanings are explained shortly.

The Graphic Design of Text. As a subject specialty, *text design* has been called technology of text (Jonassen, 1982, 1985),

text engineering (Carr, 1986, 29:76), and is also widely known as principles of typography (Berger, 1989, 178; Berryman, 1979, 22; Crystal, 1987, 190). *Text architecture* is also suitable because architecture implies the creative fusion of aesthetics and functionality (user-friendliness) that is characteristic of well-designed buildings and text alike. Simpson and Casey (1988, 171) use the term *documentation architecture* in the same sense.

Let us distinguish between two aspects of text design. I will call them mechanical and graphic. Mechanical design involves such attributes as style, size and weight of the main typeface, length and spacing of printing lines, number of columns on a page, size of margins, size of page, etc. In contrast, graphic design involves graphic cueing as discussed in this paper. Issues of mechanical design are not addressed here. As a note, mechanical and graphic design (*as in figure 2*) are sometimes one and the same, although generally they are distinct.

Also, this paper does not (with a few exceptions) address ergonomic issues such as: 1) which graphic cues are appropriate for which text situations, reading strategies, document types, etc.; 2) relative visibility (salience) and legibility of the various cues; 3) over-cueing and under-cueing. These are important issues to be clarified in future research but are beyond the scope of this paper. Such research will certainly need a comprehensive schema of the kind, if not exact form, that is presented here.

Background

MONOGRAPHIC TEXT

Monographic is an established adjective meaning: related to a monograph (a learned treatise). In contrast, the term has a new sense here. Because of its *-graphic* (one might say *-nographic*) root, *monographic* seems an appropriate name for this concept and is selected from a number of alternatives, including: *monotonic, homogeneous, pure, uniform, unidimensional* and *undifferentiated*. In this context, monographic is a descriptor for text, typography, or layouts which lack graphic cues. Here are some definitions:

monographic text: text with no graphic cues. Syn: straight text continuous text, ordinary text, pure text, etc.

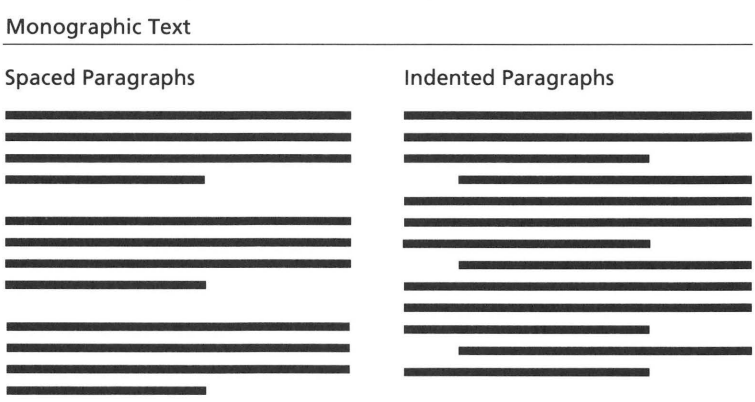
monographic typography: typography that is unchanging in style, size, weight and thus not highlighted for cueing purposes.

monographic layout: text layout that is linear, horizontal and has no extra spacing between words or lines.

Extra spacing is anything other than the normal spacing used in the mechanical design of the text. Thus, blank lines between paragraphs are not extra spacing if all paragraphs have them. Exceptions to extra spacing are paragraph indentations and paragraph endings that fall short of the right margin — as most endings do. In other words a text block can have these exceptions and still have a monographic layout.

Figure 1 shows the two most common formats for monographic text. Sometimes the two are combined.

Figure 1
Monographic Layouts



Being monographic per se does not mean that text is poorly designed, for many texts (fictional literature and certain types of nonfiction) are well-designed without graphic cues. Thus, these designators are not pejorative per se.

Graphic Text

The term *graphic text* is short for graphically cued text. Bernhardt (1986) calls the same concept *visually informative text*; it is also called *visually cued, visually coded* and *visually enhanced text*. Since graphic cueing can have so many forms, with each applied in varying degrees, it is difficult to quantify the extent to which text is graphically cued. However, using a rough scale, we might say that graphic text ranges in a continuum from barely graphic (or largely monographic) to fairly graphic to highly graphic. Some exemplary texts that are highly graphic are Hodges and Whitten (1990), Baecker and Marcus (1990, Color Plates A & B) and Horn (1989).

Figure 2

The Text-Graphic Duality of Written Language. As a practical matter, the distinction between text and graphics is fairly clear. Written words are textual, whereas non-verbal markings and space itself are graphic. The duality is clear in the familiar sign shown in figure 2.

The Graphic Nature of Monographic Text. There is a technical problem with this duality which should be mentioned. In final analysis, text is really just a special form of graphics, for text is inscribed on graphic space, it uses graphic punctuation marks and the basic units of shape of alphabetic characters are graphic marks known as graphemes. Thus, the ultimate graphic nature of text explains why text is amenable to graphic cueing. In final analysis, it is really graphics on graphics. Still, the practical distinction between graphic images and text images is useful and will be largely maintained in this paper.

Cueing in General. Cueing is a broad concept, covering visual cues (body language, graphic cues, traffic lights, etc.), auditory cues (phone ringing, tone of voice, etc.) and a whole range of othersensory and cognitive cues. In text design there are two basic types of cues available to the writer: verbal and graphic. This paper is about the latter, but let us briefly consider the former.

Verbal versus Graphic Cueing. Monographic text is straight prose with no graphic cues (word spacing, punctuation marks and paragraph cues excepted). Thus, all cueing in monographic text is verbal. Expressions such as *first*, *next*, *finally* or *this section focuses on* ... are verbal cues about the text structure. (See Meyer,1985 for an elaboration on this form of signaling.) In contrast, graphic (visual) cues complement and often replace verbal cueing. (See Bernhardt,1986,76; Hartley, 1985, 51.) For example, adverbs used in verbal enumerations (first, second, third) may be replaced by numbers, bullets or other graphic cues.

Value of Graphic Cueing. Although our focus is on the schema of graphic cues, a few general comments are appropriate regarding the value of graphic cueing. In a word, the main advantage is readability. There are many studies showing that prudent use of graphic cues can greatly improve performance for virtually all reading strategies, ranging from careful serial reading to searching, surveying, browsing, skimming and other forms of selective reading. (Some works which treat one or more of these reading strategies are Dooling and Lachman, 1971; Wright and Reid, 1973; Wright,1977; Frase and Schwartz, 1979; Hartley and Trueman, 1983; Foster, 1979; Garofalo,1988; Simpson and Casey, 1988; Horn, 1989; Bever, Jandreau, Burwell, Kaplan, and Zaenen, 1991).

Two other advantages are: creative expression and compositional quality. Both prose writing and graphic cueing are creative activities, so graphic cueing gives writers an additional opportunity to be creative. Also, it is argued that graphic cueing (especially frequent labeling) tends to improve compositional qualities such as completeness and coherence. (See Horn, 1974, 5; Bernhardt, 1986, 67.) I will not elaborate on this point other than to note this to be an interesting issue for further research. Further credit to graphic cueing lies in the fact that costly printed advertisements are seldom monographic and usually highly graphic in style. That cost-conscious advertisers regard graphic cues as worth their expense is strong testimony for graphic text.

The Schema of Graphic Cues

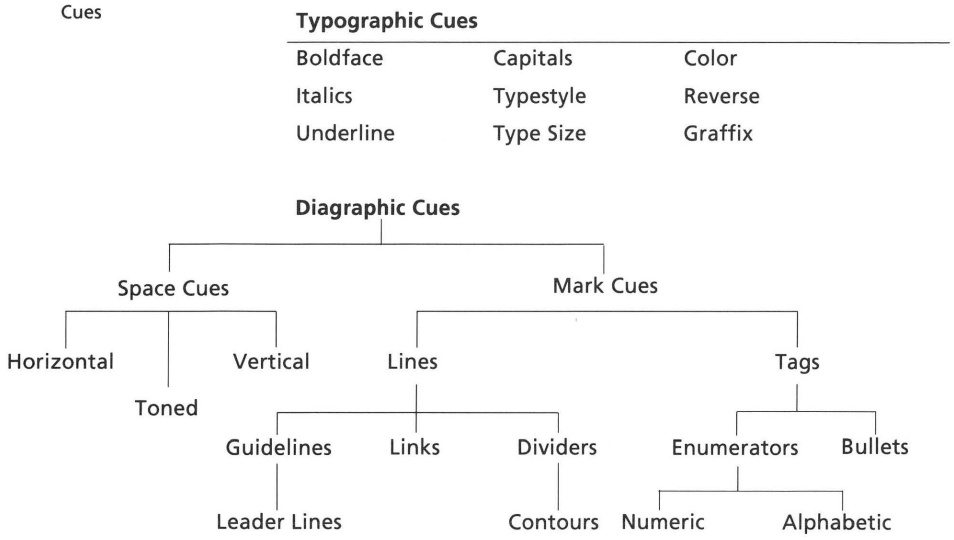
Figure 3 summarizes the basic types of graphic cues. Since this schema is the central postulation of this paper, a few comments are appropriate on its taxonomic merits. In evaluating any such schema there are several key parameters to consider.

Schema-Evaluating Criteria

- *Comprehensiveness:* are there any common or important graphic cues not covered by the schema?
- *Economy:* how many taxons are in the schema?
- *Depth / Precision:* how precise are the narrowest taxons?
- *Disjunctiveness:* to what extent are parallel taxons mutually exclusive (disjunctive)?
- *Hospitality*: to what extent are new cues (anomalies) accommodated without ad hoc categories or else major restructuring of the system?
- *Nomenclature*: are the taxon names concise, descriptive and uniform in series? [See also Gilreath (1992) for other term-evaluating criteria.]
- *Suitability for Purpose:* is the schema suitable for its purpose or purposes?

As a note, the purposes of this schema are manifold. In very general terms, such schemas help writers, text designers, students, teachers and researchers to cognitively organize, define, name, talk about, recognize, investigate and more effectively use graphic cues. I believe the schema warrants acceptable marks on each account, but this is an issue best settled by comparing the schema with alternative formulations. I will not make such comparison here other than to repeat my claim that previous formulations have not (among other differences) formally recognized mark cueing as a distinct and briefly named concept.

Figure 3
Types of Graphic Cues



TYPOGRAPHIC CUES

The primary distinction in this schema is between typographic and diagraphic cues. These are disjunctive in the sense that typographic cues can be used with or without diagraphic cues and vice versa. As Hartley (1980) points out, the term *typographic cue* has two meanings. Some authors (e.g., Frase and Schwartz, 1979) use the term broadly to also cover spatial cues. Others (Wright, 1977; Hartley, 1980) treat typographic and spatial cues as distinct. I take the latter position in this paper. Nine basic forms of typographic cues are cited in table 1. Actually underlines (3) are a type of graffix (9) but are treated separately here as a special case. The items in the attribute column are the intrinsic features (Twyman, 1982, 1986) which are treated or changed for each cue.

Table 1
Attributes
Affected in Typographic
Cueing

Cue	Attribute	Example
1. Boldface	weight	**boldface**
2. Italics	slant	*italics*
3. Underline	marking	underline
4. Capitals	case	UPPERCASE
5. Typestyle	style	times roman
6. Type Size	size	smaller
7. Color	color	**black**
8. Reverse	background	reversing
9. Graffix	marking	[graffix]

Highlighting is defined broadly here and used as a shorter synonym for *typographic cueing*. That includes any means of forming words or passages so they visually contrast with surrounding text. Most highlighting involves short segments of text, and these are often individual words embedded in paragraphs. Occasionally whole blocks of text, such as footnotes or extended quotations, are uniformly highlighted for contrast with surrounding text.

1. Boldface is an increase in weight of a typeface. Some typographers distinguish between boldface, medium-face, and lightface weights, and there are even finer scales than that. Here I will use just a two grade scale — boldface and normal weight. Boldfacing is available on most modern printers and even on typewriters by double-striking of keys. Because of its high visibility, boldface is widely used for text labels (notably headings), emphasis, warnings, etc.

2. Italics is a slanted variation of a typeface and is contrasted with the roman (upright) form. Italics lacks the high visibility of boldface but is suitable in common uses like cueing literal terms, foreign words, publication titles, emphasis, etc.

3. Underlines are lines drawn parallel with and below words for typographic cueing purposes. The common form of underline is a single unbroken line, although variations may include lines which are broken, dotted, double, boldfaced, wavy, etc. Underlining is a highly effective highlighting device although in modern text it is less common than italics. Underlines

are actually forms of graffixes (see cue 8 below), but are treated here as a separate category because of their relative visibility and universal availability to writers.

4. Capitals are the typographic cue of using only uppercase letters. Capitals are a fairly visible cue and commonly used in certain headings and also in acronyms like UNESCO, FORTRAN, COBOL, BASIC.

5. Typestyle is the basic shape of a family of typographic characters. A given typestyle (e.g., helvetica) will have subsets of different sizes, with each typically having normal and boldface versions as well as roman and italic versions. A particular subset —, e.g., helvetica 10 pt. bold — is commonly known as a font. Although typestyles can be changed within passages, it is more common for different typestyles to be used for certain headings or to cue whole passages, such as extended verbatim quotations or other categories of information.

6. Type Size. Size of typeface is commonly used to cue different levels of headings and to cue whole passages such as footnotes and quotations. Size changing is also illustrated in the use of small capitals for words like FORTRAN, PROLOG and BASIC which may be embedded in a passage.

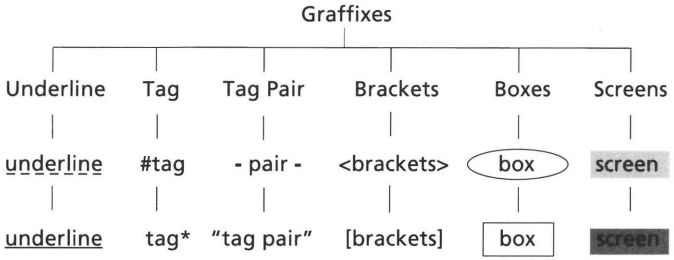
7. Color is an excellent graphic cue — useful not just in typographic cueing, but all forms of diagraphic marking and toning. Unfortunately, polychrome text is more expensive to print than monochrome (usually black), so color cueing is often impractical. As color becomes more available in desktop applications and as the price of color xerography and printing goes down, one might expect that printed text of the future will be increasingly colored.

8. Reverse printing — reversing — is a change in the image-background polarity of a typeface. Like boldface this cue is highly visible, although it is not as widely available in desktop systems.

9. Graffixes are marks attached to words for highlighting purposes. "Graffix" is a blend of the words *graphic affix*, which are quite descriptive of this concept. In lexical morphology an *affix* is a modifying form that is attached to a root; the three basic types are the prefix, infix and suffix. In the analogy, the

lexical affix is attached to and semantically modifies the root, just as the graphic affix is attached to and visually modifies the printed word. Figure 4 cites and exemplifies six main types of graffixes.

Figure 4
Types of Graffixes



In modern text the underline, the tag pair (especially quotation marks) and brackets are more common than the single tag, the box and the screen. We have already considered underlining as a special case of affixing, so let us briefly cover the other types.

Single tags may be placed on either side of the word, with the asterisk and crosshatch being common devices for this function. Tag pairs may be double or single quotation marks, hyphens and other suitable boundary-marking characters. The common shapes of brackets are straight, curved, angle, and brace. Boxes are commonly rectangles but may also be circles, ovals, triangles, etc. Screens (for want of a better word) are background tones used for highlighting. In monochrome text, screens are gray regions which mark words in a way similar (in form but not intensity) to the yellow fluorescent screens made with highlighting markers.

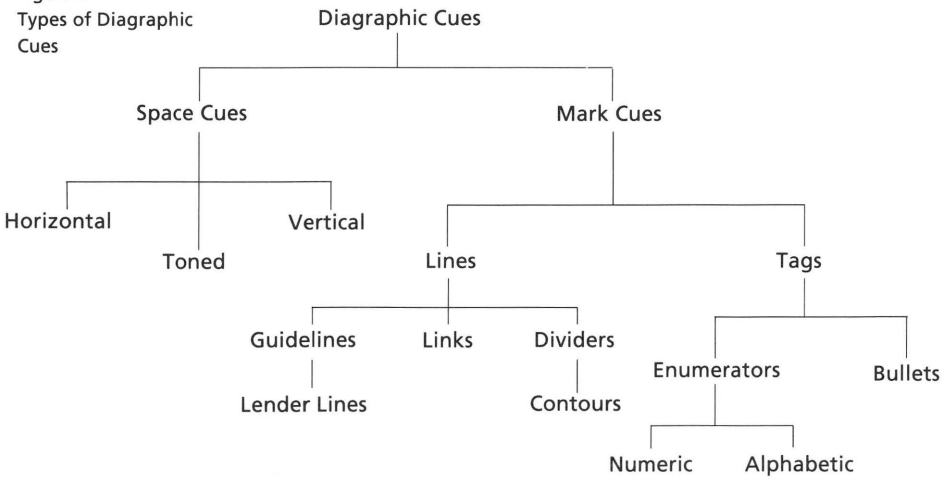
In concluding this survey of typographic cues, we should note that these cues can be used in combination. In fact it is possible to incorporate all nine cues in a single highlighted word. Also, given the variety of typefaces available today, it is possible there are some forms not covered by this taxonomy. Insofar as anomalies exist, there is the need to refine this schema. Let us now turn to the other dimension of graphic cueing which I call the *diagraphic dimension*.

DIAGRAPHIC CUEING

The word *diagraphic* is a technical term in geology (Derlich, 1986). Also, Wildbur (1989, 143) cites a book on diagrammatic communication titled *Diagraphics* (1986). Thus, the term is not new, although I think it has not been used in the sense which I propose. In fact I have found no (concise) term used for this concept.

Figure 5 (*a segment of figure 3*) shows the two basic types of diagraphic cues — space cues and mark cues.

Figure 5
Types of Diagraphic Cues



Space Cues. In dealing with space cues we need to distinguish between two types of lines: diagraphic and printing. Diagraphic lines are linear marks, whereas printing lines are not graphic marks but horizontal sectors that may be blank or have writing. It is the printing line that is intended in the following discussion of space cues.

Since the printed page is two dimensional, spatial cues can be made in two basic directions: vertical and horizontal. (See also Wright and Reid, 1973; Hartley, 1980, 1984.) Vertical cues are blank lines in the display and the relative position of lines over or under each other. Horizontal cues are any spaces on a line other than the single space between words in a monographic

layout. This includes left-space (formed by indenting), right-space (formed by ending a line short of the right margin) and interior space between text segments on a line. Ex-denting is also a horizontal cue. Related to these is the relative position of a segment (e.g., a heading) on a line.

Although vertical cues can be used without horizontal cues, and vice versa, the two are often used together. Figure 6 illustrates horizontal and vertical spaces, the combination of which is called a grid.

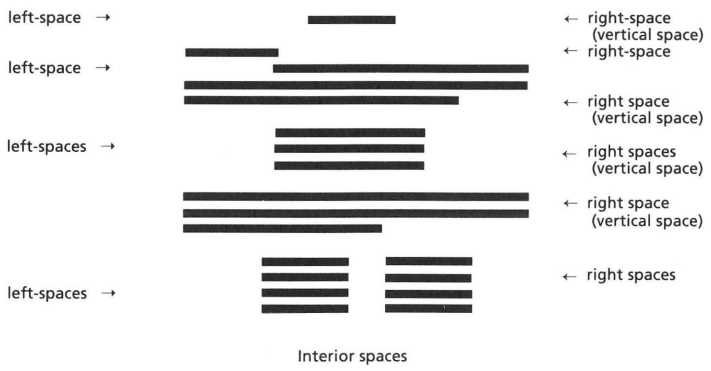
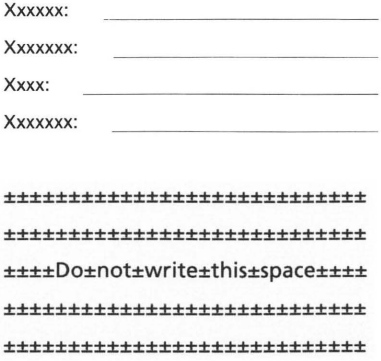


Figure 6
Horizontal and Vertical Space Cues

Space toning is classified here as a form of space cueing, although it involves marking of space and thus could be viewed as a form of mark cueing as well. Since most printed text is black type on a white background, the space we normally see is white space. When space is toned with color, shades of gray, faint dots or other textured patterns, the result is toned space. Some familiar examples are chessboards and maps which tone different regions with different colors. Diagraphic cueing with toned space is similar to typographic cueing with screens. But unlike screens, toned space is expansive and not confined to the immediate background of a highlighted word *(see figure 7)*.

Figure 7
Toned



A related form of spatial cueing not shown in figure 5 might be called relative spatial cueing. Its facets are: the distance between two items of text and their relative positions. Further discussion of spatial cueing is found in the next section under the heading of *Diagraphic Displays*.

Mark Cues. Diagraphic marks are graphic signs which complement diagraphic layouts by helping to visually organize items of text. They are closely related to punctuation marks in both form and function. Two basic types of diagraphic marks — lines and tags — are detailed below. Occasionally these marks are useful in monographic layouts, but generally they complement space cues in diagraphic layouts. Just as mark cueing is often used with spatial cueing, so too are tags and lines often used together.

Diagraphic Lines. Three types of lines are commonly used to organize diagraphic text: guidelines, network links and dividers. Underlines are classified here as highlighting marks not diagraphic lines, just as screen graffixes are considered as highlighters and not toned diagraphic spaces.

A guideline serves to visually align text or to guide writing. A leader line is a type of guideline which aligns entries that are spaced apart but usually on the same printing line. Common examples are the dotted lines which align headings with page numbers in many tables of contents. Guidelines may also function as dividers. These types are illustrated in figures 8, 9 and 10.

Figure 8
Guide and Leader Lines

Guidelines		Leader Lines
Name:	_____	Chapter # ..... p.#
Address:	_____	Chapter # - - - - - - - - p.#
	_____	Chapter # . . . . . .p.#
Phone:	_____	Chapter # _____p.#

Figure 9
Dividers and Contours

A **DIVIDER** is a line which divides graphic (or typographic) space. Unlike links, which are connectors, dividers are boundaries and separators. They may have any shape and position, but most often in graphic text they are straight horizontal lines.

Dividers can also take the form of circumscriptions or **CONTOURS** which enclose a graphic space, as exemplified here and also by window contours on computer screens. Contours can have any shape but most often in graphic text they are rectangular.

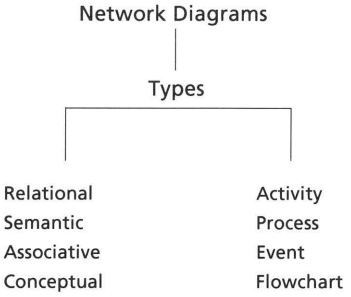
Figure 10
Nested Contours in a Table

	A	B	C	D
1	txt	txt	txt	txt
2	txt	txt	txt	txt
3	txt	txt	txt	txt

Grid lines, as shown in figure 10, are interwoven lines which serve as both guidelines and dividers. This faculty that a graphic mark may serve several functions at once is common in diagraphic displays.

A link is a line which connects nodes in a network display. Unlike dividers, which define and separate adjacent blocks of text, links serve to connect and relate blocks which may not be adjacent. Figure 11 is a relational network with all diagraphic lines being links.

Figure 11
Links in a Relational Network Diagram



Indexical links (a.k.a. pointers) are a special case. They clearly have the link function but they usually work by pointing at a distance rather than extending all the way to their target node. Indexicals may be as short as one character or may extend over some distance. They commonly appear as arrow-like marks but occasionally as pointing-hand icons.

Diagraphic Tags. A diagraphic tag is a brief symbol (often a single character) used to label and visually align or organize entries in diagraphic text. In the literature I have not seen "tag" (or any other concise term) used for this concept but find it suitable here. The two basic types of tags are bullets and enumerators.

Bullets, sometimes known as dots, spots, points, etc., are brief marks of varying shapes, such as the asterisk and dash on the ordinary keyboard and round, square, diamond, and triangular dots in more advanced systems. Other forms which bullets sometimes take are small icons and special characters such as $, #, @. A special case is the stop mark sometimes used to signal the end of an article.

Enumerators are diagraphic tags having the form of either an alphabetic character (A,B,C) or (most commonly) a numeral (1,2,3). Enumerators sometimes have several characters and

mixed ones at that — for example: 10, 1-A, 1.3.2, B-2-C. Tag enumerators, as described here, should not be confused with verbal enumerators (like first, second, third, etc.).

There is a tag-like symbol which should be noted here. Sometimes icons and other small figures are used for illustration or text-labeling — for example a scissors icon cueing a dotted guideline for cutting or a telephone icon cueing a phone number. These might be called *icons in text* rather than diagraphic tags, although the distinction is not always clear.

This concludes our survey of the typographic and diagraphic devices useful in graphic cueing of text. In the final section we look briefly at three categories of text products which result from this cueing.

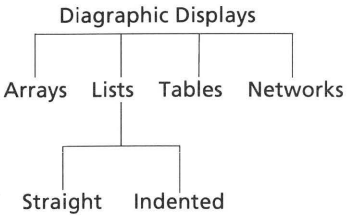
Products of Graphic Cueing

A distinction is made between products of graphic cueing and the basic cues themselves. Three types of products are covered below: graphic typography, diagraphic displays and text labels.

Graphic typography is the product of typographic cueing, just as monographic typography is the product of no typographic cueing. Graphic typography can be used in both monographic and diagraphic layouts.

Diagraphic displays are the products of diagraphic cueing. They may be typographically cued or not. Four basic types are shown in figure 12.

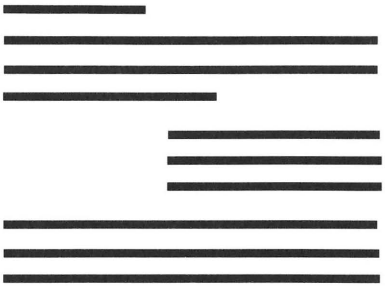
Figure 12
Types of Diagraphic Displays



These types may exist in pure form, but sometimes they are mixed, in which a predominant form will also have segments of other forms. For example figure 3 is a network and also contains a list.

Diagraphic arrays are displays of spatially cued blocks which themselves may be monographic in layout. The simplest form is a text block labeled with a detached heading. When headings are detached as opposed to run-on, the spatial cue is the extra white space surrounding the heading. Figure 13 shows a typical form.

Figure 13
Diagraphic Array



Not included as diagraphic arrays are text laid out in multiple columns on a page and runaround text. This form runs around "obstacles" such as windows or illustrations (White, 1988, 86) and serves a mechanical and sometimes aesthetic function but not a semantic one. The term *meaningful* (as in meaningful spacing) is a good descriptor for it points to the semantic function of spatial cueing which is missing in runaround forms. This designation follows Green and Payne (1982, 393) and Frase and Schwartz (1979), who use the term *meaningful* (in "meaningful indentation") in the same sense. Lists are vertical displays of text items. Lists are either straight or indented (i.e., outlines). Here, indented refers to indentation within the list and not to any indented position of the list itself. Abstract examples of each are shown in figure 14.

Figure 14
Straight and Indented Lists

Lists

Straight

Xxxxxxxx.
Xxxxxxxx.
Xxxxxxxx.
Xxxxxxxx.
Xxxxxxxx.
Xxxxxxxx.

Indented

Xxxxxxxx.
Xxxxxxxx.
Xxxxxxxx.
Xxxxxxxx.
Xxxxxxxx.
Xxxxxxxx.

Figure 15
Unmarked and Toned Tables

Unmarked Table

	XXXX	XXXX	XXXX	XXXX
Xxxxx	xxxx	xxxx	xxxx	xxxx
Xxxxx	xxxx	xxxx	xxxx	xxxx
Xxxxx	xxxx	xxxx	xxxx	xxxx
Xxxxx	xxxx	xxxx	xxxx	xxxx

Toned Table

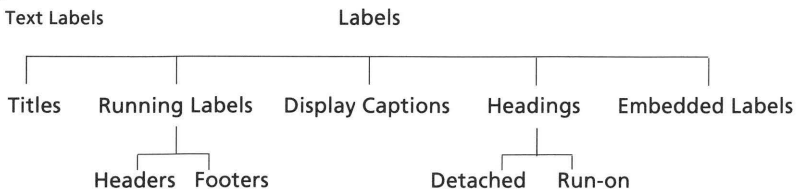
	XXXX	XXXX	XXXX	XXXX
Xxxxx	xxxx	xxxx	xxxx	xxxx
Xxxxx	xxxx	xxxx	xxxx	xxxx
Xxxxx	xxxx	xxxx	xxxx	xxxx
Xxxxx	xxxx	xxxx	xxxx	xxxx

Diagraphic tables are complex text displays which correlate information horizontally in rows and vertically in columns. Although guide/divider lines or else space tones are often used to visually clarify the organization, such cues are not always necessary. Figure 15 shows two forms.

Network diagrams have links as their distinctive feature and are amply illustrated throughout this paper. See also figure 11 for basic types of networks.

Text labels are prominently visible terms which describe the information contents of adjacent text. Like any type of label, text labels allow the user to know the contents without direct examination (i.e., careful reading). Thus, labels assist the reader in searching, surveying, scanning and other forms of selective reading. There is a case to made that well-labeled text facilitates serial reading as well. (See also Reid and Wright, 1973; Wright, 1977; Hartley and Trueman, 1983; Simpson and Casey, 1988 and Horn, 1989.) Figure 16 shows the most common types of verbal labels. Text labels can also be nonverbal (e.g., color codes and icons) but these are not considered here.

Figure 16
Types of Text Labels



The *title* is the principal label of a document. *Running labels* are the headers located at the top of each printed page or footers located at the bottom. *Display captions* are labels for figures such as statistical charts, maps, line drawings, tables and network diagrams. Captions can be considered as headings when they occupy a heading position (as in the above display). But unlike headings, captions may be placed at the bottom or other non-heading positions relative to the display.

Headings are labels located at the head or beginning of a block. A detached heading is located either on a separate line above the text or else in the left margin beside the text (and sometimes both). A run-on heading is placed at the beginning of the text block (usually a paragraph) and occupies the position normally taken by the first word or words in the block. These are illustrated in figure 17.

Figure 17
Types of Headings by Location

Embedded labels are highly visible key terms located within a paragraph. These labels may be located anywhere in the paragraph and a paragraph (like this one) may have more than one. In this paper the italic definienda (terms being defined) are intended to serve as embedded labels. Note that key words do not have to be definienda but merely terms which are descriptive of nearby text. The requirement that labels be highly visible (salient) raises the issue of comparing and rating the various typographic cues on this quality. Clearly, some cues are more visible than others. At the high end I would place boldfacing, reversing, larger type size, and yellow fluorescent screens. As for italics, it is debatable whether this cue has the visual prominence necessary for effective embedded labeling.

This concludes our look at three main types of products of graphic cueing: graphic typography, diagraphic displays and text labels. The first two can exist independently of each other but generally are found together. The third, text labels, nearly always depends upon typographic cueing and frequently on spatial cueing as well.

Summary

In this paper we have surveyed a new theoretical schema covering the various graphic cues available to modern text designers. We have focused on printed text, but the principles apply largely to electronic and other media as well. As with any such postulation, this schema can be judged by the extent to which it helps us to cognitively organize, define, name, talk about, recognize and more effectively use the various elements that are covered. These are the typographic and diagraphic cues at our disposal for graphically cueing of text.

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We examined the impact on proof-reading accuracy of setting text in (monospaced) typewriter faces and (proportionally-spaced) typefaces, and found no significant differences. However when we introduced a third condition (irregularly-spaced typeface), proof-reading suffered, suggesting the importance of a good match between character shape and horizontal spacing. There was a subsidiary finding that subjects marked more false positives (that is, suggested that there were errors in texts, when in fact there were not) in the typewritten text than in the typeset texts (well-spaced or irregularly-spaced). A post-test where judges rated text as needing more