VISIBLE LANGUAGE 35.2

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ABSTRACT

Historically, much critical discussion, particularly among typographers, has centered on the role typographic form plays in conveying meaning. Beatrice Ward's image of the crystal goblet, evoked in a 1932 essay of the same name created a framework for considering the ways in which value and meaning are assigned to a text based not only on what is written, but how it was written. While Ward was primarily concerned with the dynamics of letterform and legibility, this essay attempts to extend her metaphor into the realm of social difference by exploring the myriad ways in which spaces of cultural inclusion and exclusion are mediated via typographic form. Within such an argument, qualities of transparency and lightness attributed to the crystal goblet operate as agents of invisibility for non-standard speakers, or a whole host of "others" that fall outside of the normalizing boundaries of linguistic standardization supported by Ward's image of an undifferentiated typographic surface.

The discussion begins by tracing historical precedents for the marking of social difference through distinctions in typographic form. Typefaces from *Jim Crow* to *Tiki Magic* demonstrate how the "display" of otherness relies on the historicizing mechanics of cultural standardization. Similarly, an analysis of pictorial trademarks developed in the mid- to late-nineteenth-century reveal how fractured letterforms served as the visual equivalent to the "broken" English of a growing immigrant population. Finally, a connection is made to the ways in which contemporary software, through specified feature sets and "default settings," supports a long tradition of representational standardization.

SURROGATE MULTIPLICITIES: TYPOGRAPHY IN THE AGE OF INVISIBILITY

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I wonder about the way in which class often overdetermines our relationship to design.
Bell Hooks

1
TRACING THE INVISIBLE

Beatrice Ward's 1932 incantation "The Crystal Goblet" invokes the images of transparency and lightness as purveyors of an enlightened typographic project. Utilizing a form calculated to reveal rather than hide "the beautiful thing which it was meant to contain," the typographic crystal goblet proposed by Ward was not only functional but virtuous as well, implying an inherent, although hardly unproblematic connection between form and the moral sphere. Historically, much critical discussion, particularly among typographers, has centered on the role typographic form plays in conveying meaning, as Ward's valorization of transparency as a means of semantic revelation no doubt demonstrates. Far less attention, however, has been given to an analysis of transparency and lightness as agents of invisibility for non-standard speakers, or those who fall outside of the frame of "the beautiful thing" Ward's crystal goblet was meant to contain.

One way of thinking about this concept of *invisibility* is to consider the phenomena of the typographic visual "voice-over," which constitutes a national symbolic environment, as well as the organic process by which a standard "voice" is generalized across an entire range of cultural expression. [Template Gothic, Univers, Century Schoolbook] The standard typographic voices we are accustomed to are utopian, belonging nowhere, regionless, without accent. [Helvetica, Bell Gothic, Interstate] Seemingly transparent, these forms offer up representations of the generic, the symbolic, the superficial and the stereotypical. [Citizen, Democratica, Frathouse] In the case of the visual voice-over, language not only marks (or unmarks) identity, but functions as a kind of cultural border as well. As Dick Hebdige notes,"...there can no longer be any absolute distinction between these two terms (form and content) and the primary recognition that the ways in which things are said – the narrative structures employed – impose quite rigid limitations on what can be said."[1] Taking Hebdige's narrative structures to include both syntactic and semantic elements of the written word, an analysis of the systems of subjectivity at play within typographic discourse can reveal the myriad ways in which visual form supports structures of cultural standardization, marking exclusionary distinctions between standard and non-standard speakers.

In order to discuss typography as a system that marks social difference, it is important to remember that from earliest times the inscription of language by human hands involved practices in which value and meaning were

assigned not to just *what* was written but *how* it was written.[2] In second century Rome, for example, three formal writing systems existed for the inscription of texts. Monumental capitals *(capitalis monumentalis)* were used for architectural inscriptions celebrating imperial accomplishments and conquests. Rustic capitals *(capitalis rustica)*, an extremely condensed version used to conserve space on pages of costly papyrus, were used on political campaign material and outdoor advertising, while a third writing form, cursive or the uncial form,[3] was used "by the people" for ephemeral, day-to-day forms of written exchange. Thus, within this complex, yet clearly politicized hierarchy, the value of the text, and hence the status of the speaker, was marked by the shape of its letterforms.

This tradition of marking social difference through distinctions in typographic form continues today, and is particularly apparent in the case of environmental signage (*figure 1*), where we make immediate judgments about social class, ethnicity, regional background and a host of other social characteristics based on the sign's typographic design. Variations in syntax – either through exaggeration or "error" – immediately place the formalized (and hence politicized) sign in opposition to a correct or standardized version aptly characterized by the qualities of neutrality intrinsic to Ward's crystal cup. Forms eschewing this prized cultural transparency are labeled – by designers, most often – as forms of "visual

Figure 1

New Orleans, Louisiana. Photo by Lauren Sanders, 1998

Austin, Texas. Photo by Patricia Ramos, 1999

dialect," and can frequently be found clustered together under the undifferentiated heading *vernacular*.[4] Simple distinctions between "high" and "low" aside, this categorization of form is one based primarily on the concept of deviance, although linguistically speaking, dialects are not considered deviant forms of language at all, but simply different systems, with distinct subsets of form.[5]

Yet unlike standard dialects, which are largely defined by an *absence* of socially stigmatizing elements, vernacular varieties seem to be *characterized* by the presence of these same structures. As a result, language structures that fall outside of generic, prescriptive norms offer an affront to standardized taste; vernacular forms not only represent a kind of stigmatized visual *faux pas*, but tend to call into question the quality of the crystal from which Ward's unblemished cup was cast.

Further, because notions concerning the sanctity of language are intimately bound up with ideas of social order, typographic forms that deviate from a prescriptive discourse often incite suspicion on the part of those who wish to keep the boundaries of standardization intact. This should come as no surprise for violations of authorized codes – in this case typographic ones – through which the social world is organized and experienced have considerable power to provoke and disturb. As Levi-Strauss has noted, "...in certain primitive myths, the mispronunciation of words and the misuse of language are classified along with incest as horrendous aberrations capable of 'unleashing storm and tempest'."[6] Perhaps the classification of non-standard forms as *vernacular* is simply an attempt to avoid unleashing our own storm and tempest on the typographic front.

In street and alley what strange tongues are loud, accents of menace alien to our air, Voices that once the Tower of Babel knew.

Thomas Bailey Aldrichm "Unguarded Gates," 1895

2
AGENTS OF STANDARDIZATION: WRITING THE OTHER

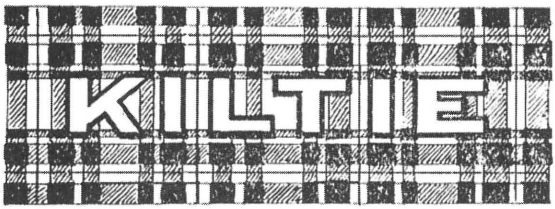
Demands for linguistic standardization had been made from the earliest days of printing, which made variations more obvious by distributing them more widely. These demands became particularly insistent in the nineteenth century, when decorum of all kinds was highly prized.[7] The flood of books and articles published in the 1880s called for "a process of more or less conscious, planned and centralized regulation of language" in which "new elements threatening to enter the language are limited, and...variants within the language are hierarchized and sometimes eliminated."[8] Between the 1880s and the 1920s, urbanization and mass emigration brought together a range of languages, dialects and idiolects previously separated through both geographic space and social difference. Linguistic criticism, spurred on, in part, by the publication of the *Oxford English Dictionary* (OED),[9] became a way of checking social mobility and racial progress. As Michael North notes in *The Dialect of Modernism: Race, Language and Twentieth Century Literature*, "...the true purpose of the

standard language movement was to focus attention on the alien, both foreign and domestic, and to provide a means of discriminating where other methods were beginning to fail. Even today, criticism of speech is often, if not always, a way of expressing other social prejudices that polite discourse overtly disavows."[10]

Yet while linguistic borders were being fiercely defended against the forces of immigration and class mobility, visual representations of non-standard speakers flourished, albeit within the narrowly defined borders of the "exotic" or "abbreviated" other. Trademarks from the early twentieth century[11] offer an excellent example of the use of non-standard forms (or forms that deviate from accepted convention) to mark social, racial and ethnic difference, operating as forms of visual shorthand for specific cultural categories. In addition to the use of highly stylized imagery denoting entire immigrant groups (the slightly drunk, impish leprechaun for the Irish; the bold fez for groups of Middle Eastern origin (*figure 2*), the typography appears to revel in its distance from conventionalized notions of beauty and legibility popularized by typefaces such as *Bodoni*, *Caslon*, and *Baskerville*. This distance is created through the use of the "broken" syntax of letterforms or speech ("Navajo," "African Pie," "Meri-kan") (*figure 3*) or through some "exotic" embellishment, such as the design of letters that evoke the calligraphic brushstrokes of Asian[12] or Arabic writing (*figure 4*). In these examples we can see how the "wild motley throng" that crowds in through the "unguarded gates" of Thomas Bailey Aldrich's 1895 poem are given representation through a literal cracking of Ward's crystal cup.

Fire extinguishing compound, May 5, 1925

Men's shirts, July 17, 1923



Fresh lemons, May 4, 1920

Peanuts, May 4, 1920

Candy, January 27, 1925

Figure 3

Fractured letterforms serve as the visual equivalent to the "broken" English of a growing immigrant population. The eye dialect at play in the "Meri-Kan" trademark indicates another popular device used to mark racial difference in non-standard speakers.

Textile, May 25, 1926

Watermelon sections, February 27, 1923

Women's dresses, May, 1926

Figure 4

Pseudo-Asian type: a popularized and repeated convention of representation. Note the range of products and the consistency of the "exotic" embellishment.

Mops, July 24, 1923

Lamps, December 17, 1929

Silk fabrics, May 25, 1926

Chinese Mission Society Monthly Magazine, December 10, 1929

In addition to the iconographic and pictorial representations of advertising display, a number of alphabets developed in the mid- to late-nineteenth-century were those designed and named to represent various "others" on the basis of stereotypical or non-Western forms.[14] It is not too much of a stretch to consider such culturally thematic alphabets as the visual equivalent of accented spoken English, or forms of visual dialects[15] imbued with socially stigmatizing form. In fact, the introductory text to a popular type specimen catalog – *Morgan Press, Linotype and Ludlow Specimens, 1917* – reads: "In our specimen catalog you will find the modern types along with the pioneers. Here are the light-lines, black letters, shaded, extreme ornamentals, scripts, cursives, bizarre, condensed or extended letters, and the gothics all making a United Nations of types that may do some uncomfortable squirming when packed together so closely." Notable fonts include *Chinese Wong*, *Japanesque*, *Samoa*, *Hobo*, and *Jim Crow*. Fonts such as *Law Italic* and *Society Script* present the oppositional standard (in this case, white, upper-middle class) against which the typographic "otherness" of the non-standard speakers was measured (*figure 5*).

English speaking foreign alphabets – these designs, used with appropriate copy, are highly successful in establishing national identity. If you can't speak a foreign language you can at least get the thrill of writing one (in good old English). Photo-Lettering's *One Line Manual of Style*, 1960-1988[13]

It is, of course, easy to dismiss these examples as historical artifacts of a time and place that had much to learn about issues of cultural representation. In fact, Ward's model of transparency alludes to a form of visual discourse that, for all intent and purpose, erased difference through a formalized homogeneity. Yet, surprisingly despite a radical critique of nineteenth century practices and a cultural reevaluation of modernism, today examples of culturally thematic alphabets abound, albeit, covertly disguised through parody and pastiche. But first, a bit of history.

In the 1990s postmodern typographic critics reveled in the demolition of Ward's metaphor, literally turning the transparent surface of the argument inside out in an attempt to reveal the fluidity of the relationships between form

and meaning. Privileging context, or point of view, as the ultimate barometer of sense-making, these critics proposed a typographic model embracing opacity and anti-mastery, yielding forms which denied the existence of any archetypal letter, whether crystal, gold or glitter encrusted. Barry Deck's *Template Gothic*, P. Scott Makela's *Dead History* and Zuzana Licko's *Citizen*, for example, were all attempts to imbue typographic with social and narrative histories. What is surprising to note, however, is that while these designers situated their practice in opposition to Ward's crystal model by becoming involved in issues of representation – on the surface at least – their work failed to challenge the inherent quality of *invisibility* found in Ward's standardized model.

A heady claim, to be sure, but an examination of the typefaces sold by two popular contemporary font houses (House Industries and Emigre) not only supports the argument, but embellishes it as well. We begin with House Industries' class (un)conscious font collection "Bad Neighborhood," "nine fonts from the bad side of the tracks," including *Poorhouse*, *Condemdhouse*, and the racially encrypted *Crackhouse*. And then there is "Scrawl," another House Industries box set (with t-shirt!) delivering *Ashyhouse* and *Nastyhouse* straight from their suburban ghetto to yours, all for the special price of $179. Two recent additions, the font kits *Tiki* and *Hardcore*, extend the practice of visualizing the exotic through the addition of a clip art library that can be used as shorthand for entire subcultures. Sadly, the nineteenth-century representation of the pickaninny seems less than a distant cousin here.[16] (*figure 6*)

Emigre's font catalog, on the other hand, while avoiding the questionable ghetto pastiche of House Industries, presents an exclusionary narrative of a different sort, reveling in the mythology of the Fall of Western Civilization. Read: *Citizen, Dead History, Democratica, Dogma, Emperor, Missionary, Senator, Suburban, Universal.* In the face of this postmodern foundry's post-colonial positioning, the story of a united white front may begin to cloud the virtuous clarity of Ward's crystal vessel.

Thus, the opaque and highly discursive spaces created by these typographers presents a model of representation equally transparent and damning in its pursuit of invisibility of the other. This practice, dramatized by contemporary type designers' love affair with appropriation and reinscription of subcultural forms, has rendered the term *vernacular* both formally vacuous and semantically vacant. Formalized as slang-like riffs on a now familiar alternaculture, typefaces like *Crackhouse* and *Malfunction* merely give the appearance of inclusion; they are culturally irrelevant beyond the thinly veiled message of urban-suburban commodification presented.

Figure 5

CHINESE WONG

JAPANESQUE

Samoa

HOBO CAP

JIM CROW

Law Italic

LAW ITALIC

Society Script

Figure 6

POORHOUSE

Condemdhouse

CRAcKhouse

TIKI HUT

TIKI PALMS

VANDALISM

Malfunction

NATIVE ART

HARDCORE CLIP ART

It was perceived that in thus abbreviating a name one narrowed and subtly altered its meaning, by cutting out most of the associations that would otherwise cling to it ... the associations called up by a word like "Minitrue" are fewer and more controllable than those called up by "Ministry of Truth." This accounted not only for the habit of abbreviating whenever possible, but also for the almost exaggerated care that was taken to make every word easily pronounceable.
George Orwell, *1984*

3
IDEOLOGY IN TYPOGRAPHY: SYSTEMS OF SUBJECTIVITY

Popular and prevailing usages, as surely as imposed elite usages, reflect an ideology or a manipulation of ideas and symbols for social or political gain. Overt representations of "otherness," as seen in culturally thematic alphabets like *Jim Crow* and *Chinese Lap Song*, present obvious examples of typography's claim to subjectivity. But there also exist more covert, and perhaps more powerful, instances of the written word's ability to mark ideology through typography. One such example focuses on the practice of non-capitalization to signify the historical weakness of a minority group. In standard English usage, the proper names of national and religious groups are traditionally marked with a capital letter. To deny a capital letter to the name of an ethnic group "symbolically diminishes the social status of the group...by the word magic of diminishing the initial letter. To deny, say, *Jew* the capital initial is clearly a slur..."[17] The user concedes the pronunciation and the spelling, but in print the dignity of the name is taken away.

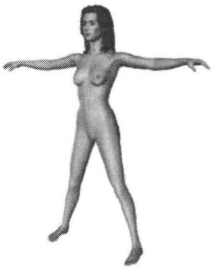
In Unkind Words: Ethnic Labeling from Redskin to Wasp, Irving Lewis Allen recounts the story of the most famous case for non-capitalization in American English: that of the term *Negro*. I quote him at length:

> The name began its centuries-long career with a lower-case initial but after Reconstruction aspired to a capital initial. In the decades around 1900, *colored* competed with *negro* for the preferred, proper name for the group. *Afro-American*, first recorded in 1853, was seriously proposed in 1880, but it was not taken up, and it was to be eighty years or more before it was to gain a measure of use. Finally, *negro* emerged as the proper name preferred by many blacks and by white liberals. Settling on the name was not to be the end of it. Soon, a campaign began for capitalizing the initial, and the debate turned on ideology as much as anything. A side debate was over whether *negro* was a relative color description, like *fair*, *dark*, or for that matter *black* and *white*, and hence had no claim on capitalization. Or was *negro*, in effect, a national name, like Englishman, German, or Spaniard, or a group name, like *Jew*, and so should be capitalized?[18]

Allen points out that the struggle for capitalization signifies the changing status of historically oppressed groups. He explains that non-capitalization has tended to signify the historical weakness of a minority group and the decapitalization has sometimes signified efforts to repress competing groups. Allen even makes a case for the dangers of typographic asymmetry, where one name, say *White*, is capitalized, while the other, *black*, is not. While symmetry is benign – whether or not both names are capitalized is a trivial matter – any attempt to capitalize one name and not the other implies a political gesture or ideology in typography.[19]

Figure 7

Figure 8



Ideal Female

Ideal Male

African-American Male

Asian-American Male

The diversity of characters included in later versions of the software were based on the recognition of a business opportunity...the decision for different races was probably motivated more by the feeling that it would sell well, than by any sort of noble racial equality feeling.

Director of Sales, MetaCreations, developers of Poser

4
STANDARD FEATURES

At this point, something of a radical departure is in order as a means of supporting an argument against transparency and lightness as a formalized language of representation. As we have seen, the marking of social difference through distinctions in typographic form has historical precedent; typefaces from *Jim Crow* to *Tiki Magic* demonstrate how the "display" of otherness relies on the historicizing mechanics of cultural standardization. Yet these forms of representation are rather overt, and certainly require no great effort on our part to identify and decode. We are then left to consider whether other, more subtle spaces of representation exist that parallel the typographic agents of standardization so far discussed.

One such space can be found in the "default settings" of the software we use to create forms of visual communication, from general use products such as Microsoft Word, to highly specialized graphics programs such as Poser, which allows users to design and animate human figures. The term "default settings" refers here to the set of representational

constraints and conditions imposed by the software itself – a set of invisible assumptions rarely noted by users. Microsoft Word, for example, assumes upon opening that users wish to write on a page 8.5 by 11 inches in measurement, with one inch margins on three sides, flush left ragged right alignment, font Times Roman. Netscape, on the other hand, assumes that "home" is always in the same place (nomadic living is not encouraged), and Poser, the 3D animation and rendering software referenced above, assumes that the "ideal adult" is male and that his genitalia are optional (*figure 7*). The significance of these assumptions are often negligible – page size or margin increments hardly matter – but in the case of imaging software, or software that packages representations of the human body, the neutralizing quality of the visual voice-over is profoundly evident.

In order to understand how Poser limits representation through the codification of human figures found in its libraries of predesigned models, we can begin by asking a few simple questions. First, how does Poser define the visual grammar of human form? For example, what did the designers of the software consider a visual "ideal," an important concern since several of the models are named using this convention. Second, how did they define "male" and "female" in the language of their figures; third, was race considered or assumed? (*figure 8*) A lengthy correspondence with the designers and animators of Poser's original figure sets revealed a very specific group of visual source materials and references. Andrew Loomis' 1943 book *Figure Drawing for All It's Worth* and Preston Blair's work in animation were cited as important resources (*figure 9*).[20] Moreover, the designers were quick to include comic books and pin-up calendars as secondary sources of inspiration, citing a special interest in representations of "heroic," "pin-up" and "classical" figures. Owing a heady debt to these limited forms of representation – forms which offer extremely prescriptive visual norms – the resulting Poser source universe is one inhabited by an inordinate percentage of overtly generic Caucasian models.

Despite several of the designers' vehement claims to the contrary, a standard grammar has clearly been established by the body sets selected for inclusion in the software's library of pre-fabricated geometries. Specifically, in Poser, standard bodies are Caucasian, twenty-something, bald and beautiful, a formula embracing the prized transparency of the generic and utopian fantasy articulated by the typographic crystal goblet previously discussed. As a result, all bodies included in the so-called "add-on" collections (these include added nationalities, elderly and overweight people, as well as an alien), are automatically perceived as non-standard, as "other," and always in direct opposition to the standard Caucasian, twenty-something, bald and beautiful form (*figure 10*).

In addition, an analysis of the underlying wire-frame architecture of the African-American and Asian-American models reveals an absence of unique geometry; in other words, the design of the African- and Asian-American figures were created through a cursory manip-

Figure 9

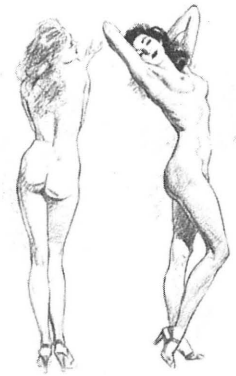


Figure 10

Standard Female

Non-standard Females

Non-standard Females

Businessman

Workman

Spandex Man

ulation of the spatial and volumetric coordinates of the software's original Caucasian models. Like the visual dialects discussed in the context of nineteenth-century linguistic standardization, these figures owe their non-standard positioning (and subsequent transparency) to their distance from a universal norm, reinforcing a representational practice predicated on a visually explicit form of cultural abbreviation.

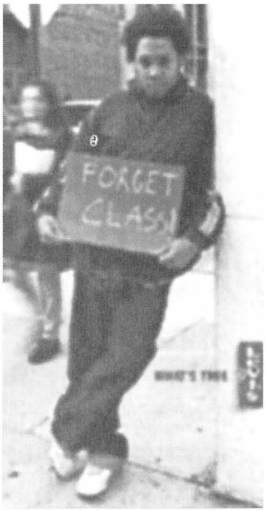
Yet it is not only forms themselves that set up this structure of difference. A critical reading of the language used within the software libraries to categorize its forms reveals that the simple constraint of naming has profound implications. We can begin with the add-on collection titled "18 Perfect People," which muddies up the field by confusing race (Asian Woman) and nationality (African-American Woman). Moving on to the most recent collection of male and female characters, we quickly see that men are identified by their occupations or attitudes (race car driver, golfer, rebel man, tough male) and women, most often, by their appearance (full-figured woman, casual woman, businesswoman). Moreover, female figures are not assigned occupations or hobbies in the same way that male figures are: the men in the collection aspire to be golfers, workmen, crewmen and race car drivers, while the *one* role assigned to a female figure beyond that of businesswoman is that of Mother Nature. Issues of class are hinted at in the selection of dress and occupation, and casual references to sexual preference surface on the rarest of occasion. In the case of both male and female models, then, representation has been limited through the language of naming, a constraint often overlooked by users of the software.

As we have already seen in the case of the word "free," words which had once borne a heretical meaning were sometimes retained for the sake of convenience, but only with the undesirable meanings purged out of them. Countless other words, such as honor, justice, morality, internationalism, democracy, science, and religion had simply ceased to exist. A few blanket words covered them, and, in covering them, abolished them.
George Orwell, *1984*

5
BORDERS OF THE CORPORATE VOCODER

Now let's return for a moment to the ideas of transparency and lightness previously discussed. When Ward proposed a parallel between the crystalline cup and the neutrality of the typographic surface she was, no doubt, neatly side-stepping issues of power, agency and mediation by now overly familiar. Recent design discourse, in fact, has recast transparency as the worst form of cultural conformity; this, despite the fact that the territory of once marginalized visual outposts has been wholly mined by a predatory design mainstream. From digital font houses such as Plazm, House Industries or Garage Fonts, to the imagery of M & Co., Pentagram or Reverb, the "look" of the marginalized other is everywhere.

Yet nowhere has this predilection for erasure been more apparent than in the corporate "voice-over" constituted by Levi's newest print ad campaign, "What's True?," where twenty-something types are pictured holding red placards on which they have been given the directive to inscribe their "own truth." With truths ranging from "I want to be



happy," to "Forget Class," to "Conformity breeds mediocrity," the campaign relies on personal revelation as a form of corporate rhetoric: the language of the tribe broadcast by text and image back to the population, this time having been run through a corporate vocoder. Perhaps not surprisingly, the use of self-captioning in the context of a corporate ad campaign like this one fails to separate typographic subjectivity from the vice-like grip of corporate invisibility. By failing to make a distinction between individual truth and a commodified representation of that truth, Levi's erases the very individuality it purportedly supports. In the end, the device of self-captioning does little more than provide an illusion of empowered, non-standard speech, as it is impossible to escape the frame when Levis has positioned the speaker squarely in its center.

Typographic and other forms of visual representation that fail to meet the requirements of normative expression pose a challenge to the neutralizing forces of the visual voice-over, calling into question the validity of a form of discourse that marks exclusionary distinctions between standard and non-standard speakers. Certainly any such challenge to prevailing norms of standardization can be quite startling, as forms of deviation – whether linguistic, typographic or otherwise – tend to expose the arbitrary nature of the codes which underlie and shape all forms of discourse.[13] As Stuart Hall has written (here in the context of explicitly political deviance): "New...developments which are both dramatic and 'meaningless' within consensually validated norms, pose a challenge to the normative world. They render problematic not only how the world is defined, but how it ought to be. They *breach our expectations...*" In addition, non-standard forms that refute normative codes negate the surface of cultural invisibility through a *rewriting* of standardized boundaries. By refusing containment within the transparent glare of the generic text, non-standard forms claim their own space, on their own terms. Thus, within the boundaries and orientations expressed by Ward's metaphor lies the suggestion that the perfection of the crystal goblet is only an illusion. With some practice we can learn to draw small lessons from unsuspected sources [type specimen catalogs, street signage, default settings] as a way to breach our own expectations about typographic transparency and the boundaries of *invisibility*.

NOTES

1 Hebdige, Dick. 1987. *Subculture: The Meaning of Style.* London: Routledge, 118.

2 Kim, Sojin and Somi Kim. 1993. "Typecast: Meaning, Culture, and Identity in the Alphabetic Omelet," *Lift and Separate: Graphic Design and the Quote Unquote Vernacular.* Barbara Glauber, editor. New York: The Herb Lubalin Study Center of Design and Typography, 31.

3 The term uncial was derived from a derogatory statement made by St. Jerome in the fourth century when he condemned the use of excessively large, inch-high, letters in the writing of manuscripts, claiming it made them clumsy and unfit for use. Drucker, Johanna. 1995. *The Alphabetic Labyrinth, The Letter in History and Imagination.* London: Thames and Hudson, 94.

4 In *Lift and Separate: Graphic Design and the Quote Unquote Vernacular,* Ellen Lupton writes, "The term 'vernacular' has become the common parlance in the design community, referring to a natural, unschooled sensibility free from the self-censorship of modernism...A 'vernacular' is simply a dialect, and every subculture has its dialects, including the subculture of 'high culture.'" *Lift and Separate: Graphic Design and the Quote Unquote Vernacular,* Barbara Glauber, editor. New York: The Herb Lubalin Study Center of Design and Typography, 5.

5 Wolfram, Walt. 1991. *Dialects and American English.* New York: Prentice Hall, 4.

6 Hebdige, *Subculture: The Meaning of Style,* 118.

7 North, Michael. 1994. *The Dialect of Modernism.* New York: Oxford University Press, 12.

8 North, *The Dialect of Modernism,* 13.

9 The 1858 proposal for the OED dictionary rules out of consideration of dialect words more recent than the Reformation, and, in so doing, provides what the OED itself cites as the first recorded use of the phrase "standard language." North, *The Dialect of Modernism,* 12.

10 North, *The Dialect of Modernism,* 13.

11 All trademarks shown come from the *Official Gazette of the United States Patent Office,* a weekly publication issued by the U.S. Department of Commerce, U.S. Patent Office, Washington, D.C.

12 Around 1885, a font called Japanese appeared in England, perhaps the first font to allude directly to Japanese or other East Asian writing. Despite the visual integrity and ingenuity of many of these alphabets, Western letterers' mimicry of calligraphic strokes used by other writing traditions inevitably fails to refer correctly to the ductus, or order and direction of strokes, of the different traditions. Kim, Sojin and Somi Kim. "Typecast: Meaning, Culture, and Identity in the Alphabetic Omelet," *Lift and Separate: Graphic Design and the Quote Unquote Vernacular.* Barbara Glauber, editor. New York: The Herb Lubalin Study Center of Design and Typography, 1993. p32.

13 As Soji and Somi Kim discovered, the text of one line samples in type specimen books reflect cultural stereotypes: "Squaw better paddle her own canoe" (Apache); "Oliental alphabet VELY GOOD" (Bartuska Nisei); "Mosques sultans harems" (Papirtis Shisk-Ka-Bob); "One quart of Russian Vodka" (Papirtis Kremlin). Conti, Gene. 1988. Photo-Lettering's *One Line Manual of Style,* 1960-1988. New York: Photolettering, Inc., 377-379.

14 Conti, Photo-Lettering's *One Line Manual of Style,* 1960-1988, 31.

15 Another type of variation that the resources of English writing make possible is what has traditionally been called eye dialect. This is the spelling of a familiar word in a non-standard form, while maintaining the standard pronunciation. Recurrent examples include *wimmin, sez, bisnes,* and *enuf.* Such eye dialect spellings...serve to hint that the overall tone of speech should be interpreted as different from the tone of conventional speech, usually in the direction of rustic and uneducated. Eye dialect spellings deliberately overstate the ignorance or illiteracy of a character. Weber, Rose-Marie. 1986. "Variations in Spelling and the Special Case of Colloquial Contractions." *Visible Language* 20.4.

16 Perhaps it is appropriate to consider culturally thematic alphabets as a form of visual euphemism? A euphemism is defined as a word that is used to avoid another word thought to be too direct, blunt, harsh or offensive. Significantly, the *Second Barnhart Dictionary of New English* (1980) points out that "a paradoxical feature of euphemisms is that when the character or meaning of what they describe catches up with the euphemism itself they loose their character as substitutes and come to denote the very same unpleasant fact or reality they were meant to disguise." Allen, Irving Lewis. 1990. *Unkind Words: Ethnic Labeling from Redskin to WASP.* New York: Bergin & Garvey, 74.

17 Allen, *Unkind Words: Ethnic Labeling from Redskin to WASP,* 69.

18 Allen, *Unkind Words: Ethnic Labeling from Redskin to WASP,* 69.

19 The Nazi resurrection of Fraktur type offers another historically important example of ideology in typography. Fraktur, a typeface initially prized by the Nazis for its "German-ness," symbolized a totalitarian politics that valued style over content. Not surprisingly, once early victories "encouraged them to look beyond Germany's borders, the Nazis, quickly recognized the usefulness of a plainer, more 'European' style, banned Fraktur on 3 January 1941 as a 'Jewish invention." Ray, Robert. 1988. "The ABCs of Visual Theory." *Visible Language* 22.4, 430.

20 Loomis, Andrew. 1943. *Figure Drawing for All It's Worth.* New York: Viking Press. Blair, Preston. 1994. *Cartoon Animation.* California: W. Foster Publications.

21 Hebdige, *Subculture: The Meaning of Style,* 91.

ETHNOGRAPHIC REFLECTIONS

Nadia Maryniak

Nadia Maryniak received a masters degree in graphic design from the Rhode Island School of Design before traveling the world. In recent email correspondence she quotes Mercy Oduyoye, a contemporary Ghanaian writer: "There is one earth, but many worlds."

Visible Language 35.2
Nadia Maryniak, 154-163

you the anonymous
you who are nameless
identity constructed
these people
the Other
OTHER
different
you the exotic
allow me to
allow me to
allow me to take
to take your picture
to take your image
to make your image
I will take your picture
capture your image
I will take your images
you the voiceless
you without voice
you have no say
no speak
nothing to speak of
you the silent
you the beautiful
you the fascinating and compelling
you the PHOTOGENIC
you make a great subject
you are the subject
you are subject

you are my object
your image – my object
your object – my treasure
your treasure – my souvenir
my beautiful image
permit me to take
your permission to take
my right to take
your permission to keep
I wish to keep
I keep as I wish
I take images from life
I suck images from life
I collect images
I preserve images
I am constructed of images
life's a series of images
you the strange and the wondrous
you give me a thrill
stimulate my senses
my visual sensors
my shutters start snapping
my image receptors happy
hungry, happy, needy, exacting
I do want your image
your image not words
your image not voice
your image not thoughts
your image not needs

I don't want your needs

transaction transacted
encounter enacted
exchanged exchanged
commodity collected
I will borrow without returning
take without repaying
promise without fulfilling
assume without inquiring
impose without replying
collect without owning
judge without trying
I ignore what's not of mine
how can we relate
how can we connect
what voices do we hear
what voices can we share
what do we really know?
you exist as image on film
you are preserved on celluloid
your image is salvaged
your image is more precious than life
more real than real life
you the illiterate
you the speechless
the unalphabetized
what is your name?
your name is a sound
your name is a voice

not an image, an utterance
you are not a text
you cannot write your name
your identification is
your identity your mark
your identity is my image
how do I image you
how do I identify you
how to identify with you
what is your identity?
what is your story?
try to tell me the story
who is your author
who is your voice
who is obliged to you
who is committed
who is responsible
what are your views
where are your views
where are you looking
what do you see?
you are not me
me looking at you
who then am I
who am I
to represent you
who am I
to speak for you
who am I

to know who are you
how to make contact
how to reach you

I have no business here
what am I doing here
who the hell am I here

have I the right to be here?
I have the right
I am the right
I am you are
I am you are
other

I am you're other
I am your other
you must believe
believe you me
I mean no harm
I need to look
I need to see
I have the right
believe you me
I need to look
I must fulfill
my need to look

you have the right
to remain unnamed
you have the right
to remain silent

you have the right
to have a voice

you are to me
revealed to me
you are the accomplice

okay now...pose!
that's it
c'mon now...smile
come visit the land of–
a thousand smiles
a thousand gazes
a thousand snapshots
a thousand pictures with zero words
a thousand wordless pictures
a thousand frames per second
the decisive moment
"frame your subject"
children are others too
cute, innocent, easy targets
shoot frame crop target

film is a witness to its own act over time:
photography acts in the moment.

the camera is a statement
it says...
it says...
it aims
it shoots -click-

the camera is a symbol of power and superiority
a wielded weapon
photography is an act of power and domination
photography is a violent act.

does physical distance define otherness?
(you're getting warmer...)
shoot/frame/crop/target
the telephoto, zoom, macro –
all medium-range weaponry.

photography is –
secrecy – stealth – silent invasion
an act of keeping-the-gaze
keeping,
looking for keeps.
photography is –
an act of .....
reframing repossessing retaking recording
redefining renaming remembering replacing
representing
reality.

finally photography is futile.

second voice:

hey you others way down there!
can I take your picture?

does physical distance define otherness?
(you're getting warmer...)

the telephoto, zoom, macro –
all medium-range weaponry.

secrecy – stealth – silent invasion

do all friends count as others?
are all others my friends – ?

it took me a long time to get over my shyness;
to master it and finally disown it. I guess I'm a pretty
tentative photographer...I'm comfortable taking pictures
of subjects that don't move – like the taj mahal.

mute, inanimate, immobile
insentient

I like my audiences captive and my subjects unaware.
it absolves my conscience and authenticates my product.

the desire – the drive – the impulse
to purge, to transcend this other-consciousness
to redefine the term "significant other"

truisms, myths, and mistakes

I confess.

this is not art photography
do not judge.
this is not about craft, originality, or style
its about re
about reflexivity in
representation.

I confess I get off on photography.
this is not art photography

do not judge.
this is not about craft, originality, or style
its about re–
about reflexivity in
representation.

I confess I get off on photography.

this is a cry to be alive
this is a primal scream
this is a need to live beyond look

do all friends count as others
or are all others my friends – ?

it took me a long time to get over my shyness;
to master it and finally disown it. I guess I'm a pretty
tentative photographer...I'm comfortable taking pictures
of subjects that don't move – like the taj mahal.

mute, inanimate, immobile
insentient

I like my audiences captive and my subjects unaware
it absolves my conscience and authenticates my product.

the desire – the drive – the impulse
to purge, to transcend this other-consciousness
to redefine the term "significant other"

otherness is – a seductive aura of magic
or a barren internal exile.

truisms, myths, and mistakes
I confess.

ABSTRACT

Diagrams are frequently used to communicate relationships between multiple dimensions of quantitative information. Attempts are usually made to simplify complex information and to reduce to a minimum the elements considered. Here I will discuss a different breed of diagrams: one that addresses the increasing need to confront complex issues in all their complexity, and that, more than serving to communicate already existing ideas, would serve to explore new ways of organizing knowledge. Several educational and cultural implications of this conception are discussed.

DIAGRAMMING AS A WAY OF THINKING ECOLOGICALLY

Jorge Frascara

Jorge Frascara is professor and coordinator of Visual Communication design at the University of Alberta in Edmonton, Canada. He has been president of Icograda and a member of the graphic symbols committee of the ISO. He is the author of many articles and of User-centred Graphic Design *(Taylor & Francis, 1997). His current practice and research are concentrated on communications for traffic safety and on the cultural analysis of mass communications.*

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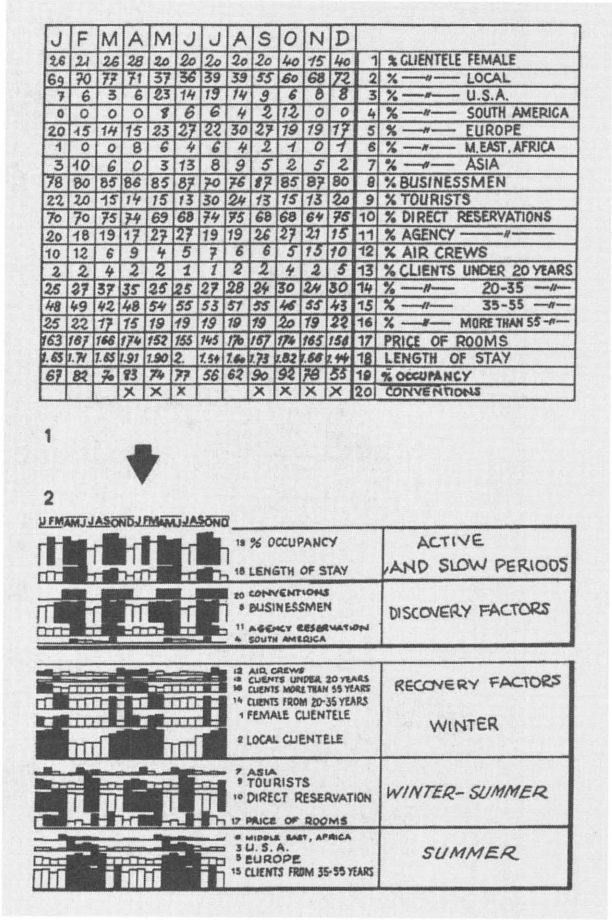
Figure 1



J	F	M	A	M	J	J	A	S	O	N	D		
26	21	26	28	20	20	20	20	20	40	15	40	1	% CLIENTELE FEMALE
69	70	77	71	37	36	39	39	55	60	68	72	2	% —"— LOCAL
7	6	3	6	23	14	19	14	9	6	8	8	3	% —"— U.S.A.
0	0	0	0	8	6	6	4	2	12	0	0	4	% —"— SOUTH AMERICA
20	15	14	15	23	27	22	30	27	19	19	17	5	% —"— EUROPE
1	0	0	8	6	4	6	4	2	1	0	1	6	% —"— M.EAST, AFRICA
3	10	6	0	3	13	8	9	5	2	5	2	7	% —"— ASIA
78	80	85	86	85	87	70	76	87	85	87	80	8	% BUSINESSMEN
22	20	15	14	15	13	30	24	13	15	13	20	9	% TOURISTS
70	70	75	74	69	68	74	75	68	68	64	75	10	% DIRECT RESERVATIONS
20	18	19	17	27	27	19	19	26	27	21	15	11	% AGENCY —"—
10	12	6	9	4	5	7	6	6	5	15	10	12	% AIR CREWS
2	2	4	2	2	1	1	2	2	4	2	5	13	% CLIENTS UNDER 20 YEARS
25	27	37	35	25	25	27	28	24	30	24	30	14	% —"— 20-35 —"—
48	49	42	48	54	55	53	57	55	46	55	43	15	% —"— 35-55 —"—
25	22	17	15	19	19	19	19	19	20	19	22	16	% —"— MORE THAN 55 —"—
163	167	166	174	152	155	145	170	167	174	165	156	17	PRICE OF ROOMS
1.65	1.71	1.65	1.91	1.90	2.	1.54	1.66	1.73	1.82	1.66	1.44	18	LENGTH OF STAY
67	82	76	83	74	77	56	62	90	92	78	55	19	% OCCUPANCY
			X	X	X			X	X	X	X	20	CONVENTIONS

Table and graphic presenting the same information, from Jacques Bertin, 1981, vi.

INTRODUCTION

The topic of this paper is diagramming as a way of thinking. I propose that thinking is highly connected to communication, including communication to oneself, and that, when thinking, processes of visualization alternate with processes of evaluation in a pendular sequence of hunches and judgments in order to build knowledge and opinions.

Diagrams are traditionally used in visual communications to present information. This has been widely discussed and their advantages for some applications have been proven many times, paradigmatically by Bertin through his classic example of the hotel manager (*figure 1*, 1981, vi). Bertin (1983) recognizes three basic functions for diagrams: to record, to understand and to communicate, extending the value of diagrams beyond their more usual function as communication devices (12). Baigie, referring to the illustrations produced by Descartes for his papers on science and mechanics, ponders: "are they merely to help the reader come to grips with the text or, more substantially, are they involved in some way in the creation of knowledge?" (*figure 2*, 90-91). Much has been discussed about the nature of diagrams, their possible strengths and weaknesses and the cognitive processes involved in both their construction and their decoding.

While diagramming as a way of contributing to the process of thinking has been used quite commonly, little of this has been systematically studied, and certainly even less of this has penetrated general education. As a result, picture making has been relegated

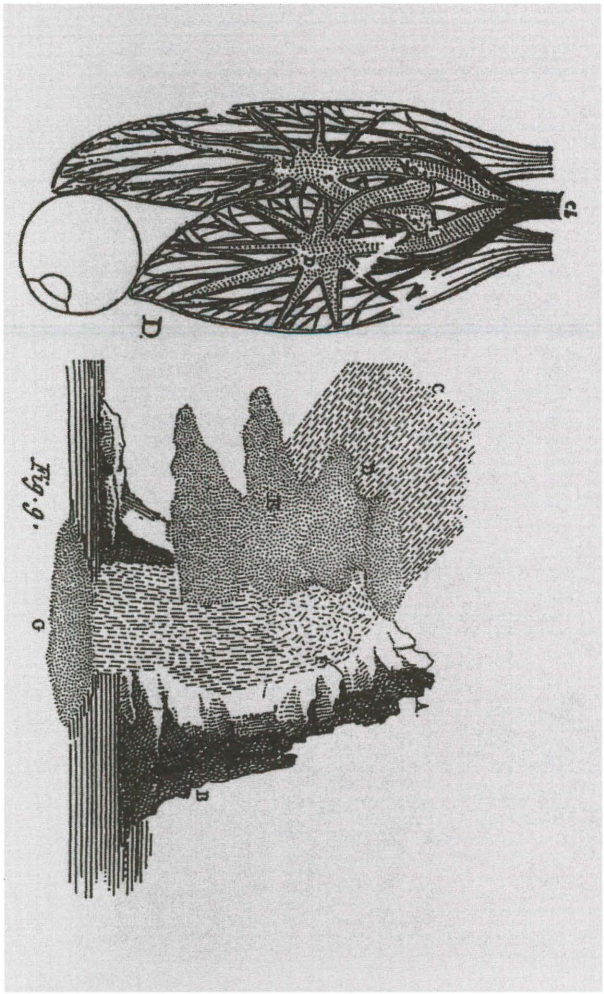


Figure 2

Reciprocal muscle action (René Descartes, 1664) on the left and his 1637 formation of vapors [clouds] on the right as reproduced in Baigre, 1996, 91.

to self expression and recreation, while verbal language has provided the paradigm for thinking, for reporting on science and for general exchanges of information.

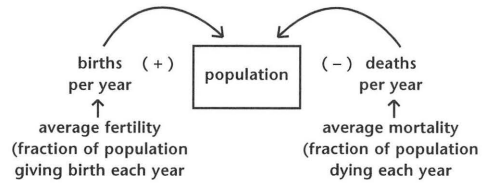
The structure of verbal language, however, offers a limited capacity to convey information. It promotes linear thinking and sequentiality, and is very poor for the presentation of hierarchies, inclusions, simultaneity, distinctions of levels, multiplicity of kinds and complexity of connections. While all this can be described verbally, the nature of verbal discourse does not reflect the structure of what is signified. The development of thinking habits in Western education has concentrated on language, and therefore on sequential and unilinear thinking. In the long run, this has limited our capacity to understand serious problems of a physical or social nature due to verbal language's inability to promote the perception of context, complexity and simultaneity – in other words – due to its inability to promote thinking in terms of ecologies of information.

This tendency has been possibly fostered by the nature of the verbal language structure, but its influence has also been felt in the terrain of graphic presentations, where simplicity, isolation of variables and reduction of data many times have been pursued as strategies to improve the scientific quality of the graphics developed. In this way the attempt was to produce clarity of information.

It is, however, evident, that our world is an integrated system, as can easily be seen now that the natural environment is stressed by human overpopulation, chemical contamination and biological hazards stemming from the need for unprecedented expansion in food production.

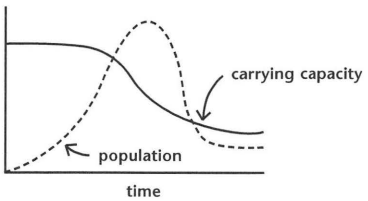
To discuss diagrams as ways of thinking and to propose the relevance of diagrams for the understanding of certain problems, I will offer three examples.

Figure 3



Population dynamics redrawn from The Limits to Growth, *Meadows et al, 1970, 34.*

Figure 4



Population and resource comparison over time redrawn from The Limits to Growth, *Meadows et al, 1970, 92.*

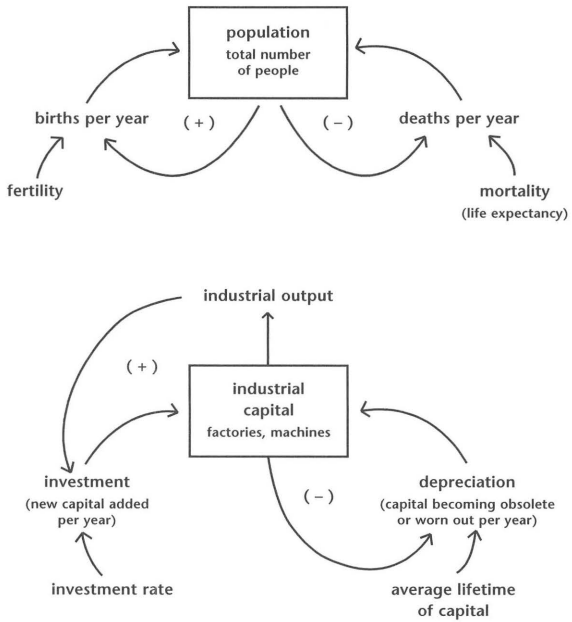
EXAMPLE 1: DIAGRAMS AND THE ENVIRONMENTAL PROBLEM

The Limits to Growth is a 1970 publication produced by the Club of Rome with a view to alerting people about the finite nature of world resources and the rapid manner in which we are heading toward disaster. It presents information about the world situation by using both a series of double entry charts and a series of diagrams that illustrate connections among a wide variety of factors. The series of diagrams begins with a simple one on population in figure 3 (34), followed by a slightly more complex one in figure 4 (92). Then they relate population and industrial capital in figure 5 (95) and propose relations between population, agricultural capital and industrial capital in figure 6 (97).

Other diagrams propose alternative influences, such as the relations between industrial capital, service capital and non-renewable resources, such as seen in figure 7 (100). Finally a full graph of the world ecology is presented in figure 8 (102-103). After carefully building and showing relationships in this case, the viewer sees an insight that cannot be conveyed by verbal language alone.

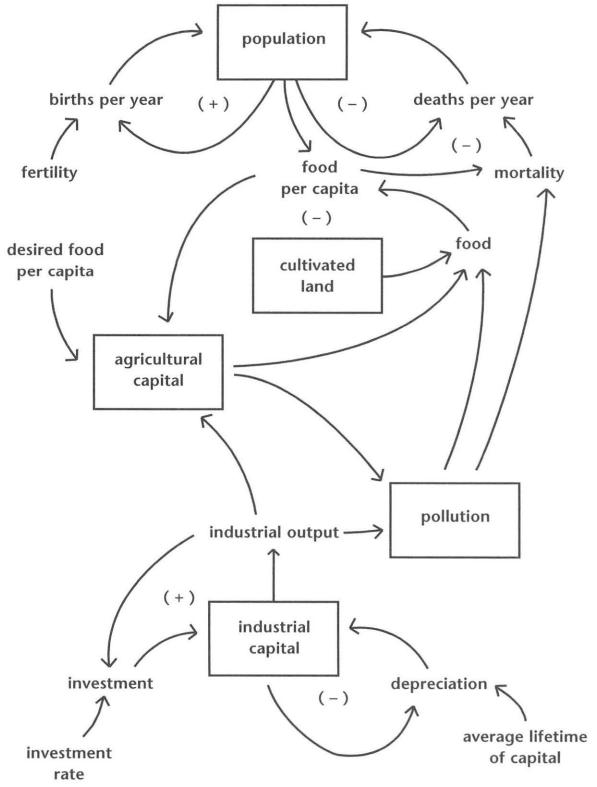
It is obvious that to convey information about something physical, such as the streets of Rome or the muscles of an arm, a visual presentation will be more efficient than a verbal description. In this case, however, I am not talking about physical things but about conceptual constructs, where connections are proposed between economic factors, biological factors, resources, population and pollution – a complex ecology that resists comprehension if one separates its components into discrete pairs.

Figure 5



Population growth and capital growth feedback loops redrawn from The Limits to Growth, *Meadows et al, 1970, 95.*

Figure 6



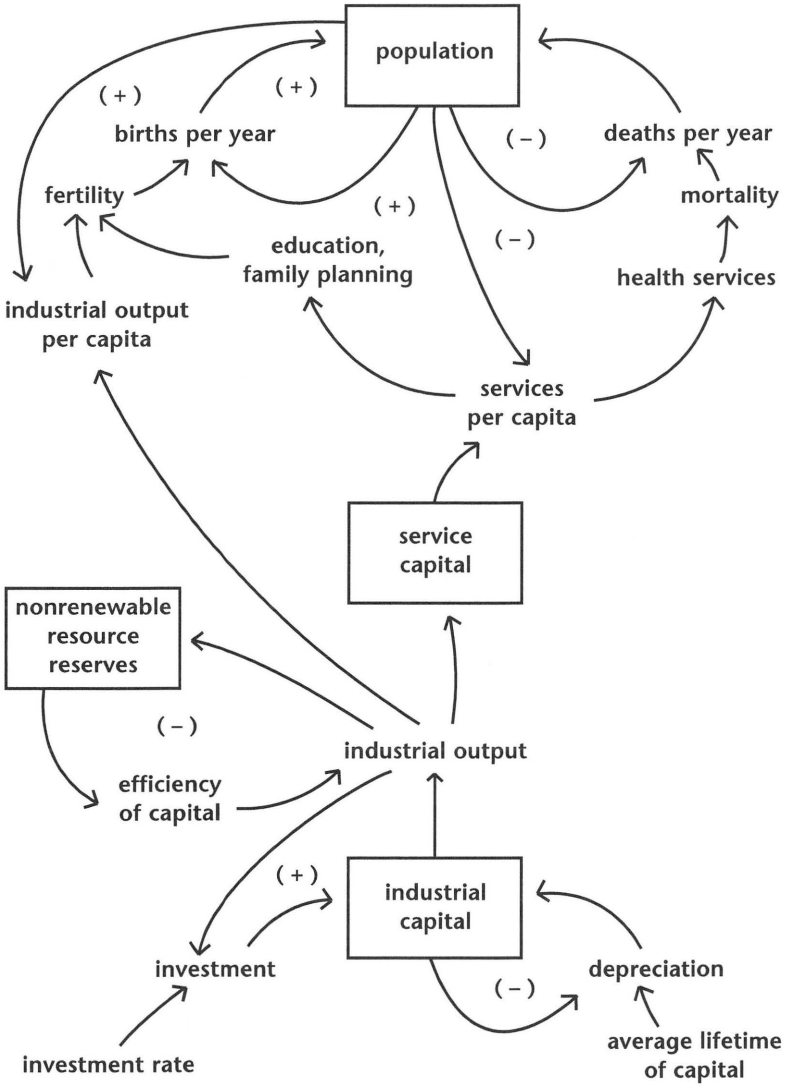
Feedback loops of population, capital, agriculture and pollution redrawn from The Limits to Growth, *Meadows et al, 1970, 97.*

While we could argue about the fitness of the specific connections outlined by the authors of the publication, the graph successfully drives home the notion that the problem is not simple, and that the possible solution to a complex problem cannot be based upon breaking it down strategically into its component problems, because these cannot be addressed independently.

I would like to suggest that the disastrous environmental situation we are facing today is in part due to the endless greed of some people; but it is also in part due to an education that compartmentalizes and isolates information, allowing for egocentric decision-making processes to ignore negative consequences that effect other people and other places. I would argue in favor of an education that would contextualize and integrate information in meaningful wholes. Instead, the specialist education that the dominant culture has promoted fosters a decontextualization of knowledge. The business obsession with efficiency and competitive performance looks at immediate actions and immediate returns, and disregards long term effects and distant consequences. Garbage is exported or buried, as if it would disappear when it is sent around the globe and out of the sight of the originators. Air and water are invisibly polluted by chemical factories, industrial processes, energy generation and transportation. Legislation is constantly developed to protect short term interests of business and governments. Nuclear waste is disposed in containers of uncertain reliability. Lack of planning affects many fields, including heath and safety; as an example, as I write this paper, virus-infected pigs are being killed and buried by the hundreds in Malaysia, without regard for possible contamination of soil and watertables and in total ignorance of the long term effects of hundreds of carcasses fermenting four meters underground in hundreds of sites to accommodate the estimated one million pigs that have to be eliminated. Cheap labor is exploited in developing countries while unemployment affects 10% of the industrialized world, creating medieval poverty in lands of plenty; and cheap people are imported to industrialized countries to perform dirty jobs that the locals do not want to perform. All this is the result of putting economic success at the top of the hierarchy, and of keeping information separated in isolated clusters so that decision-making groups can ignore the long term consequences of their actions.

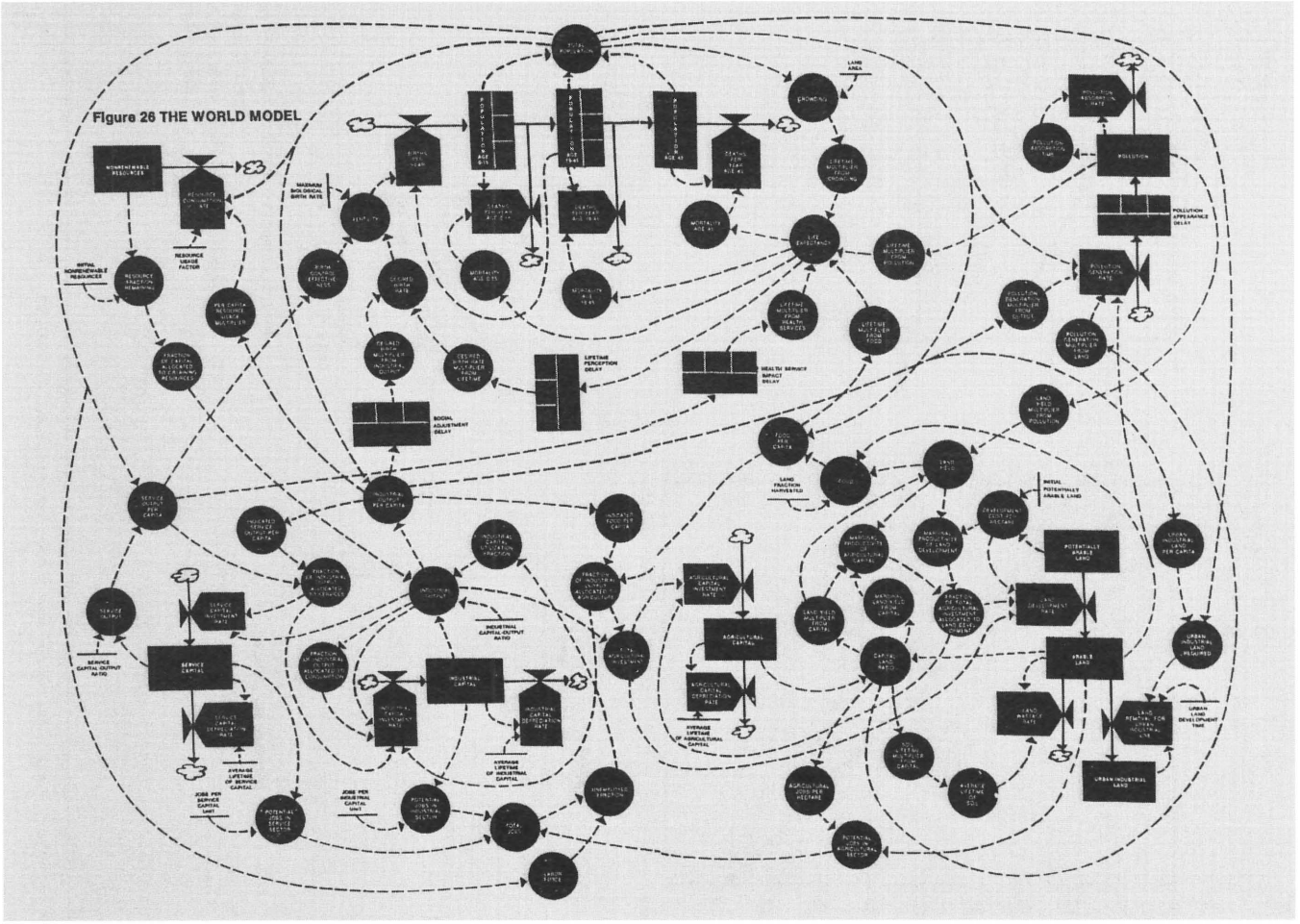
Instead of looking at isolated events in a linear, language-based, binary way, a more responsible and intelligent approach to knowledge would be to look at diagrams as tools that foster the understanding of ecologies of information, and as instruments that assist the development of intelligence. Intelligence involves critical thinking that connects and distinguishes units of information; that generalizes from particulars in careful ways by seeking out patterns; that recognizes in the individual the applicability of the general. It is the ability to discover patterns, hierarchies and causalities. The intelligent person creates taxonomies and uses information to build propositional knowledge to guide action. Because diagrams can synthesize different factors or dimensions of a situation, they lend themselves to exploration of complex interrelationships that would otherwise escape attention.

Figure 7



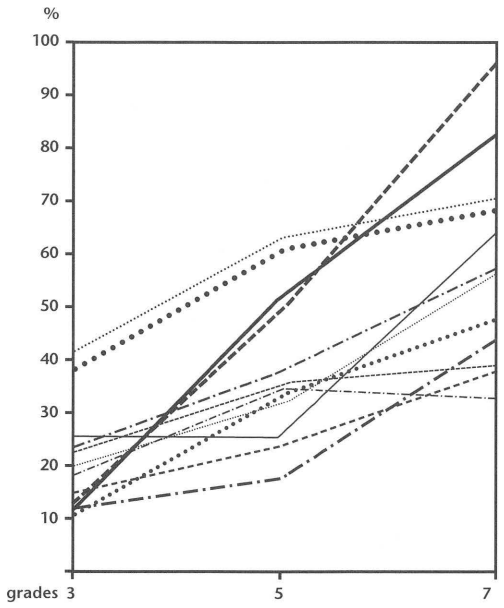
Feedback loops of population, capital, services and resources redrawn from The Limits to Growth, *Meadows et al, 1970, 100.*

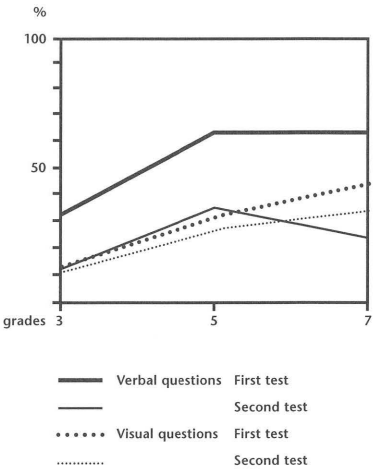
Figure 8

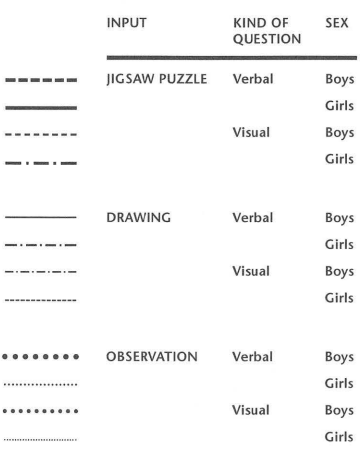


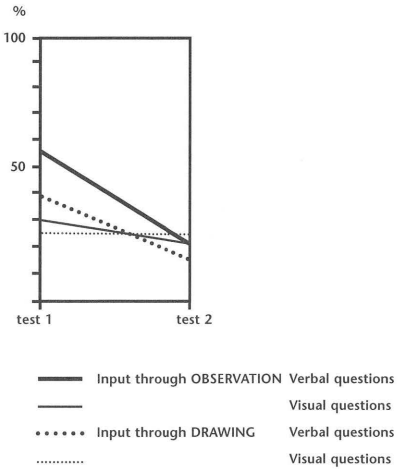
The world ecology model from The Limits to Growth, *Meadows et al, 1970, 102-103.*

Figure 9









Diagrams to synthesize working data and explore relationships redrawn from Frascara, 1981, 19.

EXAMPLE 2: LEARNING STRATEGIES AND MEMORY

In this example I will report on the instrumental value of diagramming. Some years ago I was interested in studying the relative effectiveness of different ways of acquiring information in relation to short and long term retention. I created three different situations for the acquisition of information, working with school children of ages 7, 9 and 11, males and females, and measuring immediate retention and retention after one week. Once I collected all the results, patterns of comparative performance appeared clearly to me when I produced a diagram that represented all the results and all the variables. In order to make this more understandable, I published the results in three diagrams (*figure 9*). This was not meant to communicate to others the results of my investigation, but was meant for me to be able to have three months of work in front of me so as to draw conclusions and make recommendations. I never had another experience where diagrams demonstrated more clearly their value as tools for analyzing and comparing complex sets of data. At a glance I was able to assess the relative performance of each method of input in connection with the other dimensions of the study, or any other combination of dimensions considered. Even at this low level of complexity, where – unlike in the ecology problem – all the variables involved were discreet and planned, diagramming as a way of presenting research results and analyzing information clearly was more efficient than an alphanumeric presentation of the data.

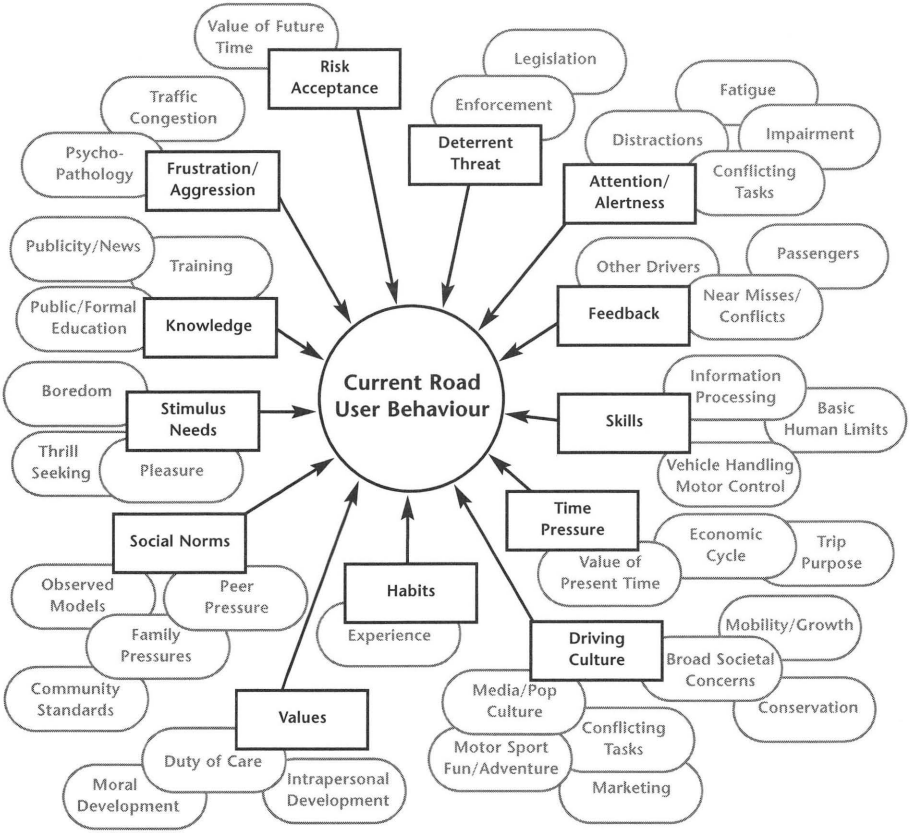
EXAMPLE 3: DIAGRAMS AND TRAFFIC SAFETY

Traffic safety is another supercomplex problem that cannot be addressed properly if one does not look at its totality. While the graphs published in *Mission Possible: the integrated safety initiative for Alberta*, do not intend to represent the totality of the factors that affect traffic safety, they at least show that when looking at the traffic safety problem we have to be conscious of the three basic areas of action that an integrated strategy has to consider: the traffic environment, the road users and the vehicles (*figure 10*, 44).

If we focus in on one of those dimensions, such as in figure 11 (35) and try to ascertain what affects road user behavior for instance, we get an idea of how each one of the dimensions outlined could be further developed in order to present the problem with a high degree of richness. One can get closer to each one of the areas and see how they are constituted by clusters of information that offer possibilities for insight and action. This need for action in the practice of design benefits from diagramming as opposed to verbally describing complex situations. Verbal descriptions challenge memory and imagination, and deceivingly present problems as if they were under control.

The first reaction of people entering traffic safety is to propose solutions that relate to the filter through which they see the problem. If they are engineers, they point at road construction and vehicle safety; if they are policemen, they look at enforcement; if they are traffic education experts they look at drivers' training, etc. In this connection diagramming has to fight the power of personal experience, recent experience and the emotional charge associated with what has been lived as opposed to what has been learned without emotional load.

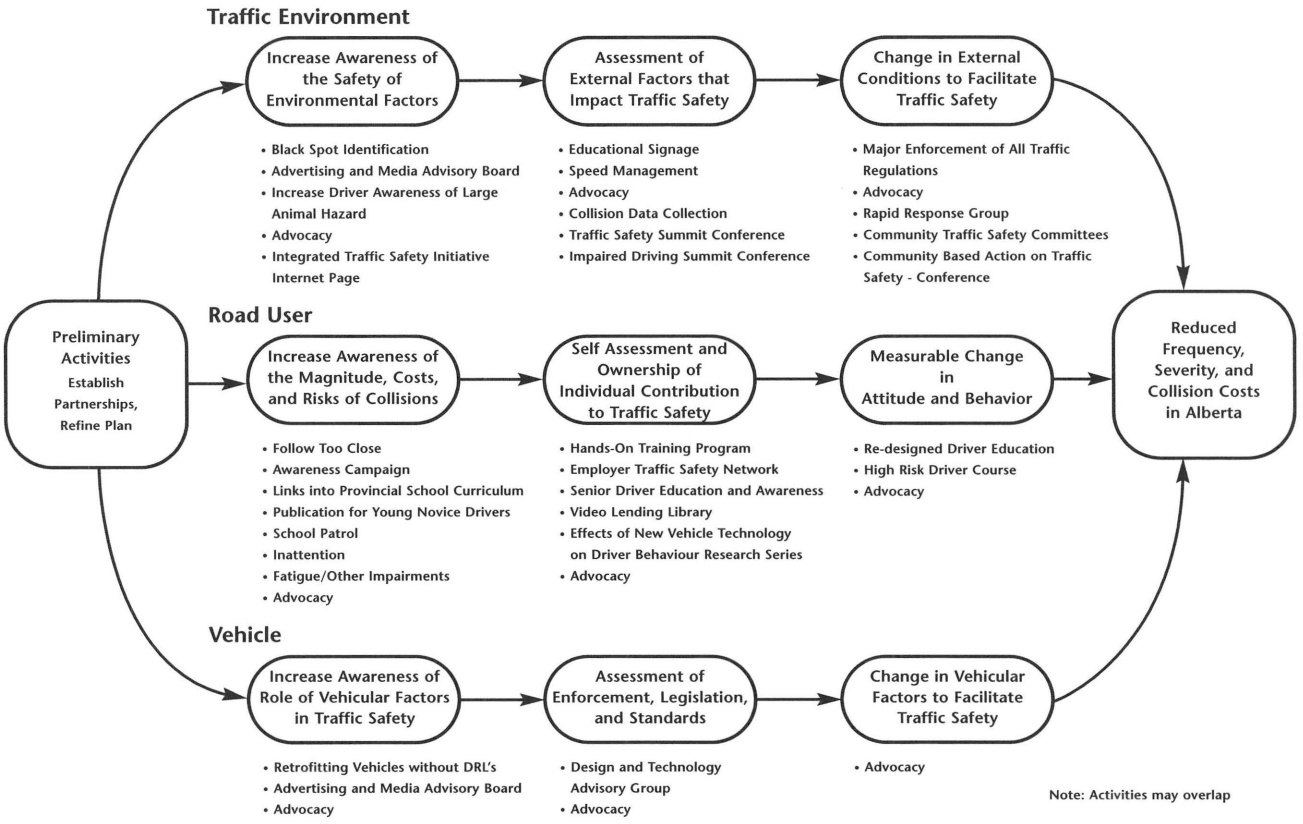
Figure 10



Factors influencing road user behavior redrawn from Mission Possible, the Alberta Motor Association, *1996, 35.*

Figure 11

Integrated Traffic Safety Initiative
Conceptual Overview and Activity Plan



Integrated traffic safety initiative – conceptual overview and activity plan redrawn from Mission Possible, the Alberta Motor Association, *1996, 44.*

AND NOW WHAT?

It remains for us, in general, to ask ourselves: how differently would we think if we had been constantly exposed to diagrams as tools for learning instead of having been bombarded by strings of words in our education? How much better would we be prepared to deal with complex realities? Would we be better prepared to understand the complexity of everything, and, particularly, human relations, life in society and natural ecology?

Given the disastrous reality that surrounds us, from Yugoslavia's war through capitalism gone wild, to the destruction of the natural environment that supports our very species, one can only hope that skill in a more holistic way of thinking could counteract the shortsighted idiocy that rules our lives, deteriorates the general welfare of humanity, affects the health of huge numbers of people and might finally destroy the human habitat.

We have talked enough about the value and the merits and the limitations of diagrams; our time now is to act, to promote the use of diagrams as tools for thinking and to incorporate them in general education as mind-mapping strategies dedicated to integrating knowledge. In this way, our ability to perceive the interconnectedness of events is increased, we become more conscious of the consequences of our daily actions and able to act more responsibly.

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ABSTRACT

Two experiments were conducted to investigate the effects of minimal legible size characters on Chinese word recognition. In Experiment 1, the minimal legible size was determined empirically to be the character size necessary to attain ninety-five percent correct recognition for various Chinese characters which differed in the number of strokes comprising the character, ranging from three to twenty-seven. The results showed that the minimal legible sizes were larger for characters with more strokes. This indicates that characters with more strokes should be enlarged to attain the same recognition performance as that from characters with fewer strokes. Experiment 2 investigated recognition accuracy for a string of minimal legible size characters, versus, conventional equal size characters. The results showed that accuracy rate for the minimal legible size condition was higher than that for the conventional size condition. Although Chinese characters presented with their minimal legible size might change the present word configuration, the results suggest that minimal legible size of characters might help readers recognize words in situations where reading time is extremely short. In particular, the results suggest that minimal legible size Chinese characters may be appropriate in the design of warning or emergency signs.

EFFECTS OF MINIMAL LEGIBLE SIZE CHARACTERS ON CHINESE WORD RECOGNITION

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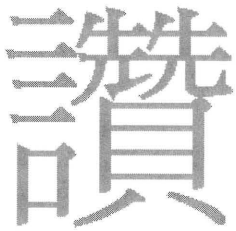


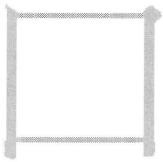
Chapanis (1965) called attention to a very important but often neglected area of human factors: the written information associated with the tools, machines, systems and operations, which have more often been the focus of research. Negligence of this particular issue has continued over the past two decades (Chapanis, 1988). Advances in technology and automation have resulted in the introduction of increasingly complex products, machinery, operational activities and systems that require increasingly more complex written information to communicate between humans and machines. This expansion of information has contributed to the creation of brochures, warning signs, illustrations and operational manuals that are frequently incapable of being adequately understood by their users. The design of such written information for accurate and efficient human processing deserves more study.

An important concern regarding the design of written information is legibility. Legibility refers to the ease of identifying individual alphanumeric characters. Poor legibility may result in the information being difficult to

read, and thus a deterrent to reading it. Important determinants of legibility are contrast, typographic style and size. Given adequate contrast, legibility is strongly affected by the type style. Much research has shown that character size significantly influences legibility (Chang and Konz, 1993; Imbeau et al., 1989; Joseph and Uhlarik, 1992; Miyao et al., 1988; Silver and Braun, 1993). Some studies (Bouwhuis, 1993; Vigilante and Wogalter, 1998) showed the effect of character size on reading performance was significant for elderly readers. In order to obtain good text legibility, an important question is how large a character must be to be identified and discriminated from adjacent characters.

Although extensive guidelines exist with respect to character size, contrast and typography, problematic issues remain concerning the spatial arrangement and characteristics of the elements within a character, in particular, those affecting discriminability of the elements, and thereby the recognition process. In English, each word may fill a different amount of space, for example, the space for "people" is twice that for "the." But, the discriminability for the letters of these two words is probably quite similar. However, written Chinese characters are square-shaped, and all characters occupy equal spaces. Some characters have few strokes, while others have twenty or more strokes. Thus, the discriminability of the strokes that form the equal size characters is different. Some investigators (Yen and Liu, 1972; Yu and Cao, 1992; Zhang and Yang, 1987) indicated that the effect of stroke number on Chinese character recognition was statistically significant and suggested that characters with more strokes are more difficult to identify than those with less strokes. For instance, although the characters 元 (*yuán*, dollar) and 寶 (*bao*, treasure) are the same size, in terms of space occupied, they differ significantly in number of strokes and the discriminability of their strokes.

Based on the findings presented above, recognition performance should be affected by the number of strokes within a character and character size. If this is true, then how do we redesign characters, such as 元 (*yuán*, dollar) and 寶 (*bao*, treasure), so that they are more equally legible? Perhaps, 元 (*yuán*, dollar) should be drawn a little smaller, and 寶 (*bao*, treasure) should be drawn a little larger to produce equally legible characters, and thus improve overall recognition performance. The purpose, then, for Experiment 1 was to determine, for Chinese characters having different numbers of strokes, the minimal legible size which produced a high (ninety-five percent) correct recognition accuracy. Experiment 2 evaluated these minimal legible size characters presented within a string of Chinese text.



EXPERIMENT 1: SPECIFY THE MINIMAL LEGIBLE SIZE FOR CHINESE CHARACTERS

The purpose of this experiment was to specify the minimal legible size for Chinese characters comprised of different numbers of strokes under extremely short exposure durations.

METHOD

SUBJECTS

Thirty college students between 20 and 22 years old (M=20.8, SD=0.82) served as subjects. All had 18/20 corrected visual acuity or better. The subjects were paid for their participation.

MATERIALS AND DESIGN

Two hundred fifty characters with 10 occurrences per 800,000 characters in Chinese literature (Wu, 1987) were used in this experiment. The 250 characters were divided into five levels based on the number of strokes per character: Level 1 (3 to 7 strokes), Level 2 (8 to 12 strokes), Level 3 (13 to 17 strokes), Level 4 (18 to 22 strokes), and Level 5 (23 to 27 strokes). Each level contained fifty characters, ten characters per stroke number.

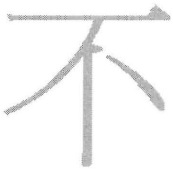
Ten levels of character size were used: The largest characters were 19 mm by 19 mm; the smallest characters were 8.2 mm by 8.2 mm. The increment between levels was 1.2 mm.

The selection of 19 mm x 19 mm as the largest size character was based on the results from a preliminary study using the method-of-limits (Gescheider, 1976; Liu, 1976). In this preliminary study, 10 subjects (who did not participate in the formal experiment) were presented 50 words consisting of 27-stroke characters for 250 msec at a viewing distance of 200 cm. The result was that a 19 x 19 mm character size was required to achieve 95% correct recognition.

The design consisted of a 5 (Stroke Number Level) x 10 (Character Size) mixed design, with character size as the between-subjects factor and stroke number level as the within-subjects factor. Subjects practiced ten characters before their performance data were collected on the experimental characters. Each subject received five blocks of trials in about 80 minutes. A block consisted of 50 trials with stimulus characters of the same stroke number level. There was a 5 minute break between blocks. The sequence of the five stroke number levels was randomized.

TASK SPECIFICATION

All subjects were tested individually. A Model G1290 tachistoscope (by Gerbrands Corporation) was used to present the task. Prior to the presentation of each stimulus, subjects were instructed to fixate their eyes at the center of the screen. Two seconds later, a stimulus was presented for 250 msec. exposure duration. Then, the subjects reported the character just presented. Subjects were instructed to perform the task as accurately as possible.



PERFORMANCE MEASURE AND ANALYSIS

Accuracy rate (percentage correct) were obtained for each block of 50 trials and entered into the analysis of variance performed using SAS.

RESULTS AND DISCUSSION

The means for accuracy rate under the different experimental conditions are shown in table 1. The results of analysis of variance showed a main effect of stroke number ($F_{4,80}$=629.3, p<.001) on accuracy rate. Multiple comparisons with the Duncan test showed that the differences among Level 1 (M=90.9, SD=12.8), Level 2 (M=84.8, SD=18.1), Level 3 (M=77.0, SD= 27.0) and Level 5 (M=58.9, SD= 30.9) were significant. The difference between Level 3 and Level 4 (M=76.1, SD=24.9) was not statistically different. The results indicated that the more strokes a character has, the more difficult it is to recognize the character.

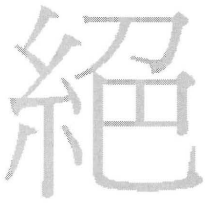
Table 1

Stroke Number

	Level 1		Level 2		Level 3		Level 4		Level 5		*Subtotal*	
	M	SD	M	SD	M	SD	M	SD	M	SD	*M*	*SD*
Character Size												
8.2	66.27	1.94	47.45	1.24	27.10	3.00	36.26	1.19	13.92	3.52	*38.20*	*18.57*
9.4	72.44	2.30	64.42	3.59	40.74	1.48	38.23	2.80	18.04	1.73	*46.77*	*20.31*
10.6	78.27	3.85	68.17	1.94	49.48	6.59	49.57	2.44	27.34	1.41	*54.57*	*18.43*
11.8	95.38	3.87	83.60	2.19	74.59	3.82	72.60	3.59	42.48	1.91	*73.73*	*18.39*
13.0	96.55	2.81	88.67	6.44	84.38	3.10	79.58	2.61	52.40	4.88	*80.32*	*15.96*
14.2	100	0	97.27	1.70	96.95	1.49	91.60	1.72	74.14	3.43	*91.99*	*9.81*
15.4	100	0	98.29	2.99	98.17	0.30	94.63	1.25	84.44	2.05	*95.11*	*5.99*
16.6	100	0	100	0	98.86	0.26	98.89	1.02	87.51	1.61	*97.05*	*5.02*
17.8	100	0	100	0	99.77	0.39	99.84	0.28	91.92	1.25	*98.31*	*3.34*
19.0	100	0	100	0	100	0	100	0	96.57	1.73	*99.31*	*1.56*
Subtotal	*90.89*	*12.9*	*84.79*	*18.2*	*77.00*	*27.0*	*76.12*	*24.9*	*58.88*	*30.9*		

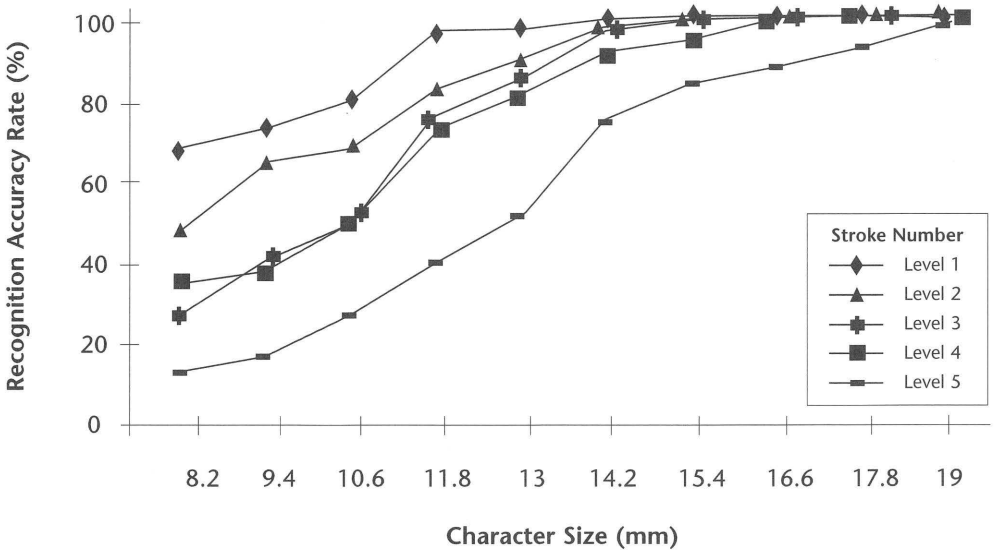
Means and Standard Deviations of Accuracy Rate (%) under Different Conditions of Exp. 1 (n=3).

The main effect of character size ($F_{9,20}$=2261.7, p<.001) on accuracy rate was significant. Multiple comparisons with the Duncan test showed that the differences among 8.2 mm (M=38.20, SD=18.57), 9.4 mm (M=46.77, SD=20.31), 10.6 mm (M=54.57, SD=18.43), 11.8 mm (M=73.73, SD=18.39), 13.0 mm (M=80.32, SD=15.96), 14.2 mm (M=91.99, SD=9.80), 15.4 mm (M=95.11, SD=5.99), 16.6 mm (M=97.05, SD=5.02) and 19 mm (M=99.31, SD=1.56) were significant. The differences between 16.6 mm and 17.8 mm (M=98.31, SD=3.34), and between 17.8 mm and 19 mm were not statistically different. The interaction between stroke number and character size was also significant ($F_{36,80}$=32.0, p<.001). Figure 1 shows this interaction, in which the effect of stroke number on accuracy rate was greater for smaller characters than for larger characters. However, when the character size exceeded 15.4 mm, the effect of stroke number on accuracy rate was less significant.



The purpose of this experiment was to specify the minimal character size necessary to attain a recognition level greater than ninety-five percent correct, for characters with different stroke numbers. These minimal sizes referred to herein as the minimal legible sizes are presented in table 1, and are as follows: 11.8mm, 14.2mm, 14.2mm, 16.6mm, and 19.0mm, for stroke number Levels 1 through 5, respectively. These results indicate that characters with more strokes must be enlarged to obtain the same recognition accuracy as that for those with fewer strokes.

Figure 1



Recognition accuracy as a function of character size for characters which varied in number of strokes per character. (Note significant interaction between stroke number and character size).

EXPERIMENT 2: EFFECTS OF MINIMAL LEGIBLE SIZE CHARACTERS ON RECOGNITION

The purpose of this experiment was to investigate the effects of minimal legible size characters on recognition performance in a task using a string of Chinese characters.

METHOD

SUBJECT

Thirty-six college students (6 women and 30 men) between 20 and 24 years old (M=22.4, SD=1.02) served as subjects. All had 16/20 corrected visual acuity or better. The subjects were paid for their participation.

MATERIALS

Ninety-six four-character Chinese strings, including 32 high-frequency, 32 low-frequency words and 32 nonwords were used in this experiment. The high-frequency words appeared over six times per 800,000 characters, and the low-frequency words appeared only one time per 800,000 characters in Chinese literature (Wu, 1987).

Two presentation conditions for the character strings were employed. In the redesign condition, each character was presented at its minimal legible size as obtained from Experiment 1. Thus, the sizes of the four characters within any string could be different. In the conventional condition, the size of all four characters of a string was the same; it was the average of the minimal legible sizes of the string's comprising characters (see *figure 2* for illustration).

DESIGN

The design consisted of a 3 (Word Frequency) x 2 (Presentation Condition) mixed design, with presentation condition as the between-subjects variable. Subjects practiced with ten training strings before their performance data on the experimental strings were collected.

The stimulus exposure duration was decided in a preliminary study, in which 12 persons (who did not participate in the formal experiment) received 30 stimuli in a recognition task. The results showed that a 400 msec. exposure duration was necessary to produce a mean accuracy rate of 52.2% (SD=9.2) at a viewing distance of 200 cm. Thus, the exposure duration of the stimulus was set at 400 msec. in the formal experiment.

TASK SPECIFICATION

Subjects were tested individually and informed that the character string was to be recognized in the left-to-right direction. A Model G1290 tachistoscope (by Gerbrands Corporation) was used to present the task. Prior to the presentation of each stimulus, subjects were instructed to fixate their eyes at the center of the screen. Two seconds later, a stimulus was presented, then, they reported the string they had just read. Each subject received three blocks of 32 trials in about 40 minutes. There was a 5 minute break between blocks. Subjects were instructed to perform the recognition task as quickly and accurately as possible.

PERFORMANCE MEASURE

Accuracy rates (percentage correct) were obtained for each block of 32 trials and entered into the analysis of variance performed using SAS.

RESULTS AND DISCUSSION

The mean accuracy rates under the different experimental conditions are shown in table 2. The results of analysis of variance showed a

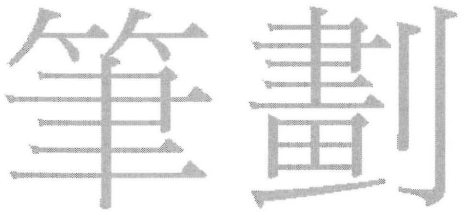
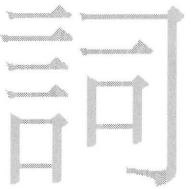


Figure 2

	Redesign condition	Conventional condition
High-frequency word	讚不絕口	讚不絕口
Low-frequency word	波瀾壯闊	波瀾壯闊
Nonword	灪生通水	灪生通水

Some examples of character size design in Experiment 2. In the redesign condition, the sizes of characters for the high-frequency word were 19.0, 11.8, 14.2, and 11.8mm; those for the low-frequency word were 14.2, 16.6, 11.8, and 14.2mm; those for the nonword were 19.0, 11.8, 14.2, and 11.8mm, respectively. In the conventional condition, the size of all characters were the average of the sizes of the characters in the redesign condition: 14.2mm.

main effect of presentation condition ($F_{1,34}$= 37.9, p<.001) on accuracy rate. The accuracy rate for the redesign condition (M=50.8, SD=8.3) was significantly higher than that for the conventional condition (M=47.3, SD=8.7). The main effect of word frequency ($F_{2,68}$= 407.1, p<.001) on accuracy rate was also significant. Multiple comparisons using the Duncan test showed that the differences among high-frequency words (M=56.2, SD=3.0), low-frequency words (M=53.1, SD=3.0), and nonwords (M=38.0, SD=4.0) were significant. Interaction of the two factors was not statistically significant.



The results indicate that the accuracy rate was higher when the characters of a word were presented at their minimal legible sizes than when they were presented at their conventional size. The results also showed that word frequency affects accuracy rate. High-frequency words were correctly recognized more often than were low-frequency words, which in turn, were recognized better than meaningless nonwords.

CONCLUSIONS

The results of Experiment 1 indicate that recognition accuracy was higher for Chinese characters with fewer strokes than for characters with more strokes, a finding consistent with other researchers (Yen and Liu, 1972; Yu and Cao, 1992; Zhang and Yang, 1987). According to Just and Carpenter (1987), the average focus time for each stroke is 4.6msec. Hence, subjects need more time to identify the characters with more strokes. In addition, characters in Chinese text have the same size regardless of number of strokes. Thus, the characters with more strokes would necessarily have a higher stroke density, and would be more difficult to recognize. One implication is that the size of Chinese characters should vary directly with character stroke number, in order to maintain the same level of discriminability for each character.

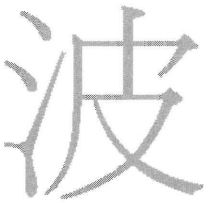
This implication was confirmed in Experiment 2, in which recognition accuracy was higher for words consisting of minimal legible size characters, versus, the conventional equal size. One possible reason for this result is that when the size of the character with more strokes was enlarged, it became easier for the subjects to recognize and the accuracy rate increased. However, perhaps the smaller size for characters with fewer strokes did not degrade recognition performance because the size was still within the minimal legible range. The recognition accuracy rate for high-frequency words was greater than that for low-frequency words. This result is similar to the results of other studies (Clark et al., 1994; Duchek and Neely, 1989; Howes and Solomon, 1951; Johnston, 1978; Scarborough et al., 1977). The effect of word frequency was still

Table 2

Word Frequency

	High-frequency		Low-frequency		Nonword		*Subtotal*	
	M	SD	M	SD	M	SD	*M*	*SD*
Design								
Redesign condition	57.87	2.56	54.54	2.50	40.05	3.44	*50.82*	*8.30*
Conventional condition	54.47	2.43	51.57	2.75	35.92	3.59	*47.32*	*8.72*
Subtotal	*56.17*	*3.00*	*53.06*	*2.99*	*37.99*	*4.04*		

Means and Standard Deviations of Accuracy Rate (%) under Different Conditions of Exp. 2 (n=18).



significant when the characters of a word were individually designed with their minimal legible sizes.

The minimal legible size design varies the sizes of the characters according to their stroke numbers: Character with fewer strokes required less size and vice versa. Different character sizes may not be plausible in the same text due to editing and aesthetic considerations, but for "signs" with only a few characters, character sizes could be designed according to stroke number. If the sizes of the characters in a sign must be equal, the appropriate size should be equal to or larger than the minimal legible size of the character with the highest stroke number. These character size recommendations may prove appropriate for emergency situations where recognition accuracy is critical and time is short.

The findings of this study might be useful for a designer in creating a more easily recognized Chinese character string. However, the experimental stimuli used in this study were short character strings; future research is needed to explore the effects of minimal legible size design on reading sentences or text. This design also changes the word configurations. The effect of these changes on recognition accuracy needs further study.

ACKNOWLEDGMENT

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BOOK REVIEW

INTERFACE/AN APPROACH TO DESIGN

Gui Bonsiepe

Reviewed by Jorge Frascara, a professor of Design at the University of Alberta in Canada.

Maastricht: Jan Van Eyck Akademie, 1999
ISBN 90-6617-212-6
168 pages, softbound, illustrated, one color

SCOPE

The book is a collection of papers, articles, one interview and conference presentations, mainly written in the nineties, but including a few pieces from the eighties and one from 1965. It touches on many topics, introducing as a consequence a complex picture of the design problem, in a somewhat postmodern fashion. Somewhat postmodern in the sense that there is no clear beginning, middle and end, nor is there any grand plan. The book is a documentation of Bonsiepe's preoccupations about design and designing, the contexts within which design operates and the social forces that affect its purpose and practice.

There are several recurring themes and the title suggests the reader might want to focus on the discussion of design as a practice that deals with the connections between users and products, that is, as the creation of interfaces. Indeed, the English version's title is somewhat different from the Italian, Spanish and Portuguese editions, in which the direct translation would be "From the object to the interface." That is, in the other editions the

emphasis of the title is on a historical process of change with the concerns in the designer's mind: the move from being interested in the design of objects to becoming interested in the design of the relations between objects and people. The English edition, instead, centers on the design of interfaces (in the broad sense of the term) as a choice, rather than as the result of a historical process. While some articles at the beginning of the book center on the actual design of interfaces for computer programs (42-56), the gist of the book suggests that the design of interfaces (in the sense of points of articulation, bridges or connections) is the ever present problem of the designer, whether dealing with the visual presentation of screens for CDRoms or with agricultural machinery. Bonsiepe's definition of interface in the broad sense appears on page 29: ". . . the interface is not a material object, it is the dimension for interaction between the body, tool and purposeful action. This is not only true of material artifacts, but also for semiotic artifacts, for instance, information in communicative action."

The book, however, extends well beyond the title, and wanders through the design territory in a wide exploration of concerns. The author lists seven central topics in the preface: "The reinterpretation of design as 'interface design'; hypermedia as new cognitive technologies; text and visuality; design and language; design education; the role of design in the peripheral world; and development, industrialization and environmental crisis"(8). But it is easy to also recognize other recurrent themes, such as the need for design theory, the economic imbalance between industrialized and less industrialized countries and the problem of cultural identity. A further indication of the thematic breadth of the book is given by the fact that there are twenty-one articles and each article is headed by a title and a list of keywords (one hundred and thirty-nine of them in total). A subject index at the end of the book is a very useful reference. It should also be noted that the material was originally written for seven specialized journals, and for presentations in Brazil, Cuba, Italy, France, Germany, Mexico, the Netherlands, Spain and Uruguay. The author, in addition, has lived in Germany, Chile, Argentina, Brazil and the United States, and has been actively involved in educational and governmental institutions in Mexico and Cuba. This wealth of experience brings a cultural and a geopolitical context to the book that strongly frames the nature of its content. This is particularly true when discussing issues of cultural identity and economic imbalance: two concerns that are extremely strong in Latin America and practically nonexistent in

the other countries mentioned. One might wonder to what extent papers on these subjects, that were originally delivered in Latin American countries, can be relevant or even understandable to the English reader without previous discussion. Bonsiepe echoes this point. He states: "It is hard for the central countries to understand this. In the periphery the problems of design are primarily political, and only secondly are they technical and/or professional"(31-32). He thereafter offers a brief discussion of this issue. I am not a good judge for the subject, since I have never been interested in the pursuit of identity, whether during the sixteen years I worked in Argentina or the twenty-four I lived in Canada. Identity is something that happens, whether one likes it or not. It resists reductions and, as Bonsiepe argues, it cannot be found in the past (107). Knowledge of the past is an asset (he states), but identity has to do with the present and the present of any country's design, today, is complex and interconnected.

As far as the economic imbalance is concerned, this might sound removed from design to the English reader, but not to the Latin American designer. There, the economy is in your face, often as a hard slap. It cannot be ignored. And if one understands it a little, it can be very painful, as Bonsiepe outlines in his comment about the orchestrated de-industrialization of Argentina in the seventies (91).

TERMINOLOGY AND ARGUMENTS

There are some terms, here and there, that deserve special comment. One of them is the repeated reference to "retinal space" (43, 53, 60, 106, and others). Why "retinal," I wonder, and not "visual"? The book does not offer an explanation for the choice. In my view, to say

retinal instead of visual ignores the holistic and even cultural dimension of vision. While the retina is essential to vision, vision does not happen in the retina. As Maturana and Varela would say, the retina is subject to disturbances caused by stimuli (Maturana and Varela, 169, cited by Bonsiepe, 134-135). It is the interpretation of those disturbances that brings sense and vision to life. Vision is a subjective experience that results from highly sophisticated and codified physiological, psychological and sociocultural phenomena. The retina is just a small part of that process, and it by no means can represent the complexity of vision. We know that several cultures have fewer names for colors compared to our own. We know that others make more distinctions about some aspects that we gloss over (snow among the Eskimos and sand among the Tuareg). We know as well that learning to distinguish one letter from another presupposes the existence of the concept of "letter." Vision, I agree with Bonsiepe, is central to design, but referring to it as retinal is an unnecessary reduction of the concept, and the book offers no discussion in support of this choice.

Another contention for discussion is the use of the word "science"(20). References to design as science made sense in the context of his time at Ulm HfG. Design needed at that time to establish itself as a legitimate field. Today, design departments abound in universities, while science has lost its notion of the pursuit of absolute truths and has embraced the notion of approximations to operational truths. I do not think it is useful today to discuss design in relation to science. It certainly can use scientific information, but the activity of designing, itself, is not a science.

I suppose that Bonsiepe is well aware of all this. Science has that ring of certainty that was dear to some theoreticians of design in the sixties. Today, I would argue that doubt, more than certainty, is necessary in any mature discourse. "... the search for absolutes is an age-old phenomenon. But certainty excludes doubt, and thereby turns into dogma. Doubt goes hand-in-hand with uncertainty. And doubting what exists, what one thinks, and what one does, is the most important aspect of creative action. Doubt is a prerequisite for creativity. Design should be effective, but in its effectiveness it must also see itself as a self-created problem. It must acknowledge the fundamental doubtfulness of its own action and create a public awareness of this"(Meurer, 126).

In the article "The chain of innovation" (37-41) I find several difficulties: in his proposed "Matrix of innovation," (39) Bonsiepe defines the social setting of design as "the market." While it is true that most design happens in the marketplace, not all of it happens there. It is surprising that he, who worked on not-market-driven projects for governmental design organizations in Latin America, would simplify so much the nature of design that way, ignoring all the experience of design for public service produced by international agencies, government organizations, grass-roots organizations, citizen groups and political parties, particularly – but not exclusively – in the communications field.

In the same matrix Bonsiepe defines the conditions of satisfaction of design as "customer satisfaction." Again, this presupposes a commercial transaction only, but, more importantly, it ignores the political and ethical contexts within which design operates. It is possible that Bonsiepe drew the concept from econo-

mists' writings. Jerome Kagan refers to this when he says that "Economists ignore the distinction between the pleasure of sense and the pleasure of virtue because it resists quantification. They simply declare, without the support of deep argument, that all economic decisions are based on a wish to maximize satisfaction. They leave to the community the difficult task of figuring out the meanings of 'satisfaction'" (Kagan, 152). How can one defer judgment about the conditions of satisfaction of design to customer satisfaction alone? ("The condition of satisfaction of design can be formulated in one simple sentence, a declaration by the customer: 'I am satisfied'.") (41) I would suggest that things are more complex than that. For example, during the literacy campaigns in Argentina in the early sixties, aware citizens were worried about promoting literacy without assuring education. A peasant that can read is more easily prey to political manipulation than one who can't. As a student of writing he/she might be satisfied as a "customer" of the government, but the question remains open: is it good? With the increasing ability of marketing strategists to push goods and services at people, can one safely state that customer satisfaction is a sufficient measure for conditions of satisfaction in design? How about social justice, cultural fitness and notions of identity that the book discusses elsewhere?

While the book includes several references to economic injustice, the broader issue of ethics, however, is generally absent, and this is possibly the reason why the issue of conditions of satisfaction are so limited. "Ethics" does not appear in the subject index, and shows up possibly only once in the book, in a short and inconclusive passage about innovation: "But innovative action, which creates something new, something that did not exist before, is not sufficient to describe all the aspects of design. For that reason the idea of concerns needs to be introduced, and this establishes a link with ethics"(35). This, unfortunately, is left just like that, with no further elaboration, a problem that affects as well other passing references to other issues and leaves the reader wondering about what to do with them.

Also in "The chain of innovation," Bonsiepe states: "The objective of design activity is neither to produce new knowledge nor to produce know-how, it is to structure the interface between the artifact and the user."(40) I would, instead, argue, that it is necessary to develop new knowledge to structure the interface between the artifact and the user. It is true that an experienced designer can apply a number of routines to the solution of a new problem; but it is also true that a new prob-

lem will most likely present challenges never encountered before, challenges that require knowledge development. I would suggest that his definition reduces the possible contribution of design in more ways than one. It responds to the notion of the designer as a "problem solver," without reaching for the broader idea of the designer as a "problem identifier" (Frascara, 20).

While the notion itself has been discussed only in the last few years, design as an active agent in the generation of knowledge has been around for a while. A clear example that comes to mind is the decision of Arnolfo di Cambio to design a cathedral for Florence in 1297 with such a dimension for the dome that nobody knew how to build it. It took more than a century for Brunelleschi to do it, thanks to his analyses of Roman constructions and a number of constructive innovations. Designers, many times, can see the need to solve a problem, even where nobody sees that there is, indeed, a problem. And they can also create them. "Design must be liberated from the one-dimensional mode of thought that focuses on solving tasks, and instead it must be seen as the constant creation of new tasks." (Bernd Meurer, 126)

Bonsiepe several times discusses information design, called by him sometimes infodesign. (52, 60, 158) He writes: "Perhaps in the future the notion of 'image design' or 'visualization design' will become popular, though I would prefer the term information design, because the binarism between word and picture should be avoided."(158) In this case his preferred terminology ignores the alternative distinction made already in 1978 (if not before), at a congress convened by Easterby and Zwaga in the Netherlands, between information design

and visual presentation of information. In this case, information design was defined as dealing with the structuring of the contents, in pursuit of cognitive sense, as different from the complementary need to design the visual presentation of the information. While we find the above quotation (158), coming from a paper delivered in Maastricht in 1997, on page 60, quoting a 1993 presentation in Cologne, we find a similar distinction made: "The specific new competencies of infodesign include: finding, selecting and subdividing information in order to create coherent bodies of knowledge – interpreting the information and transferring it to the visual domain." In this case the two aspects are clearly distinguished. I wonder what inspired Bonsiepe in 1997 to move away from the more clear 1993 distinction.

In a similar way, what could appear as a contradiction leaves the reader wondering about his assertion: "Language and design are not only structurally similar, design is closely related to language. Design is rooted in language." (142) Later, listing the issues that design education should address in the nineties, Bonsiepe ends by calling for "a design theory based on language."(145) In the last article of the book, however, under a section called "Visuality," he states: "The denigration of vision and visuality has its philosophical origins in Plato's well-known cave simile. We can call this deep linguistic bias against visuality and its cognitive potential the 'imperialism of the word'... The still fledgling imaging science is a new branch that deals with the multifaceted phenomena [where] images are not taken as examples of mimesis, but in which images reveal realities that are not accessible through words and texts."(157) So, do we need "a design theory based on language" alone? Bonsiepe attacks again the hegemony of language on the fol-

lowing page: ". . . The theory of post-structuralists based on the assumption that reality is a 'text' that has to be 'read'... will have to be revised. . . . [T]he judeo-christian tradition... claim of the word as the exclusive and predominant domain of cognition is simply that: a claim that today shows signs of corrosion." (158) He attributes these signs of corrosion to technology: an assertion that requires a support the book does not offer. These kinds of assertions without elaboration appear some times in the book, leaving the reader hanging at the edge of a provocative thought, but without handles to grasp it. Other passages could have benefited from some re-thinking and re-writing: "The third issue in design discourse is the relation between design and the sciences, both the natural and the social sciences and the humanities. At a very late stage design entered the management and marketing discourse, a process not yet concluded." (27) Can this process ever be "concluded"? Can any process? Is the process of the relationship between design and the sciences (and humanities) concluded? And, should it be some time? Shouldn't the first sentence already include the humanities, instead of presenting it as an after-thought? There is also what I might define as an exaggeration: "... there is no area of human knowledge and action that is not related to design." These sentences, possibly made as colloquial statements at oral presentations do not stand up well in the more reflective act of reading.

"Effective action" is another principle worth discussing. "The answer to the question why products are invented, designed, produced, distributed, sold, bought and used, is simple: products are invented, designed, produced, distributed, bought and used in order to enable effective action."(35) While the author

suggests that there are many ways of defining effectiveness, the word connotes (and denotes) a notion highly connected to efficiency, engineering and rationality, leaving aside a wide set of less precisely measurable dimensions of life, and the reasons why some things get invented, designed, produced, distributed, bought and used. They get invented possibly because someone wants to affect the way people do some things in order to express another conception of the world. They get produced and distributed because some people want to make money. They may get bought because some people feel compelled to buy something at the beginning of the month, or when they are on holiday, or because they believe that someone will like it, or just because of a mistaken conception of what the thing really is, or as a reaction to cultural pressures. The central problem in this passage – a problem that appears elsewhere as well – is that it is unlikely that a complex issue like this can be described by a "simple" answer, as the quoted text suggests at the beginning.

The notion of effectiveness is connected to the notion of self-effacing of the design object and the designer. This appears in one of Bonsiepe's discussions of the concept of interface (this time in computer programs): "It is easy to formulate the function of the interface: it should permit the user to obtain an overview of the contents; navigate the data space without losing his way; and pursue his interests. . . It's like looking through a pair of glasses. You don't need to see the glasses – they are the tool for seeing."(53) "It is a waste of time to ask how a teller machine should look. Instead one should concern oneself with how one can induce the user to act effectively. The concern should be to make the use of a new product transparent." (135-136) Bonsiepe brings this up against the narcissism of some designers that see design as an opportunity to express their egos and one can be easily persuaded to agree with that. The issue, however, can be seen from another standpoint: Bonsiepe's position is in line with Christopher Alexander's famous statement that one notices design when it does not work: a door knob that does not turn, a car seat that is too low, a warning sign that can't be read at night (See *Notes on the Synthesis of Form*, 1964, cited by Bonsiepe on page 27). But later on, other authors have rightfully called attention to different possibilities: yes, an interface should allow me to perform my intended task, but the process of performing it can be pleasurable, can intensify my consciousness of my own acts, can help me see better than I expect, can bring to me more than I am expecting to find. The process

of use of the interface is not limited by the intended actions: it is a value loaded sensorial and cultural activity that needs to be acknowledged in both the design discourse and the task of the designer. (I am writing this review in a Macintosh iBook; a very different experience from my old Powerbook 160, yet with no difference in performance regarding my task at hand.)

CONCLUSION

The book makes a rich contribution to the current design discourse, but I believe that Bonsiepe has more to offer than what he has given us here, in terms of both precision of language and elaboration of ideas. His way of dealing with issues in this book reminds me of a text I read long time ago comparing Schumann and Brahms: the first with exuberant melodic imagination and ready to abandon underdeveloped themes, the second a master of harmony whose lack of melodic imagination led him to borrow melodies from others, and to work on series of "variations." Bonsiepe is a bit like Schumann. In the twenty-five lines of page 33, the reader is taken from a proposition that environmental compatibility and design management are the main focus for design discourse in the nineties (having discussed the eighties in the last paragraph of the previous page); to the differences of interpretation between central and peripheral countries regarding sustainability; to the relation between design and the efficiency of firms and national economies; and, finally, to the need for more theoretical research in design. After reading the book, the reader might feel simultaneously overwhelmed and wanting. Overwhelmed, because of the complex portrait of the range of problems design must confront; but also wanting, because of a need for more

elaboration of the ideas many times only succinctly mentioned. I guess this might be too much to ask, and maybe the job is there for the design community as a whole to respond to Bonsiepe's desperate call for help toward the development of a design discourse. This call, however, many times stops at a mere headline: "Design theory could be used for investigating the links between visuality and discursivity. Then words could be brought to images, and images to words."(24) This is somewhat too brief to figure out how to pick up the pieces and begin the Brahms-like elaboration of the theme.

When he does go into details, however, his contribution is significant, like in his description of the major references present in the design discourse at the Ulm HfG, as a way to understand the intellectual context of the school (122), and the usefulness of identifying the major theoretical frames within which every design school – knowingly or unknowingly – operates. Equally significant are his comments on the need for interdiscipline in design education (121) and on the potential power of the design education model for other fields, through the notion of "project-based education" – something Richard Buchanan has been arguing for at Carnegie Mellon University. (121-141) There are many useful suggestions about concerns, issues, aims and needs. The many preoccupations brought forward mark a design landscape that needs to be confronted, discussed and articulated by the community of discourse. These include the subjects Bonsiepe selected to highlight at the beginning of the book: "the reinterpretation of design as 'interface design'; hypermedia as new cognitive technologies; text and visuality; design and language;

design education; the role of design in the peripheral world; and development, industrialization and environmental crisis"(8). And also the need for design theory, the economic imbalance between industrialized and less industrialized countries and the problems of cultural identity in the face of globalization.

The book proves that Bonsiepe has brought to many and diverse audiences, in their own terrains, some of the complexity of design, and particularly, the notion that the central preoccupation of design is not the conception of things, but the conception of the relations between things and people. The computer industry calls this "interface design," the design of the way in which the workings of the computer become usable to people, and this is to be welcomed. (42) But the term "interface design" needs to be contextualized in the broader notion that design, fundamentally, as Bonsiepe asserts, is design of relations between artifacts and people, in other words, it is design of interfaces.

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LETTER TO THE EDITOR

A response to Earl M. Herrick's article
"Toward Disambiguating the Term "Roman"
in Visible Language 33.2,
by Dr. Burke

While one may welcome Earl M. Herrick's attempt to 'disambiguate' the term 'roman,' some of his proposed alternative terms may provide new confusions, at least for students and scholars of letterforms and typography. He modestly proposes his new alternatives for 'roman' as suggestions, which may lead to further discussion; so that is the spirit in which I would like to make some comments on his proposals.

Professor Herrick's statement of the problem, that roman has several different nuances of meaning is indisputable, but his argument does not take full account of certain well-established terminological traditions from within the printing trade and the fields of printing history and typographic scholarship. But, to begin positively, his suggestion of the additional employment of 'upright' to signify variants of roman type that are not sloped or 'italic' does seem useful.

It is in his definitions of 'roman-shaped' and 'italic-shaped' that significant problems arise. His choice of illustrations lets him down here to a large extent. Prof. Herrick partly takes

Eric Gill's sketch of 'essentially italic' letter shapes (*figure 3a*) as a guide and deduces therefrom that it is these shapes, and not slope, that define 'italic-shaped,' given that there are some sloped typefaces which do not possess these requisite italic shapes. Gill himself said that slope is not one of the "essential marks of difference," but that it is one of the "customary differences which seem almost as important." (Some would dispute Gill's model for an italic lowercase g, which is peculiar to him and relatively uncommon.) Italic variants of type, as opposed to merely sloped romans, usually have the added aspect of cursive features derived historically from speedy writing, which also naturally gives rise to an angle of slope. This becomes a little clearer when we consider terms in other languages, such as German, where a real italic is a *kursiv*, and a sloped roman is simply called *schräg*. (German labeling of typefaces is generally sounder on this point than English – for example, most sloped variants of sanserif typefaces are called *schräg* in German, as they do not have cursive features. English equivalents sometimes employed are 'inclined' or 'oblique.' So when Prof. Herrick extends his supposition to describe the lowercase letter 'a' of the 'upright' variant of the well-known typeface Futura as 'italic-shaped,' he is in danger of creating some confusion. He does not explore the identity of sanserif letters in his article. Sanserif typefaces (of which Futura is one) occupy a difficult position in the classification of letterforms. The upright version of Futura should perhaps not be called a 'roman' (although its designer called it 'a serifless roman'), but it simply does not feel right to describe any part of it as 'italic-shaped,' due to the historical association of cursive qualities with the term 'italic.' There is nothing cursive

(derived from a flowing writing instrument) about the small "a" in Futura – it is a constructed, geometric letter. It is true that the conventional meanings of 'roman' and 'italic' have many loose associations, but these carry some weight of tradition and cannot be trampled over in the desire for a rational system. (Herrick points to the 'curious' essay by Stanley Morison of 1924, "Towards an ideal italic," in which Morison bizarrely suggests that "it is necessary to beat out of the italic more than seventy-five percent of its cursive quality." This itself was an example of an over-rational reforming approach.)

There are further problems with Herrick's suggestion of the term 'Trajanicized' to mean, as I understand it, serifed and with contrast between the thickness of strokes (Herrick talks of 'lines' instead of strokes in a letter). Apart from the ungainliness of the word 'Trajanicized,' it will make some people groan at the implied reassertion of the primacy of a certain ancient Roman inscription in defining the style of western script. The Trajan inscription has only been accepted as the definitive example of the Roman letter periodically throughout history, as is thoroughly explained in James Mosley's seminal essay "Trajan revived" (1964), which is absent from Herrick's list of references. As Jost Hochuli pointed out in this journal (7.1), the primacy of the Trajan inscription is not indisputable. To revive the name of this Emperor and give him a new lease on life as a descriptor for certain aspects of style in letterforms, including Cyrillic, Greek, Thai and Hebrew examples, is an unsettling prospect. Let us not forget that it was not Trajan who made the letters but some anonymous craftspeople. The fact that there is an immensely successful typeface actually called Trajan will not aid the clarity of this term either, I fear.

In addition, as Herrick indeed observes, Trajan can only strictly refer to capitals. I am not persuaded by his assertion that, because the forms of handwritten minuscules eventually acquired serifs in the hands of punchcutters, they too can be called 'Trajanic.' Also the implication, contained in some of the more impenetrable endnotes, that all the subsequent 'gradual' changes in serifed letterform style – such as from old face to modern face (or Aldine to Didone) – can be lumped together under 'Trajanicized' will also make historians of type very uncomfortable. The Trajan inscription was not constantly in view as a model during the many centuries encompassed by these developments. Moreover, roman typefaces, as they have developed over five centuries, cannot all be labeled as sets of forms bearing the hallmarks of having been created by a common tool. Typefaces are, by definition, not 'written,' but were until recently cut in metal. There may have been traces of influence from certain writing or drawing instruments in the forms thus created, but discerning them is a tricky matter.

On a point of fact: is it entirely correct to say that minuscules, or lowercase letters (another terminological can of worms opens up; cf Twyman & Walker in *Visible Language 14.2*) reached their "final development during the eighth century A. D. at the court of Charlemagne" (112). Prof. Herrick explains later in his essay that the humanist script of the 1400s was partly a revival of the Carolingian minuscule, but the two scripts differ in detail, being separated by several centuries of broken-script/blackletter handwriting. So, if we take the fixing of humanist letterforms in print as roman type to be some kind of irrevocable finalization, then humanist script must be seen as a more advanced stage of development than Carolin-

gian. (Herrick seems to have adopted from one of his sources the 'Carlovingian' for the script developed under the auspices of Charlemagne, but paleographers for many years have used either 'Carolingian' or 'Caroline.')

Just as sanserif is not explicitly dealt with by Herrick, neither is the whole category of blackletter (or gothic, as it is sometimes called in Britain). Although blackletter styles were a medieval development of what Herrick calls the Roman/Latin script, I would partly define roman, in terms of letterform style, as 'not blackletter' – so, not with its curves most often broken, and, for most purposes, without a very heavy weight of stroke in relation to letter height. Also, most blackletter types did not share the same form of majuscules with roman type, which leaves them in a difficult position regarding Herrick's term 'Trajanicized.'

I have found the distinction made by Nicolete Gray concerning the term 'roman' in her *A History of Lettering* (Phaidon, 1986, 11) to be useful: "In this book I have used spelt with a capital to mean 'related to the roman people'; so the Roman 'square' capital is the letter which they invented, of which the letters on the Trajan column in Rome are usually taken as typical examples, on the other hand, when spelt in lowercase letters, is a classification used to describe type designs and inscriptional letters which may vary very considerably in detail from the Roman letter, and which cannot be precisely defined."

PROF. HERRICK'S REPLIES TO DR. BURKE'S REMARKS

I am glad that Dr. Burke agrees with the basic idea of my paper, which is that the term 'roman' is so ambiguous that our discussions of written characters will be helped if we have available to us a set of alternative terms, one

for each of its several meanings, which we can use when necessary to make sure that our readers know exactly what we mean. Although we should undoubtedly retain our traditional terminology for these characters as much as possible, there are some times when that terminology is confusing or self-contradictory, and these times will require supplementary terminology.

Dr. Burke objects to the term 'italic-shaped' that I have used in disambiguating one meaning of 'roman.' As a result of my experience with written languages, both in making scientific descriptions of their writing systems and in my other kinds of professional work with them, both academic and practical, I have come to realize that the term 'italic' is used with so many different meanings that it is as much in need of disambiguation as 'roman' is. Unfortunately, an analysis of the meanings of the term 'roman' must involve two separate, independent meanings of 'italic.' When describing a printed mark, 'italic' can refer to how much the mark's non-horizontal axis diverges from the vertical, or it can refer to certain geometrical (sometimes specifically topological) properties of the mark's shape. One contrasting pair of terms, involving the first of these meanings, should cause us no further difficulty. I have suggested that for this distinction we can say 'sloped' instead of 'italic' and 'upright' instead of 'roman.' Dr. Burke agrees with these terms, and we may hope that they will become generally accepted. The problem arises with finding a term for the meaning 'italic' that refers to the geometrical shapes of printed marks.

If we are devising a system of nomenclature which involves terms with many different meanings, we can do either of two things.

We can make up new terms, which will have exactly the meanings that we assign to them but which may shock readers who encounter them, or we can use the old terms, hoping that readers will understand that we are using them with only certain ones of all their meanings. In an earlier draft of my paper, I attempted the former of these methods by proposing two new terms: 'romiform' and 'italiform.' The referees of that draft rejected these terms, saying that I was cluttering up our art with horrid-looking neologisms. I therefore replaced those terms with 'roman-shaped' and 'italic-shaped,' hoping that by hyphenating the same word at the end of both terms I would mark them as technical terms with specific meanings. Apparently I was not successful; I used the term 'italic-shaped' to describe certain marks that are italic in one way, viz, according to the topological properties of their shapes, and Dr. Burke has criticized me for using this term because those marks are not italic in another way.

There is no doubt that several letters of the Roman/Latin script, when they are not capitalized, can each be printed by marks which have two different geometrical shapes; and for each of these letters, one shape is used more often when the mark is otherwise italic. These are the shapes which Gill and others refer to as 'italic' shapes. (I would not insist that 'italic g' must always mean Gill's exuberant drawing of it with its tail reaching its bowl, but my inadvertent use of Gill's illustration for that character shows how tricky it can be to develop a nomenclature.) However, not all typefaces use all of these 'italic' shapes for all of their marks that are otherwise italic, and some typefaces use some of these shapes for some of their marks that are not otherwise italic. My paper therefore used the term 'italic-shaped'

and its contrasting term 'roman-shaped' to refer solely to the geometrical or topological shapes of marks. These terms have nothing to do with whether marks look as though they were handwritten or with whether they have serifs or are sanserif. Those are additional facts about them that can be described separately. I hope that we reach a consensus on one pair of terms for these two kinds of geometrical shapes of marks, but I have now been criticized for trying to take both possible ways of making up such a pair of terms.

Dr. Burke also objects to the term 'trajanicized' that I used for disambiguating another meaning of 'roman.' I am sorry that he feels this term is ungainly, but it says exactly what I wanted it to say. The second part of it says that these marks are not necessarily the same as the letters inscribed on Trajan's column, but that, if they are not, they have been *made to look like* those letters. For the first part of it, I needed a clear and simple term for marks that have certain kinds of serifs and certain patterns of differences between the thickness of their strokes. I agree with the comment by Nicolete Gray which Dr. Burke quotes: "The Roman 'square' capital is the letter which they [the Roman people] invented, of which the letters on the Trajan column in Rome are usually taken as typical examples." If Dr. Burke can provide us with another term which is as short (long as it is), which as readily makes its readers think of these marks and only of these marks, and which do not just have "contrast between the thickness of strokes" but that have *this kind of pattern* in the thickness of their strokes, I will be delighted to use it. Also, I am not worried about using Trajan's name, because my term is not intended to refer to Trajan himself, but to his column, which is famous in its own right. And if these marks are called after the monarch of the time when they were used, that is the way of the world. I suspect that very little 'Louis quatorze' furniture was made by Louis XIV's own hands.

As to the range of meaning to be covered by the term 'trajanicized,' I believe that it will be very useful if we have some one term for this meaning of 'roman': an encompassing term that can refer to all of the typefaces from old face to modern face that have serifs and thickness-differences of this kind. Despite the methods used for cutting types to print them, the shapes of all of these typefaces show in various ways that the eventual prototypes of their marks were written with the edge of a brush.

Because my paper was intended to provide synonyms for various meanings of the term 'roman,' it made no effort whatever to deal with sanserif or blackletter/gothic marks, whether written or printed, whether majuscule

or not, and whether produced in medieval times or later. As far as my paper was concerned, all such marks were simply non-trajanicized. But it is a point of fact well agreed upon by historians that Renaissance humanists wanted the books they collected to look as classical as possible (as they understood that concept), and they therefore wanted them written with capital letters that looked like Roman imperial inscriptions (which were the only remaining examples of classical lettering that they could actually see) and with minuscule letters that looked like the oldest such letters they had ever seen (which were those in manuscripts recopied in the time of Charlemagne) adapted to make them look even more like the Roman inscriptional capitals. The lowercase printed letters which developed from humanist script were therefore not an advanced stage of development, except chronologically; they were actually the result of a mistaken, backward-looking idealization.

Finally, I should point out that I did not refer to our lowercase letters with these serifs and to some Cyrillic, Greek, Thai and Hebrew characters as 'trajanic.' I referred to them as 'trajanicized,' meaning that their shapes have been modified in a certain direction. (And I am sorry that some of my endnotes were so long, but that can happen when one wants to be precise. Compare, for example, the things that have been said about some of Dr. Johnson's convoluted definitions in his *Dictionary*.)

CALL FOR PAPERS

COMMUNICATION DESIGN RESEARCH FOR NEW MEDIA

A SPECIAL ISSUE OF VISIBLE LANGUAGE FOR 2002

Visible Language's mission statement includes research and ideas that help define the presentation of information within the digital arena. The shift from page to screen is comparable in its significance to the shift from manuscript to print. Developing the knowledge base and conventions for this new media will take time and challenge our ability to move beyond the book and into more fluid, relational and responsive systems of presentation."

The form of new media and conventions for its use are evolving through trial and error. Studies based on print media do not always translate to the screen, particularly with regard to human factors, user preference and interaction. Communication design is facing new challenges. More than ever, communicative performance is expected and valued. But since design happens in a situation of complexity and uncertainty (to paraphrase Donald Schön from *The Reflective Practitioner*), the current situation of change complicates the process of building an understanding of what variables in the communicative process can be adequately accounted for and controlled.

This call for papers addresses the research aspect of the *Visible Language's* mission statement. The papers this issue wishes to include go beyond assertion based on experience or intuition (which are surely useful) to focus on empirical evidence. What marks research is an analysis from documented evidence. Whether this evidence has been gathered and analyzed through a quantitative, qualitative or comparative method depends on the nature of the research question. The goal of this research is to enhance practical performance in design.

Sample research areas include, but are not limited to:

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- narrative development using multiple sensory channels (vision and sound)
- search strategies and their display in databases or websites
- navigation strategies and user preference
- changes in writing style for new media
- typographic presentation and its limitations on screen
- text or image – when to use either or both
- relationships between user purpose and textual presentation
- explorations in user readings and meanings of icons and indices

Visible Language is interdisciplinary – it publishes scientific research and poetry – historical research and design process – language analyses and pedagogical demonstrations and more. In this special issue it seeks to provide some exemplary research as it relates to the communication and the visible language challenges in the forefront of our attention now.

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