The Language of Visuals: Text + Graphics = Visual Rhetoric

Tutorial

—Feature by
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***Abstract*—*Technical communication textbooks tend to address visual rhetoric as two separate units, usually a chapter on document design and then a chapter on graphics. We advocate teaching a unified system of visual rhetoric that encompasses both text and graphics within a common visual-language system. Using C. S. Peirce's three-part theory of rhetoric and his ten categories of sign, we offer an integrated semiotic system, interpreting in one model the effectiveness of graphics, document design, and formatting, all considered as subtypes in this proposed visual rhetoric, organized around three primary communication goals: to decorate, to indicate, and to inform. Thus, any evaluation of visuals, either textual or graphic, must be made with reference to rhetorical contexts in which audience needs and graphic/textual media choices should align with authorial goals.*

***Index Terms*—*Document design, graphics, Peirce, semiotics, visual rhetoric.*

Technical communication textbooks tend to address visual rhetoric as two separate units, treating document design and informative graphics separately. Document-design discussion tends to focus largely on formatting and readability issues: invoking the use of margins, white space, font styles, color, headings, paragraphing, columns, etc. Informative-graphics discussion tends to focus largely on effectiveness, defined in terms of (1) accuracy, (2) inoffensiveness, and (3) clarity or readability. A graphic is judged ineffective if it skews data or inaccurately portrays information. A graphic is judged ineffective if it offends a particular group of readers. A graphic is judged ineffective if it is unclear or unreadable.

It is quite apparent, though, that text and graphics alike must accurately portray information. Neither must lie to readers. Likewise, both text and graphics must be constructed so as to avoid giving offense. What may require further explication, however, is the idea that document readability and graphics readability are both governed by the same rules. This is the subject of our tutorial. Our purpose here is to enumerate theoretical principles that serve to clarify and strengthen the ties between text design and informative-graphics design in such a way that they may be taught as a single unit. This is valuable because there is a tendency among student writers (and even some professionals) to view their written text as primary and their graphics as merely decorative add-ons. This erroneous view can lead to poorly hastily constructed graphics but also to poorly constructed text as well. Handa cautions that

> we must resist overlooking the rhetorical function of graphics, small or large, which we might often find so easy to ignore or to dismiss subconsciously as decoration. When analyzing hybrid texts and constructing them with our students, we need to constantly remind ourselves that images, as much as text, can be analyzed rhetorically, can be connotative, for instance, in addition to being denotative. [1, p. 305]

Our goal in this tutorial is to present a system of visual rhetoric in which graphics and text are treated together. Our presentation of this system will be organized around four key points:

Point 1: Text and graphics alike can be classified as visually configured information.

Point 2: Text and graphics alike necessarily have a decorative (aesthetic) component, but this is never sufficient for genuine information transfer.

Point 3: Text and graphics alike must use indicative (action-provoking) forms with restraint, so as not to burden or overwork readers.

Point 4: Text and graphics alike, in order to be informative, must be diagrams rather than images.

Conclusion: Textual and graphic media choices, if effective, must align with audience needs and authorial goals in terms of primary types.

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POINT 1: VERBAL TEXT IS A KIND OF VISUAL

We will begin the tutorial by calling attention to base text. This is a block of text with minimal visual formatting only: punctuation between major phrases and white space between words.

For full effect, we suggest that an instructor might also present students with text lacking even spaces between words or punctuation.

In any case, it should be explicitly pointed out that the white space between words, even the periods and commas, are correctly understood as visual-rhetoric features:

> Punctuation is to typography what perspective is to painting. It introduces the illusion of visual and audible dimension, giving words vitality. Whether prominent or subtle, punctuation marks are the heartbeat of typography, moving words along in proper timing and with proper emphasis. [2, p. 117]

Without these very visual cues, the text effectively becomes unreadable. Therefore, readable text must employ some aspect of visual rhetoric, where RHETORIC is here defined as formal strategies that make communication effective. Written text is thus best understood as just another kind of informative graphic, not fundamentally different from tables, graphs, diagrams, charts, or even photographic images. To be readable, text has to be visually configured, just as other kinds of graphics are.

Despite this textual dependence on visual configuration, scholars traditionally have described visuals as dependent upon and subordinate to written text (e.g., Barthes' "Rhetoric of the Image" [3]). More recent work in visual rhetoric has attempted to define a language of visuals that is similar to written language systems (e.g., having grammar) yet separate from (no longer symbiotically linked to) surrounding text (c.f., Kress and van Leeuwen's *Reading Images: The Grammar of Visual Design* [4]). While this scholarly push has created a burgeoning field for visual rhetoric, technical communication textbooks still often discuss document design separately from graphics, when both are visual-rhetoric topics.

The study of visual rhetoric is now widely thought to differ from the study of text design inasmuch as rhetorical visuals are widely thought to have their own systemic relationships and patterns of meaning that constitute a separate code, or a separate language, in a manner of speaking—a language that is not inferior to, or a mere supplement to, or dependent on, textual information. We must recognize, however, that there are aspects of visual rhetoric that begin to merge with textual rhetoric: layout issues, font-choice issues, and white-space issues (i.e., visual design/graphics issues). There are other aspects of visual rhetoric that, at the superficial level, seem to pull away from textual issues, but even these, we would suggest, are not distinct in principle.

Visuals as a group will be considered part of a single semiotic system that includes textual language as one type among several related types, including images, diagrams, pure decorative forms, indicators, and so on. The overall look and effective purpose of each type is distinct. Some types of visuals are highly effective for accomplishing one kind of goal that other types will not serve. Even so, there is a common system that unifies all the visual types, of which text is but one subtype. The source of our model is the work of the semiotician C. S. Peirce who identified 10 major classes of sign type as logical permutations within a single system [5].

Why Peirce? Peirce, more than any major communication theorist since his time (1839–1914), argued for the very point which was demonstrated in our discussion of Fig. 1. Text is a kind of visual and visuals are a kind of text. For Peirce, visuals and text are only superficially different manifestations of the same SEMIOTIC PROCESS, meaning the exchange of feelings, actions, or information between minds by means of any kind of sign. A SIGN is any visual or textual or tactile or auditory form that conveys meaning.

> Logic, in its general sense, is, as I believe I have shown, only another name for **semiotic** ({sémeiötiké}), the quasi-necessary, or formal, doctrine of signs.... I mean that we observe the characters of such signs as we know, and from such an observation, by a process which I will not object to naming Abstraction, we are led to statements...as to **what must be the characters of all signs** used by a "scientific" intelligence, that is to say, by an intelligence capable of learning by experience. [5, para. 227, emphasis added]

In Peirce's system, the underlying meaning of any word, sentence, or any longer text must be understood as a diagram or other icon, either visually or in some other sensory mode, either consciously or unconsciously.

> The only way of directly communicating an idea is by means of an icon; and every indirect

> method of communicating an idea must depend for its establishment upon the use of an icon. Hence, every assertion [i.e., verbal text] must contain an icon or set of icons, or else must contain signs whose meaning is only explicable by icons. The idea which the set of icons (or the equivalent of a set of icons) contained in an assertion signifies may be termed the predicate of the assertion. [5, para. 278]

In this tutorial, our main purpose is to explain Peirce's system and demonstrate its specific relevance to contemporary communication in which visuals and text are so closely interwoven. The meaning of any verbal information, if it is understood, has to be transformed through the mediation of diagrammatic forms into both perception (i.e., what we would see, hear, or feel if the information is true) and action (i.e., how we would act if the information is true). This insight is uniquely Peirce's, and it is key to our analysis of visually configured text. The Peircean system is defined by just these three basic categories, firstness=**feeling**, secondness=**action**, and thirdness=**information**, which for our purposes can be presented as three distinct rhetorical goals:

(1) (Peirce's Firstness) to decorate—to create a quality of feeling in the audience—borders, font shapes, color, etc., creating an overall feel for a document. We will call all such feeling-generating forms DECORATIVES.
(2) (Peirce's Secondness) to indicate—to provoke an audience to action, locating, dividing, classifying, etc.—web links that can be clicked, action-activating buttons, page tabs that can be turned, etc. We will call all such action-provoking forms INDICATIVES.
(3) (Peirce's Thirdness) to inform—to promote in an audience further understanding of some idea—stories, sales pitches, reports, explanations, etc. We will call all such idea-promotion forms INFORMATIVES.

POINT 2: DECORATIVES ARE NECESSARY BUT NOT SUFFICIENT

We now take the base text (Fig. 1) and apply those kinds of visual configuration which are primarily decorative in nature. This decorative presentation of the text (Fig. 2) is distinctly less intimidating than the raw base text. This is an important consideration: if not put at ease, readers may not

We will frame discussion in terms of C.S. Peirce's "Ten Classes of Sign" which Peirce himself represented as an inverted pyramid (Collected Papers, volume 2, paragraph 264). (I) Decorative Icons--borders, font shapes,color, etc. (II) Image Icons--photographs, realistic illustrations. (III) Signaling Indices--bullet points, arrows, flashing banners, etc. (IV) Action Indices--web links, buttons,page tabs, etc. (V) Informative Icons--diagrams, charts, graphs. (VI) Demonstrative Indices--tables, figure labels,etc. (VII) Informative Indices--figure captions, line-byline instructions, etc. (VIII) Word-symbols--nouns, verbs,adjectives, etc. (IX) Sentence-symbols--propositions, clauses, if-then statements, etc. (X) Whole-Text-Symbols--stories, sales pitches,reports, explanations, etc. The roman numerals represent Peirce's own numbering of his ten types. In this version of his ten categories, we have adapted his terminology to a modern audience and supplied key examples of each type. These key examples, as divided and classified in the Peircean system, will each be discussed in detail. We propose to develop a unified visual rhetoric based on Peirce's model which will explain how and why different rhetorical situations require different kinds of visuals, from both a practical and an ethical standpoint. Although Peirce's system seems at first rather intricate, it is based on very simple principles, the logic of which we will develop from three fundamentals. Types I, IV, and X above represent the terminal points of a large triangle. Each of these types can be described as the extreme manifestations of three basic rhetorical purposes: (First) to decorate--to create a quality of feeling in the audience--borders, font shapes, color, etc., creating an overall feel for a document. (Second) to indicate--to provoke an audience to action, locating, dividing, classifying, etc.--web links that can be clicked, action-activating buttons, page tabs that can be turned, etc. (Third) to inform--to promote in an audience further understanding of some idea--stories, sales pitches, reports, explanations, etc. Between the extremes of pure decoratives, pure indicatives and pure informatives there are a range of intermediate types. Diagrams and other kinds of technical graphics have definite aesthetic-decorative properties but they serve primary informative purposes, just as pure text does. Images likewise have strong aesthetic properties but unless carefully edited for aesthetics they serve primary indicative purposes, to represent specific things to an audience. Step-by-step instructions are in contrast a mix of strongly indicative and informative elements.

Fig. 1. Base text is unreadable, or only readable with considerable effort.

even begin to read. A feeling of ease might emerge from emotional tones created by color, ornamental borders, and font forms, but the necessary feeling of ease may equally well arise from visually balanced, appropriately divided text and uncomplicated sentence structure, especially in cases where dense information is involved.

The problem with strongly decorative elements arises when their effects are not in line with intentions evident in the text. The decorative effects in Fig. 2 might work well enough for a party invitation, where the informative message is minimal (a time, a place, and the hosts' names) and the emotional message of celebration is the primary one.

Fig. 2 is more inviting than Fig. 1, but it is virtually as difficult to actually extract complex information from the decorative version as from the raw version. This version's paragraph breaks are made for aesthetic reasons of balance, rather than to mark key divisions in the information. Information divisions do correspond in Fig. 2 to changes in font, but this strategy creates a feeling of emotional division, rather than a feeling of a larger informational unity across divisions.

If authorial intention and audience need are primarily informational, then decorative elements should take a distinctly subordinate role.

Point 3: Indicatives Should be Used Sparingly

We now take the base text (Fig. 1) and apply those kinds of visual configuration which are primarily indicative in nature (Fig. 3). This indicative presentation of the text is nearly as intimidating as the raw base text, but for a different reason. Where the raw Fig. 1 presented an impenetrable block, the indicative text presents a thorny gauntlet of bullet points.

The thorny quality of Fig. 3 emerges from this sheer number of bullet points. Each bullet forces a positive action: readers' eyes physically move from point to point, and in the readers' minds, each bulleted piece of information must be actively divided from the rest.

Bulleted lists are simply the textual counterpart of graphic strategies such as pointing arrows, or blinking signs, or moving objects in animated clips. A blinking or moving object forces the eye to follow it, and mentally the object is separated from the background of fixed objects. Animation becomes likewise confusing and tiring when several equally prominent objects move in several directions at once, or blink at different rates. A parallel effect is created by over-bulleting a text, breaking each information component into too many visually distinct parts.

Like the decoratives exemplified in Fig. 2, indicative strategies have their place. It is typically necessary to focus reader attention on a given point, or even to get readers actively moving in response to text, something which must happen with written instructions.

As with decoratives, the problem with strongly indicative elements arises when their effects are not in line with the intentions evident in the text. The indicative effects in Fig. 3 might be necessary if a technician needs to, for example, check off each element on a detailed parts list, but once again this legitimate use does not square with the actual content of the model passage.

In short, if authorial intention and audience needs are primarily informational, then decorative and indicative elements alike should take a distinctly subordinate role.

Point 4: Informatives are Diagrams, Not Images of Information

We now take the base text (Fig. 1) and apply those kinds of visual configuration which are primarily informative in nature (Fig. 4). This informative presentation of the text will require some level of effort on the part of readers, but this interpretive effort is far more manageable here than it was for the versions in Figs. 1–3.

The key to understanding the correct design of informative text is an understanding of the difference between images and diagrams. Again, this is because graphics and texts are simply subtypes, part of the same larger system. Texts with imagistic properties can only serve decorative or indicative purposes, as graphic images do.

Images:
- lack of clear contrasts;
- no filter for irrelevant detail;
- unreliable generalization.

Diagrams:
- clear contrasts;
- relevant details only;
- generalization reliable and unified.

It is worth noting that we have deployed bullet points here, in the image/diagram contrast, but in

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The roman numerals represent Peirce's own numbering of his ten types. In this version of his ten categories, we have adapted his terminology to a modern audience and supplied key examples of each type. These key examples, as divided and classified in the Peircean system, will each be discussed in detail. We propose to develop a unified visual rhetoric based on Peirce's model which will explain how and why different rhetorical situations require different kinds of visuals, from both a practical and an ethical standpoint. Although Peirce's system seems at first rather intricate, it is based on very simple principles, the logic of which we will develop from three fundamentals. Types I, IV, and X above represent the terminal points of a large triangle. Each of these types can be described as the extreme manifestations of three basic rhetorical purposes: (FIRST) TO DECORATE--TO CREATE A QUALITY OF FEELING IN THE AUDIENCE--BORDERS, FONT SHAPES, COLOR, ETC., CREATING AN OVERALL FEEL FOR A DOCUMENT.

(SECOND) TO INDICATE--TO PROVOKE AN AUDIENCE TO ACTION, LOCATING, DIVIDING, CLASSIFYING, ETC.--WEB LINKS THAT CAN BE CLICKED, ACTION-ACTIVATING BUTTONS, PAGE TABS THAT CAN BE TURNED, ETC. (Third) to inform--to promote in an audience further understanding of some idea--stories, sales pitches, reports, explanations, etc.

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Fig. 2. Overly decorative text is less intimidating, but it remains difficult to extract complex information from it.

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- Step-by-step instructions are in contrast a mix of strongly indicative and informative elements.

Fig. 3. Overly indicative text can be nearly as intimidating as raw text, and it remains difficult to extract complex information from it.

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I
Decorative Icons
borders, font shapes, color, etc.

V
Informative Icons
diagrams, charts, graphs

VIII
Word-symbols
nouns, verbs, adjectives, etc.

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Whole-Text-Symbols
stories, sales pitches, reports, explanations, etc.

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Image Icons
photographs, realistic illustrations.

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propositions, clauses, if-then statements, etc.

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Signaling Indices
bullet points, arrows, flashing banners, etc.

VII
Informative Indices
figure captions, line-by-line instructions, etc.

Ten Major Sign Types:
Language and other kinds of visuals can be treated within a single theoretical system.

IV
Action Indices
web links, buttons, page tabs, etc.

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Fig. 4. Appropriately informative text is organized as a kind of diagram; major blocks of information are both separated and related to one another in a visual configuration.

a much more restrained way than shown in Fig. 3. The primary difference is that the two sets of three bullets make one reliable generalization: images are in these three ways the very opposite of diagrams.

When bullets lose this at-a-glance unity, then they lose their informative properties and "degenerate" as it were to a merely indicative, visually diverse list (compare Figs. 3 and 4). In Fig. 4, indicative bullets are kept to a minimum and serve a visually unified point when used. Likewise, a minimum decorative aesthetic is necessary in any text, and here it emerges implicitly from visual symmetry and unity rather than from distracting imagery.

The central insight here is that the transformation from Fig. 1 (unreadable raw text) to Fig. 4 (text with readable document design) is identical in principle to the transformation shown in Fig. 5, the shift between a raw photographic image and a processed diagram (=map). The map (=diagram) extracts from the image only a relatively few clear contrasts, separates relevant details with white space, and creates a visually unified generalization.

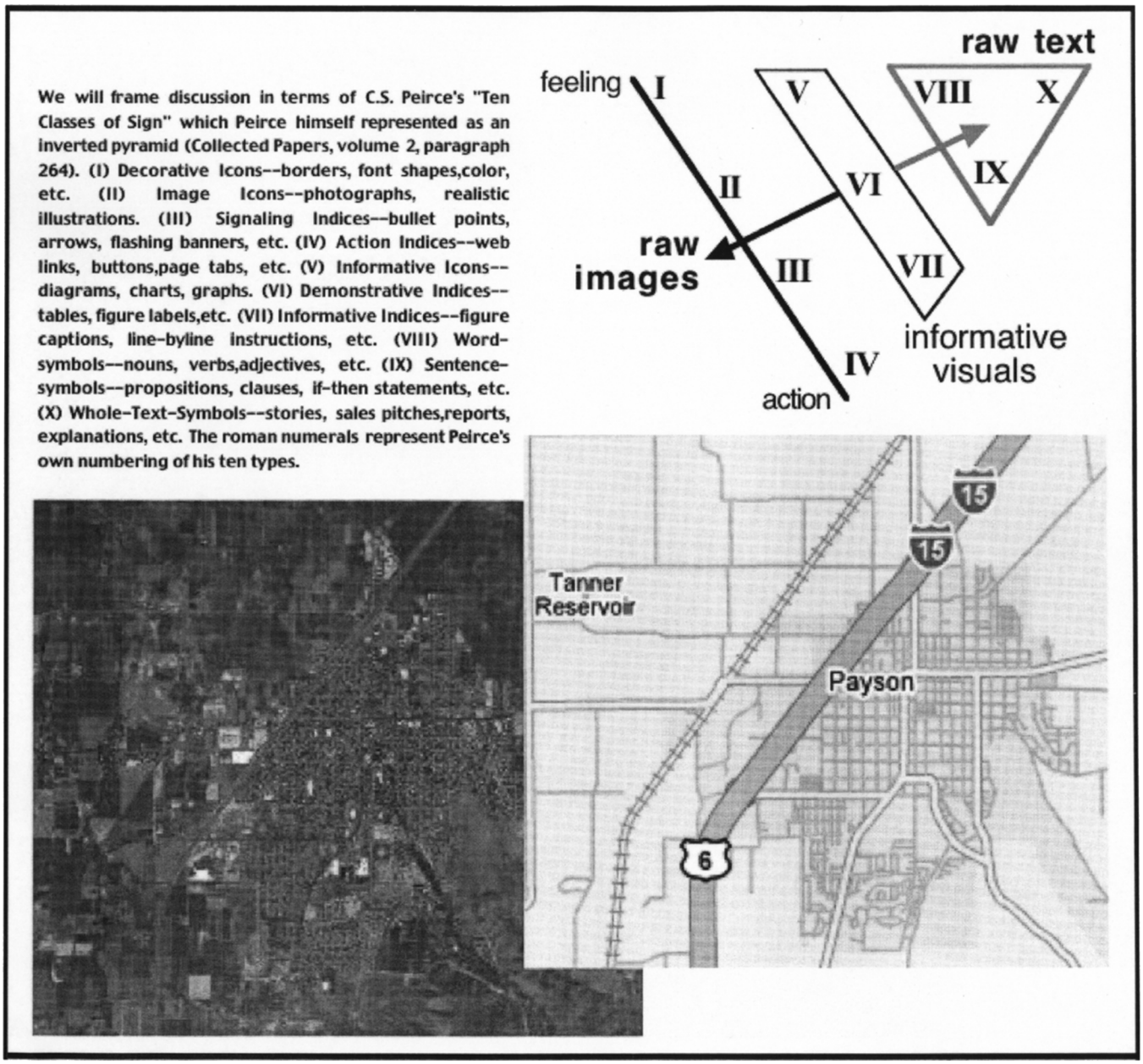

Fig. 5. Image versus diagram: contrast between raw text and readable text parallels the contrast between a raw satellite and a map of the same area (both readily obtained from Google.com).

This parallel between text processing and image processing is inherent in Peirce's unified rhetorical system, as shown in Fig. 5, top right. Raw images reflect the feelings, signs, and actions of direct experience (Roman numerals I-II-III-IV in Fig. 5). Text is made up of words, sentences, and discourse (Roman numerals VIII-IX-X in Fig. 5). Both of these regions, according to Peirce, **must be mediated** by diagrams, demonstratives, and indicators (Roman numerals V-VI-VII in Fig. 5) in order to be grasped as information [5, p. 2.280].

In Peirce's system, the underlying meaning of any word, sentence, or any longer text (Fig. 5, top left) must be understood as a diagram or other icon (Fig. 5, top right), either visually or in some other sensory mode, either consciously or unconsciously. The meaning of any verbal information, if it is understood, has to be transformed into both perception (i.e., what we would see, hear, or feel if the information is true) and action (i.e., how we would act if the information is true). As indicated in Fig. 5, top and bottom right, this transformation only can occur through the mediation of diagrammatic forms, supported by demonstrative labels and indicators. Good textual formatting is thus no different in principle from a well-structured diagram.

It is difficult to process an unfamiliar raw image just as it is difficult to process a large block of unfamiliar raw text. The transformation of either into an interpretable form requires a diagrammatic analysis. A writer/editor can either leave to the reader the entire work of this mental transformation, or the writer/editor can do some of this processing, in advance, on behalf of the reader. Whether working with image or raw text, the transformation is the same, the extraction of a relatively few clear contrasts, separating labeled blocks of information with white space, to create a visually unified generalization.

It is critically important that an author have a specific rhetorical purpose in mind (when selecting from either raw image or raw text) in choosing particular visual contrasts and in creating an overall visual generalization. This point is further illustrated in Fig. 6. Peirce's 10-class system can be presented in different ways visually, each visual-contrast choice showing a different aspect of the logic of the system. The pyramid table in Fig. 4 emphasizes the connection between each of Peirce's roman-numeral classifications and contemporary examples of each type. Fig. 5 (top right) divides the sign types of raw perception/raw action (I–IV) from the sign types of raw text (VIII–X) and shows how diagrams, demonstratives, and indicators mediate between image and text. Three additional presentations in Fig. 6 help show why the 10-class system has exactly the shape that it does.

In Fig. 6, different aspects of Peirce's 10-class system are revealed by different visual presentations: from the top, each corner of the pyramid (I, IV, X) represents the far extreme of decorative, indicative, or informative effect. All other sign types are intermediates between these extremes, as shown. From the center of Fig. 6, Peirce's pyramid can be subdivided into a smaller triangle of **icon** types, a subtriangle of **index** types, and a subtriangle of **symbol** types. (The center type VI is technically also an index but contains iconic and symbolic elements, which is why it is in the central position of the pyramid.) From the bottom of Fig. 6, the inverted pyramid represents a continuum between concrete action (the **low=concrete** point in the pyramid) and two very distinct kinds of abstraction (the **high=abstract** corners), as postulated by Peirce: abstractions from direct experience (e.g., **redness** abstracted from seeing a red ball) versus abstractions from relationships understood but not directly experienced (e.g., understanding that Bob and Ed are **cousins**, where no direct experience defines this understanding: cousins do not **look** or **act** in any perceptually consistent way).

Connections to Previous Research and to Classroom Practice

Visual rhetoric should be taught as the common visual deployment of the **language** of text and graphics; that is, visual rhetoric goes beyond basic document design issues to include the **rhetoric** of both textual visuals and graphics visuals where the author, message, and audience all connect. A problem in the teaching of visuals occurs when we separate graphics pedagogy from text pedagogy where text is what you read and graphics are what you see. Moreover, splitting document design issues from graphics chapters in technical communication textbooks may have helped us to better "see the text" for its visual properties, but it has done very little to help us read all visuals rhetorically or to teach our students to create effective graphics based on the rhetorical situation [6]. As a result, visual deployment consistently defaults to decorative strategies.

> Today, students are most likely adept enough at the rudiments of layout that they will place

> the image effectively on the screen and achieve a nicely-balanced [sic] visual composition. But the image will often be mere decoration, a graphical weight to offset the pull of a text field or a row of buttons. [7, p. 33]

We would emphasize here that if the graphic defaults to decorative image, then the text likewise defaults to image also, meaning that the words will be seen, but the information content will remain largely unprocessed, as in Fig. 5, top left. We would again emphasize that VISUAL means graphics and/or text alike, namely "the ways in which words become images—that is, the ways in which the visual nature of text becomes part of that text's meaning and rhetorical purpose" [8, p. 43]. If the rhetorical goal of the visual is informative, then the author has failed to reach his or her audience by choosing decorative instead of informative visuals (see Fig. 5). Therefore, effective visual rhetoric is more than readability; it is the force of

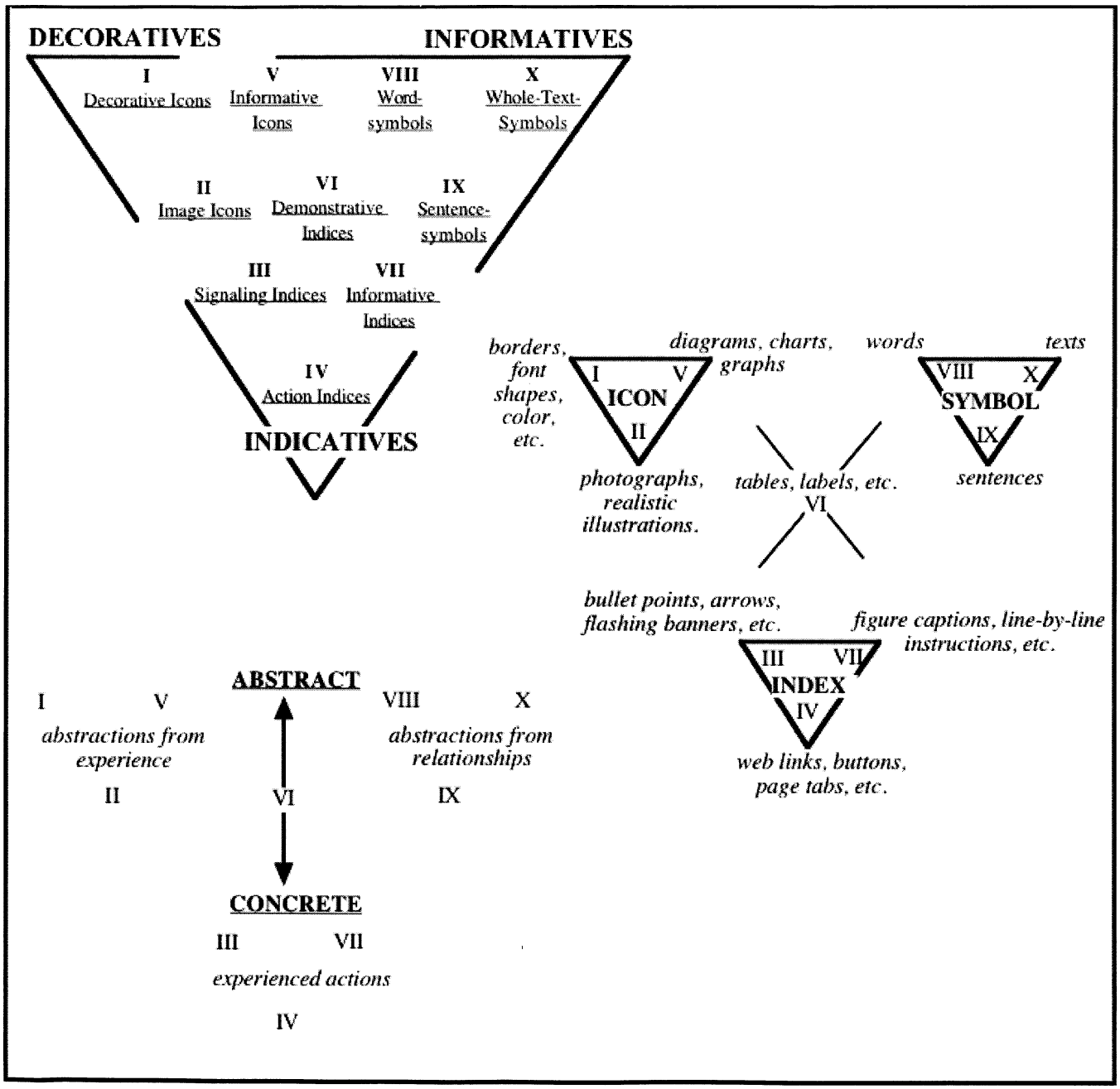

Fig. 6. Distinct visual contrasts chosen for distinct rhetorical purposes.

the message on the audience based on authorial choices matched with audience needs.

We advocate approaching visual rhetoric discussions by addressing graphics first via Peirce's decorative, indicative, and informative strategies and then moving quickly to illustrations of these rhetorical strategies in textual visuals, as exemplified in Figs. 2, 3, and 4. We have used this approach in both our technical editing and visual rhetoric courses with much success, by demanding that our students analyze graphics and textual visuals (think and respond critically based on the rhetorical situation) instead of only reacting emotionally to the images (just "seeing" what they like/do not like). This approach helps them to gauge whether the combination of decorative, indicative, and informative features is aiding or impeding knowledge-making.

One way to initiate students into the treatment of visual rhetoric as rhetoric and not document design only is to discuss **persuasion**, one of the cornerstones of traditional oral (and later, written) rhetoric. Most students are familiar with Aristotle's logos, ethos, and pathos. They may also be familiar with figurative devices such as synecdoche, metonymy, hyperbole, etc. Although students may have been trained to recognize these devices semantically in written text, they may struggle when identifying these in images and photographs or in recognizing how textual elements as visuals (e.g., white space, borders, shading, font style, size, and emphasis) contribute to the rhetorical function of these devices in the service of authorial intention and audience expectations.

Using *Macbeth* posters as an example, Ehses urges designers to be "more conscious of the underlying system of concept formation" [9, p. 187]. Ehses applies both semiotic and rhetorical theory to create persuasive visual rhetoric based on 10 figures of speech, sorted into four rhetorical figures or functions (see Table I).

It is critically important to recognize that although Ehses offers a vocabulary for analyzing visual rhetoric that is familiar to most students who have studied literature, these figures are of relatively little use when the message is informative. As might be appropriate for purely persuasive appeals, all of Ehses's figures serve indicative or decorative strategies, either to provoke an audience to actively notice a contrast or to evoke in an audience some quality of feeling (see Column 3 of Table I).

TABLE I
EHSES'S VISUAL RHETORIC INCLUDES NO INFORMATIVE STRATEGIES (ADAPTED FROM [9, P. 189])

Types	Rhetorical Figures	Strategies
Figures of contrast	antithesis, irony	indicative strategies
Figures of resemblance	metaphor, personification	decorative strategies
Figures of contiguity	metonymy, synecdoche, periphrasis, puns	indicative strategies
Figures of gradation	amplification, hyperbole	decorative strategies

Similarly, Blair uses Benetton ads to show a multi-premised visual argument against racism [10]. These ads use the same rhetorical moves found in oral and written text arguments. Again, the moves Blair describes are decorative evocations of feeling and indicative provocations to action, and these are useful when the goal is advertisement, as is the case with *Macbeth* posters and clothing ads. However, because much of technical communication involves information, we need a visual rhetoric system that also includes informative strategies. Such would include systems of comparison simultaneous with contrast, explanations by analogical resemblance, models of causes and their contiguous effects, and measurements that allow gradation to be quantified. Texts and graphics that include these informative kinds of rhetorical figures must both be carefully organized visually, using the same kinds of diagrammatic principles.

When authors and technical illustrators move away from decorative/indicative images, they move into the informative-cognitive realm. Image strategies work well for literature and advertising, but technical communicators must make the move to diagrammatic, informative strategies in nearly all visuals—text and graphics alike—for technical informative purposes. This kind of diagram-based rhetoric was effectively pioneered by McCloud, who employed a comic-book format in his book *Understanding Comics* to demonstrate his primary thesis: that cartoons are more effective than images to communicate ideas because of their persuasive minimalist "amplification through simplification" approach.

> When we abstract an image through cartooning we're not so much eliminating details as we are focusing on specific details. By stripping

> down an image to its essential "meaning," an artist can amplify that meaning in a way that realistic art can't.... Cartooning isn't just a way of drawing; it's a way of seeing. [11, p. 30-31]

In Peirce's categorization of visual types (Figs. 4, 5, and 6), it becomes apparent that cartoons are a kind of diagram, specifically diagrams deployed to create narrative. What McCloud says about the conceptual power of cartoons versus images applies equally to diagrammatically organized text (e.g., a text formatted as a comic book) as opposed to any visually undifferentiated block of text (e.g., a traditional scholarly treatise, page after page of block text with few paragraph breaks). Raw images and block text alike do not "pass easily into the realm of ideas" [11, p. 91].

We are certainly not the first to advocate a combined semiotic system of text and graphics in order to improve visual literacy. Stroupe, for example, argues for a hybrid literacy by connecting words and images dialogically [12]. Dragga and Voss also mention the need to better integrate words and pictures but specifically with the goal of improving ethics [13]. Horn's semantic fusion likewise encourages the rhetoricity of text and visuals, which may be accomplished through a multiple integration of such rhetorical devices as metaphor, metonymy, and synecdoche [14].

To these proposals, we now add the clarification that combining graphics and text is not actually a hybridization, nor an integration, nor a fusion of inherently distinct rhetorical types. Both graphics and text are visuals to begin with and are governed by the same rhetorical principles, specifically the principles enumerated by C. S. Peirce. This tutorial is simply the latest in a series of studies which have applied Peirce's principles to various problems in contemporary technical communication [15]–[21].

CONCLUSION

The purpose of this tutorial is to provide professional communicators, students and practitioners alike, with a basic three-pronged approach to visual rhetoric based on the rhetorical functions of decorative, indicative, and informative strategies. These strategies are governed by the same principles in all visuals, in both graphics and text.

Combinations of these primary elements elicit more complex goals/functions such as when decorative and indicative strategies combine to serve the desired goal of persuasion: readers are made to feel a certain way about a topic by means of the feeling-evoking decorative forms, and then readers are led to act a certain way (e.g., to buy a product, or attend a performance, or vote for a candidate) by means of action-provoking indicative forms. In contrast, indicative and informative strategies combine in other ways to serve the distinct goals of technical instructions: readers are led to act through the bulleted steps indicated in the instructions (e.g., to operate a piece of machinery), but these actions must be guided by clear information, tips, notes, and explanations in the instructions, invariably best encapsulated in some diagrammatic form.

Textual and graphic diagrams best serve the purposes of technical information while decorative/indicative images best serve the purposes of persuasion, to evoke feeling and provoke actions. In this tutorial, we have emphasized this critical difference between images and diagrams, a distinction largely overlooked in prior treatments of visual rhetoric which have been primarily image-based, primarily decorative-feeling and indicative-action based, and therefore less applicable to the communication of technical information.

In conclusion, we would illustrate this primary distinction between decorative, indicative, and informative visual display with a thought experiment suitable for classroom presentation.

The instructor places any kind of odd-looking gadget on the table in front of the class and asks the students to imagine that this is a working cold-fusion device. Immersed in a bucket of ordinary tap water, this one unit will produce a constant current of electricity but only barely enough to power the average home (say, for convincing effect, 12 volts at 50 amps). Emphasize that there is just this one working device in the whole world, perhaps created by space aliens and beyond anyone's ability to figure out how to reproduce it. Emphasize that, if this one device cannot be reproduced, its monetary value is limited to the average home's monthly electric bill plus whatever admission you might charge people who would pay to see it for themselves.

The class should be asked to compare the relative effects and the relative value of each of these distinct representations of the cold fusion device:

- pure decorative—a poem about the device, or an impressionistic painting of it

- decorative/indicative—a photograph of the device, or a detailed verbal description;
- pure indicative—a checklist of all the identifiable parts of the device, or separate photographs of the parts from various angles;
- indicative/informative—a list of all parts of the device, with step-by-step instructions on how to make each part from materials available at any hardware store, and instructions on how to put the parts together, with diagrams showing very clearly the manufacture and assembly of parts;
- pure informative—an explanation of the principles operating in the device, showing why commonly found materials would generate a fusion reaction if combined in the right way.

It should be noted that each information type, even purely decorative art, has marketable value. Decorative/indicative photographs or descriptions would be particularly useful in a promotional brochure, if one were charging admission for people to come and see the device. Scientists and engineers might pay for access to a detailed parts list and documentary photographs of those parts.

It should be plain, though, that instructions for assembly of the device would be infinitely more valuable, and a clear explanation of the principles operating in the device would be more valuable still, infinity squared as it were, since those principles might lead to the invention of other technology even more valuable than cheap electricity.

But this is the final, critical point: it is relatively easy to separate graphics and text in the decorative mode, less desirable but possible to separate graphics and text in the indicative mode, but practically unworkable to separate graphics and text in the informative mode.

Poetry works well enough in the absence of illustration, drawing, painting, or photography. Illustrations, drawings, paintings, or photographs in turn may function, as decorative art, without any text as caption. It becomes somewhat difficult, though still possible, to separate graphics and text in the indicative mode. A verbal checklist of parts might be useful without any indicative photographs of the parts, and photographs of the parts might be identifiable without the verbal checklist, but surely any researcher would prefer to have both. Once we enter the informative mode, however, it becomes impractical to imagine diagrams working without textual explanation, or textual explanation working without diagrams, or graphs, or tables of some kind.

In forms of communication with the highest value, the text and the graphics must be one.

REFERENCES

[1] C. Handa, Ed., *Visual Rhetoric in a Digital World: A Critical Sourcebook*. Boston: Bedford/St. Martin's, 2004.

[2] M. Solomon, "The power of punctuation," in *The Idea of Design: A Design Issues Reader*, V. Margolin and R. Buchanan, Eds. Cambridge, MA: MIT Press, 1995, pp. 113–117.

[3] R. Barthes, "Rhetoric of the image," in *Image, Music, Text*, S. Heath, Ed. New York: Hill and Wang, 1977, pp. 32–51.

[4] G. Kress and T. van Leeuwen, *Reading Images: The Grammar of Visual Design*. New York: Routledge, 1996.

[5] C. S. Peirce, *Collected Papers*, C. Hartshorne and P. Weiss, Eds. Cambridge, MA: Harvard Univ. Press, 1935, vol. 2.

[6] S. A. Bernhardt, "Seeing the text," *College Composition Commun.*, vol. 37, no. 1, pp. 66–78, 1986.

[7] M. S. Shauf, "The problem of electronic argument: a humanist's perspective," *Comput. Composition*, vol. 18, no. 1, pp. 33–37, 2001.

[8] J. Kalmbach, "The ransom note fallacy and the acquisition of typographic emphasis," in *Working With Words and Images: New Steps in an Old Dance*, N. Allen, Ed. Westport, CT: Ablex, 2002, pp. 43–56.

[9] H. J. Ehses, "Representing Macbeth: A case study in visual rhetoric," in *Design Discourse: History/Theory/Criticism*, V. Margolin, Ed. Chicago: Univ. Chicago Press, 1989, pp. 187–197.

[10] J. A. Blair, "The possibility and actuality of visual argument," *Argumentation Advocacy*, vol. 33, no. 1, pp. 23–39, 1996.

[11] S. McCloud, *Understanding Comics: The Invisible Art*. New York: Harper Collins, 1994.

[12] C. Stroupe, "Visualizing English: Recognizing the hybrid literacy of visual and verbal authorship on the web," *College English*, vol. 62, no. 5, pp. 607–32, 2000.

[13] S. Dragga and D. Voss, "Cruel pies: The inhumanity of technical illustrations," *Tech. Commun.*, vol. 48, no. 3, pp. 265–274, 2001.

[14] R. Horn, *Visual Language: Global Communication for the 21st Century*. Bainbridge, WA: MacroVU, 1998.

[15] A. Manning and N. Amare, "Visual-rhetoric ethics: Beyond accuracy and injury," *Tech. Commun.*, vol. 53, no. 2, pp. 195–211, 2006.

[16] ——, "Using visual rhetoric to avoid PowerPoint pitfalls," in *Int. Professional Communication Conf. Proc.*, 2005, pp. 281–287.

[17] A. Manning, "What is thought?," *IEEE Trans. Prof. Commun.*, vol. 44, no. 1, pp. 50–53, Mar. 2002.

[18] ——, "What is explanation?," *IEEE Trans. Prof. Commun.*, vol. 44, no. 1, pp. 53–57, Mar. 2001.

[19] T. L. Chambers, A. Manning, and L. J. Theriot, "A new theory for the assignment of members to engineering design teams," presented at the Proc. ASEE Gulf-Southwest Annual Conf., Las Cruces, NM, 2000, Paper 76B2.
[20] A. Manning, "Error and the growth of technical understanding," *IEEE Trans. Prof. Commun.*, vol. 42, no. 2, pp. 123–127, Jun. 1999.
[21] ——, "Interface: Scott McCloud's understanding comics," *IEEE Trans. Prof. Commun.*, vol. 41, no. 1, pp. 66–69, Mar. 1998.

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