

CHAPTER THIRTEEN

Semiotics in Graphic Design

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INTRODUCTION

Why graphic design warrants its own chapter in this book

A chapter on the semiotics of graphic design, placed within a reference set that includes chapters on pictorial semiotics and multimodal semiotics, has as its first task to explain why it exists as a stand-alone. That graphic design has something to do with making visual signs and often with pictures seems apparent, so what precisely is it that distinguishes graphic design from other visual semiotic modalities? Indeed, both pictorial semiotics and the semiotics of graphic design can be seen as sub-divisions of the broader class, visual semiotics.

Nevertheless, various factors make graphic design worth considering as a special class. The first factor has to do with that somewhat problematic word, 'pictorial'. If a picture (and hence, pictoriality) is a representation of something else – a likeness of a subject – then certainly the scope is too narrow for graphic design.¹ While graphic design practice frequently makes use of both photographic and drawn pictures, it is a field that ranges well beyond the pictorial, encompassing typography and abstract elements that are not clear pictorial representations of any particular subject.

A second factor, in some ways an amplification of the first, is that a display of graphic design combines many modes of visual communication in a complex ensemble (a book, a line of packaging, a web site, a branding identity system, etc.) rather than being comprised a single image.

Thirdly, while many pictorial efforts are the result of creativity, graphic design foregrounds problem-solving creativity in a particularly salient way. Picture-making may or may not be a creative process. For instance, a remote field camera that snaps a picture whenever an animal walks by is not deciding to make an image, nor does it make decisions about framing and composition of the image. But arranging that picture on a web site (for example) is an act of graphic design that requires making a series of decisions contributing to the fulfilment of some intended purpose. In that respect, design's generative, creative impulse must be served in any semiotic model that tries to encompass it, while pictorial semiotics may function without an assumption of the thinking that went into the picturing.

Finally, extending this notion once again, all design is planning. This places, for graphic design, a special emphasis not only upon the creative act, but also upon the analysis of purpose and intended goals, in service of which the planning happens. Purpose-driven (teleological) inputs, in pursuit of anticipated outcomes, along with study of the contexts

that are likely to shape the interpretation for the receiver, are all important in design. These problem-solving factors, even if present, are neither central to the enterprise of a semiotics of the pictorial image nor the yet more general arena of visual semiotics. But they are essential to a semiotics of graphic design.

What graphic design is

Graphic designers make, compose and assemble visual entities, for an intended audience, with a particular communication-driven purpose in mind. So perhaps we can take that description and hazard a definition: *Graphic design is the planning and production of entities to act as signs when conveyed through the sense of sight.*²

Graphic design is a transitive, utilitarian enterprise; whether the purpose is to persuade or to inform it is always to be *useful*. It points to something in the world other than itself. It disappears into the environment it helps construct. In that way graphic design separates itself from fine art in which the work is, by whatever definition of art you choose, intransitively *attended to for what it is* (in itself), not primarily *used* for what it helps you to do in the world.³ Graphic design's essential role is to intentionally function as a *link outward*, towards some other thought or action, without pulling the attention back to its own materiality. So, although some design may be later praised and even exhibited for its aesthetic value, or perhaps someday valued as an important achievement of a culture (thereby bringing it closer to the realm of fine art), its initial use is never purposed in that self-referential way. One may appreciate the shape and feel of a finely wrought woodworking tool, but that tool's success as an artefact of design is to be judged by how well it functions in working wood. Graphic design is such a tool, an implement towards getting along in the world.

Graphic design serves a vast variety of functions, including such wide-ranging areas as logos and branding systems, typography, font design, advertisements, informational brochures, diagrams, maps, architectural signage, wayfinding, web sites, product interfaces, international traffic signs, exhibitions, data visualization, pictographic symbol systems and packaging. With the advance of digital technologies, user experience and user interface (UX/UI) have become important parts of graphic design and a portion of this chapter is devoted to that emerging area.

Virtually anything that is developed for the purpose of conveying information through our eyesight can be considered a product of graphic design. Given that graphic design is such a large area of practice, and always concerned with the streaming of meaning, semiotics is a vital area of study for graphic designers; reciprocally, analysis of the process and products of design have become an important area of research for semioticians.

HISTORY OF GRAPHIC DESIGN

Taken in one respect, graphic design is as old as history, as the written word itself depends upon a set of graphic characters which were designed by someone. Yet, the term 'graphic design' is of recent vintage. The industrial revolution in the late nineteenth century produced an increase in both literacy and manufactured products. For the first time, the supply of products vastly outstripped local demand. Magazines, becoming an increasingly popular medium due to the increase in literacy, began to use advertising as a means of generating revenue. Manufacturers used magazine advertising as a way to inform the public of new products and to stimulate demand. Railroads allowed

the rapid distribution of goods. Meanwhile, new innovations such as linotype and chromolithography meant that printing could be made faster, cheaper, more colourful and freshly entertaining in content.

This stew of influences resulted in an intense demand for artists to work with industry to fashion a growing assortment of visual communications. At first, the duties of these artists were quite separate: illustrators made paintings, type designers made letters, and printers were largely responsible for composing them for the press (Meggs 1983). But by the 1920s the execution of these various tasks were beginning to be placed into the hands of artist-managers (in advertising they called them ‘art directors’) who produced and coordinated visual content and delivered them to the printing house (Shaw, Jury). In 1922, W. A. Dwiggins, in an essay for a Boston newspaper,⁴ recounts the various duties the ‘advertising man’ is expected to perform, including ‘advertising artist’, ‘printing designer’, ‘artist’, ‘designer’, and apparently for the first time a new locution: ‘graphic design’. The term grew in prominence only after the Second World War, as universities began including graphic design curricula.⁵

By the 1960s, the functional-rationalist ideals of modernism, adopted by multinational corporations and prolifically spread through their expanding influence, had become so prevalent that, at least in the most technologically developed countries, the vernacular sign painter and traditional printer-composer were rapidly disappearing.⁶ A new self-awareness developed within the design community that realized graphic design as a powerful and increasingly eloquent communicative practice. Simultaneously, within boardrooms and marketing departments, the power of systematic visual communication planning was recognized as essential.

Perhaps best represented by the International Style promoted by the Schule für Gestaltung Basel (Basel School of Design), modernist design of the late 1950s and 1960s employed sans serif typography, grid systems as organizing devices and favoured a minimalist approach to composition. Rational and coolly efficient, modernism expressed the authority of objectivity and the values of science. It aimed for a seamless and transparent process of interpretation on the part of the receiver, one in which the goal was to deliver ‘a content’ as directly and clearly as possible. Ideally, the viewer would be unaware that the display was even a designed artefact; rather the information was expected to be ‘handed over’ – immediately, intact – as if it were brute fact, a force of nature speaking with unquestioned assurance.

Modernism’s goal of efficiency at once assumed, but hid, the sender’s authority. Whereas an advertisement in the 1930s would bear traces of a particular artist’s hand – embrace quirks of taste in illustration and in the peculiarity of layout, employ hand lettering or calligraphy – high modernist advertising in the 1960s was impersonal; neutral typefaces such as Helvetica had supplanted hand lettering, layouts were less idiosyncratic, and hand illustration was eschewed in favour of photography. The artist behind the message was de-emphasized in modernist design and this had the effect of ‘naturalizing’ the claims made in the messaging, resulting in an implicit dominance of sender over receiver.

Ultimately, this elicited a late-twentieth-century reaction. The first impulse of this reaction was seen with the rise, in the late 1960s, of counter-cultural psychedelia, typified by the music venue posters of San Francisco’s Haight-Ashbury district, which luxuriated in the experience of florid materiality while content was obfuscated. Later, in a more consciously theoretical way, experiments of deconstructionist typography in the 1980s and 1990s heralded the rise of postmodern graphic design, in which the sender’s implicit

authority was challenged in a number of ways.⁷ While the first wave of reaction in the 1960s was embedded in the experiential lifestyles of the ‘tune-in, drop-out’ culture, this second wave was consciously semiotic, drawing fully from Barthes, Derrida and other continentalists.⁸

Since the 1990s it is impossible to put one’s finger on a dominant style of graphic design. There is, however, a generalization that might be suggested: graphic designers today work with a consciousness of this history as well as the social milieu within which the planned communication will be seen. Products of strong academic programs in Europe, Australia, USA and Asia, designers have taken design history and marketing courses that reinforce the interdependency of the artists and the communities they serve. Today, one is likely to find semiotics, if only at a rudimentary level, introduced within a design studio curriculum. Graphic design is evolving to be less about the technologies used in production and more about the essential and deeply semiotic transaction that occurs in a visual communication event. Given the upheavals in digital technology and the increasing rate of disruption in design’s production tools, a focus on the fundamentals of how people make meaning offers a comparatively welcome stability.

SEMIOTIC METHODOLOGIES IN GRAPHIC DESIGN

Semiotics can be used at the front end of the design process, during the ideational, creative stage, or at the back end after the designed pieces are distributed into the world. Whether applied during the creative phase or in post-hoc analysis, three currents of semiotic thought tend to find favour: Saussurean/poststructuralist, pragmatist and transitional. The fundamental principles of these approaches are addressed elsewhere in this reference collection (see, e.g., Vol.1, Chps. 3–4).

Saussurean and poststructuralist methods

The semiology that evolved from Ferdinand de Saussure has had a profound effect in all areas of communication studies. Based on a linguistic foundation, using a dyadic notion of the sign, Saussurean concepts developed to have a broader, extra-linguistic reach with Roland Barthes and the ‘Paris School’ advances of A. J. Greimas and Louis Hjelmslev. These later adaptations developed a semiology that was able to regard any mode of cultural transmission as a networked structure of codes along interacting planes of expression and content. Poststructuralist semiology reached its apparent end-state with the ‘deconstructionist’ ideology of Jacques Derrida who challenged all tidy architectonics of structuralism and stressed the unfixed nature of polysemy.

Special note must be taken of this move by Derrida because it had a particular catalytic effect on radicalized design. Influenced by the Derrida’s writings, Katherine McCoy and her grad students at the Cranbrook Academy⁹ began to explore the visual ramifications. McCoy encouraged her students to force attention onto the materiality, rather than content, of words and images. In contrast to work in the modernist mainstream of the time – clean, efficient and invisible communications – the work issuing from Cranbrook in the late 1970s through the 1980s required considerable collaboration on the part of the viewer (Figure 13.1).

Here is playfulness rather than authority, improvisation rather than rationality, opacity rather than transparency; a reader must slow down, take part in a game of transcription, always conscious of the process of encoding and decoding. Looking and reading are set

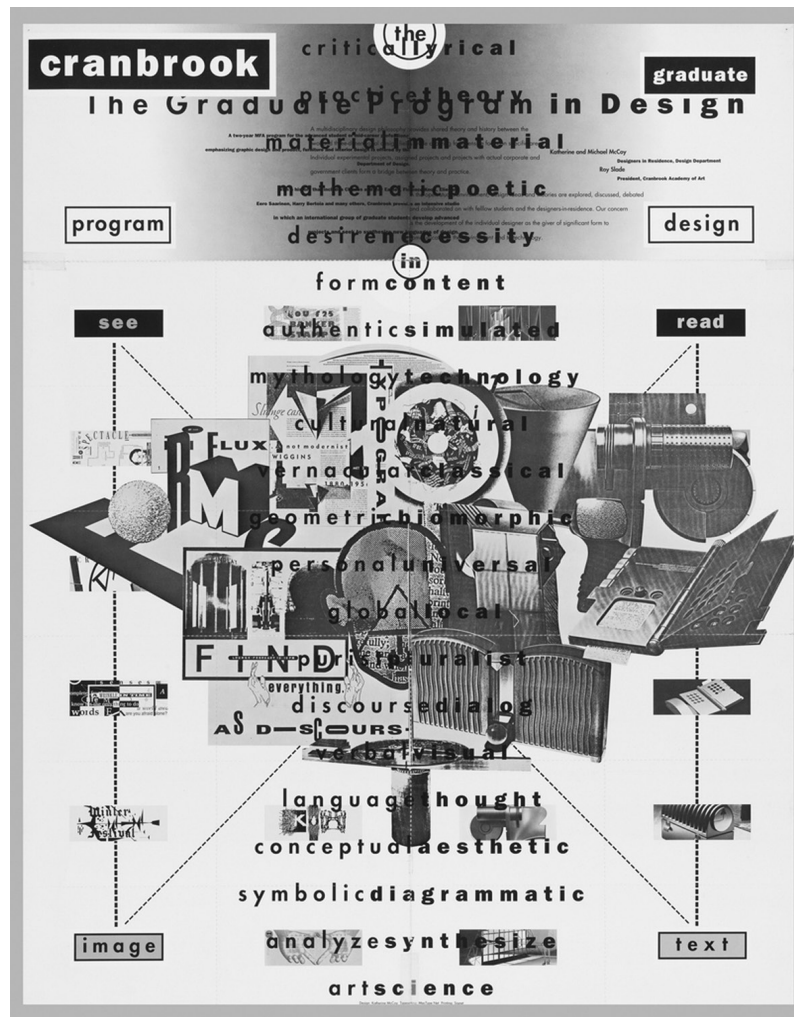


FIGURE 13.1 Poster, Cranbrook Graduate Program in Design, 1989; Designed by Katherine McCoy (American, b. 1945); offset lithograph on heavy perforated card stock; 71.1 × 55.7 cm (28 × 21 15/16 in.); Gift of Ken Friedman; 1997-19-287.

side-by-side, the receiver alternating between being a reader and a viewer. Word is not privileged over image. Image is rarely used denotatively. Background and foreground, the most fundamental of gestalt dichotomies, often flip positions. We are made aware that we are *looking at*; indeed, it is only with effort do we manage to *look through* to the denotative content.

Ironically, this direction – the style came to be called ‘decon’ – is, in part, a misreading of Derrida. Derrida’s notions of indeterminacy, play, erasure, *différance*, were targeted at conventional messaging that pretended to be clear and distinct. Derrida’s whole point was that language (especially the visual writing and printing of texts) implicitly hides or covers up its own instability; by intentionally and explicitly destabilizing the signifier, decon in a sense inverts Derrida’s point. However, by making the destabilization so emphatically visible, McCoy’s experiments forced the audience to be aware of the points Derrida was

making. The receiver questions the process of making and of interpretation, feels the tension between reading and looking and becomes mindful of the manipulation that has been enacted by the sender of a message.

Denotation and connotation

Another contribution from the poststructuralist tradition that merits more detail because of its influence on design methodology is the distinction between denotation and connotation. While C. S. Peirce in also making this distinction, bases these terms along narrow logical lines, the version of the connotation-denotation dichotomy that has had more impact among designers is that which ensues along structuralist lines, especially those suggested and popularized by Roland Barthes (1957, 1977). In this conception, denotation is a signification that is direct and more explicitly code-dependent, while connotation is indirect, more nuanced, a second-level code of common association. The structuralist understanding of the denotation-connotation distinction is similar to the conventional dictionary description of these terms, with denotation being highly precise and prescribed by the code, and connotation being those associated implications which the sign arouses.

Jean-Marie Floch (1995 [2000]) provides an example of a semiologist applying poststructuralist procedures, especially foregrounding in his work the role of connotation. His *Visual Identities* provides six case studies of detailed connotative analyses of brands, logos, packaging and advertising. His essays typify the ways in which the 'continental' tradition of semiology makes room for (often idiosyncratic) branching connections of connotations, memories, associations and transferences, each of which he accommodates within the notion of 'bricolage'.

Connotations, taken in the manner in which Floch uses the term, are perhaps the most covert, and most important, mode of communication in graphic design. Unlike denotation, in which the referent is highly constrained, connotation is often highly idiosyncratic. A person who has been bitten by a dog may have a heightened aversion to seeing an unleashed dog. Both the dog's owner and the person with the fear of the dog recognize the animal, but the effect of that recognition softens to love on the part of the owner and hardens to fear for the once-bitten neighbour. Their personal histories contribute to the connotative meaning of the object.

Shared connotations develop a sense of shared culture, and indeed, can be the basis for the connotations evolving into a symbol. We see this in the rise of popularity of certain humanitarians or heroes who, once their good works become widely recognized among a people, come to attain hero status and stand for an admirable life.

Connotation is especially critical in graphic design because it is a visual discipline in which, unlike verbal language, the constraint of explicit coding is often absent. Display a photograph of a politician to a sympathetic or an unsympathetic audience, and although they may agree on the identity of the figure, their reactions are diametrically opposed and depend wholly on the associations elicited by the subject. The associative references are often more important to the message than the mere denotative identification of the politician.

Other than indexical functions such as navigational efficiency, the choice of compositional style in graphic design is determined by intended connotation. For instance, the use of a grid as a compositional method connotes European modernism, while the use of symmetry in combination with ribbons and panels as graphic framings

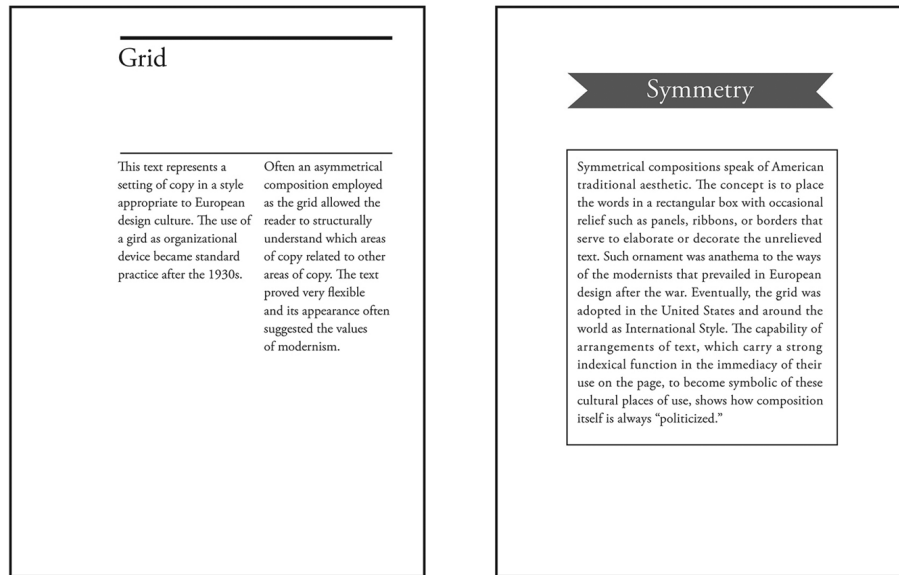


FIGURE 13.2 Compositional styles carry semantic connotations.

of text often connotes American vernacular (Figure 13.2). These connotative structures, supplemented by stylistic choices of typeface and imagery, contribute to establishing and working within (or defying) genre.

Pragmatist methods

Pragmatist semiotics stems from the late-nineteenth- and early-twentieth-century work of Charles Sanders Peirce, John Dewey and Charles Morris. A fundamental premise in pragmatist semiotics, especially distinguishing it from Saussurean/Structuralist semiology, is its conception of a sign structure that is triadic rather than dyadic. Instead of a sign consisting of a signifier/signified, pragmatist semiotics conceives of any interpretable instance, or 'semiotic moment' (Skaggs 2017a: 42–9) as constituting a relation between a sign, its referent and an interpretant.¹⁰

For graphic design, pragmatist approaches offer two immediate allures. First, this three-part division resonates with a designer's everyday work life. To understand this deep affinity, consider a fundamental situation in which a design studio is asked to design a piece and to later test whether their efforts have been effective. After an initial meeting with the client, a designer knows she has certain content to be put across (the referent); then she fashions a visual entity (the sign) that is intended to do the work of standing for the referent; which visual entity, upon being seen, engenders an effect (the interpretant) on members of a public. This process is then carried forward in a follow-up analysis: the *test result* is a sign; it refers to the effect the visual entity had on the public (the former interpretant); these results are now *evaluated* (the conclusion is now a new interpretant). This triadic chain, or semiosis, comprises stages with which every designer is familiar.

This example is just one possible framing, but even here, in this basic exchange which is a fundamental and universal part of design life, there is an affinity between pragmatist ideas and a designer's world. But the pragmatist notions take place in many ways, many

dimensions, many scales, that offer more analytical powers than the simple description of a largely commercial interaction given above. We will discuss some of these subtler potentialities and tools below when we come to the current state of semiotics in graphic design theory.

The second allure, an especially sympathetic trait of pragmatism for the designer, is that unlike structuralism, pragmatism has absolutely no discernible nod, tilt towards, nor birthplace in, linguistics. As a result, pragmatist semiotics is more easily adaptable to the visual problems the designer is asked to solve; in graphic design, even when words appear, they do so through the visual manifestations of typography.¹¹ The visual component of typography is precisely all that is *not* linguistically coded.

Apart from these affinities, the pragmatist concept that has had the largest impact in graphic design is found in Peirce's second trichotomy: the idea that a sign can relate to its object in three possible manners – iconic, indexical or symbolic.¹² Indeed, this is a notion that is universally taught in design programs in colleges and art schools. However, this contribution to the design lexicon has also had the unfortunate effect of being nearly as universally misunderstood. Too often, one hears a designer speak of designing 'an icon' as if the visual entity can only be an icon, or a symbol, or an index; in fact, it can be all three depending on the context (or ground) upon which one is reviewing the situation. Peirce's second trichotomy describes the three kinds of relation that may obtain between a sign and referent; there is no strict absolutism or categorical exclusivity implied. A pictorial emblem such as the Starbucks logo can be iconic of a mermaid while simultaneously being symbolic of the coffee chain it stands for.¹³

Among design theorists whose work has been influenced by pragmatist thought are Martin Krampen, Per Møllerup, Ellen Lupton, Johanna Drucker, Thomas Ockerse, David Crow and Richard Buchanan. Many of them have found the icon/index/symbol division to be fertile ground for exploration.

Crow, Krampen and Møllerup have each employed Peircean schemes in various ways to classify logos and branding programs. With respect to logos, most theorists make a division between word-based and image-based logos. Image-based logos are usually called 'pictographs' and logos that are based on initials or words are usually called 'wordmarks'. Some writers have found sub-categories. Møllerup, for example, lists ten beneficial semiotic attributes of logo use, from 'uniqueness' to 'repetition', before employing the icon/index/symbol schema to develop nine distinct classes: images, diagrams, metaphors, designations, reagents and symbols.¹⁴

Martin Krampen was one of the first semioticians to work specifically with graphic design (as opposed to photography, advertising or film). His conception, in the mid-1960s, of a division of graphic signs into logograms, phonograms, pictographs and diagrams pointed the way towards classification schemes and astute semiotic analysis of graphic displays and sub-elements.¹⁵

Apart from its abstruse lexicon¹⁶ the central challenge for pragmatic semiotics is its general lack of 'prescriptivity'. For the creative designer, tasked with generating ideas, can pragmatist semiotics offer conceptual tools to aid in the creative act? Moreover, does pragmatism offer the kinds of ready hypotheses, such as exist on the structuralist and poststructuralist side, to aid in a critique of visual culture? These stumbling blocks are beginning to be removed with some 'neo-Peircean' initiatives that we will get to below.

Pragmatism has allowed both designers and analysts to observe fine divisions in the way logos and other kinds of graphic design function. The challenge for the pragmatist school is to more fully develop methods of creation and criticism.

Transitional methods: Multimodal, social, cognitive and more

I use the term ‘transitional’ here to refer to areas of semiotic study that begin to intersect with, or merge into, traditional well-established academic disciplines such as psychology, anthropology and sociology. Transitional methods may use methods within the traditional discipline but the investigator emphasizes processes of signification from either a structuralist or pragmatist basis and sometimes using a combination of the two foundational paradigms. These transitional methods may be thought of as various ways of pursuing what Charles Morris (1971: 21) called ‘pragmatics’ – the relation of the sign to the interpreters of the sign.¹⁷

Multimodal semiotics stresses that people simultaneously interpret many kinds of media including verbal, visual, haptic and auditory. A study of meaning-making, therefore, needs to account for holistic effect of them all and not be weighted towards only the linguistic. Multimodal approaches employ a mix of pragmatist and structuralist ideas in an attempt to analyse and integrate a more comprehensive set of inputs. In most multimodal work, the social context within which the communication event takes place plays a part. For instance, whereas Saussurean approaches consider the linguistic sign as well as many other code systems to be arbitrary and unmotivated, multimodal semioticians hold any sign systems that stems from a social group’s ancestral or unconscious beliefs and practices to be motivated.

Because the multimodal method considers all varieties of sense-effects as interdependent, it does not recognize ‘visual semiotics’ per se. As in social semiotics, in multi-modal approaches the interpretant tends to reside in a social group or a culture rather than in an individual mind. Multimodal approaches often use empirical data gathered in procedures borrowed from linguistics and the social sciences.

A close cousin of multimodal semiotics, social semiotics, focuses on the behaviour of the communicative group, whether it be a small neighbourhood, a socio-economic class or a larger cultural unit. In its most developed form, perhaps best seen in the work of Gunther Kress, Theo van Leeuwen and Robert Hodge in the 1980s and 1990s, and Jay Lemke in the 2000s, social semiotics broadens the subject of semiotic study towards the macro level of social interactions.

These empirical assessments result in conclusions about common social habits of, say, visual composition, which can then offer instruction to ‘performers’ (i.e. makers or designers).¹⁸ For example, Kress and Van Leeuwen (1996: 227–9) noted the compositional styles of daily newspapers in Britain and Germany and summarized differences in the ways their readers parsed the visual elements on the page. They concluded that the German audiences expected many short articles all visible at once; the British public, on the other hand, seemed to prefer just a few articles presented at a time, but with large photographs and big typography.

For the graphic designer (performer and maker), ethnographic analysis of this sort always begs certain questions: If the British public became thoroughly habituated to the German manner, wouldn’t we expect their interpretative context and graphic style begin to change? Does style influence culture as much as culture influence style? Also, such data collection methods sometimes have difficulty accounting for innovation. They describe *what is*, but they have a more difficult time suggesting what *might be* or *should be*.

Multimodal and social semiotics overlap with each other to a significant degree and with other practices that collect demographic tendencies. The difference is that demographic preference data (for instance in market shelf-testing prospective package

designs) tends to be mute on the reasons consumers prefer one look over another, while multimodal and social semiotics are able to draw inferences about the motivations behind those preferences.

A third transitional method, cognitive semiotics, establishes connections between semiotic analysis and the cognitive sciences. Cognitive semiotics looks at the fundamental mechanisms of perception and cognition at the micro level but translates the cellular and physiological components into a semiotic framework. Cognitive semiotics treats both mind and brain as semiosis. Marcel Danesi is one prominent semiotician who has recently been working in cognitive semiotics. Cognitive semiotics also has the potential to trade concepts with integrated information theory (which will be discussed below) and other recent developments in understanding how thought (including artificial intelligence) happens.

Transitional semiotic methods function as doorways into the more traditional disciplines such as neuroscience, sociology, demographics and media studies. Each of the transitional areas is able to contribute the statistical, empirical and observational practices of the conventional disciplines to which they connect, while also retaining a decidedly semiotic point of view based on pragmatist or poststructuralist foundations. The influence of these transitional semiotic methods on the planning and analysis of design process and artefacts is expected to grow in coming years.

UX/UI AND HUMAN/COMPUTER INTERACTION

User experience and user interaction imply two aspects of human-computer interactions. The study of both user experience (UX) and user interaction (UI) usually entail some variety of transitional methods, especially multimodal and cognitive semiotics. User experience takes an approach that is rooted in cognitive science and the psychology of perception; user interaction a kind of ‘descriptive phenomenology’ as revealed through observations of gesture and body movements as people use digital devices. Whereas the former regards human beings as processors of information, the latter approach tends to concentrate on the actions of eyes and limbs.¹⁹

These complementary approaches are somewhat difficult to reconcile because each endorses a dualistic Cartesian premise, implying a separation of mind and body. But as semiotics sees both mind and body as secondary to the process of semiosis, it provides a useful uniting paradigm.

The cognitive approach tries to understand what is going on in our heads, while the embodied phenomenological approach is better at ‘describing the way in which we inhabit media-saturated environments’ (O’Neill, 43). Semiotics concentrates on ‘the role of the stuff in the world itself in terms of how it can signify what we mean when we manipulate it’ (O’Neill, 44). Semiotics therefore promises not only a broader and more general perspective, but also an infinitely scalable one that can be employed any place along a sequence of human/computer moves.

As a recently developed sub-field of graphic design, only taking hold with the advent of the personal computer in the early 1980s, interface design was not as concerned with exploring layers of meaning as providing rudimentary functionality. Before screens were ubiquitous, it was necessary to signal in very definite ways what was an interactive button, or a field waiting for input, or a ‘hot link’ to send the viewer to another page. We still see, a half-century later, the relics of this primitive time fossilized into standard

formats: underlined text to stand for links, rectangular colour panels as buttons, the word ‘home’ to return a visitor to the entry portal. These are all methods to indexically locate fields that allow – and signal – interactivities of one sort or another, and the habit of underlining, or boxing in, or calling a location a home, are all early methods to signify the kind of interaction to be undertaken. We can expect these traditional tropes to weaken; on a screen, the simple change from a cursor to a pointing finger²⁰ or a change in colour is enough to index the interactive elements without the clichéd redundancies of the underscore and box.

Peter Andersen’s early (1991) attempt to construct a taxonomy of computer interactive semiotics isolated five specific kinds of interface signs: interactive, actor, controller, object and layout signs. Interactive signs index the location for our manipulative interactions, actor signs each perform a specific function, controller signs change the properties of other signs, object signs are the targets of the interactive signs and layout signs present a backdrop behind actions (Andersen 1991: 199–213).

Within a decade Mihai Nadin and others were sensing the need for a more detailed and articulated semiotic analysis of the digital graphic environment, even calling into question the novelty of a notion such as ‘interaction design’, saying one cannot *not* interact with anything in life (Nadin 1997). But the degree of complexity generated by a thorough semiotic accounting of visual digital media was becoming overwhelming.

So when Shaleph O’Neill’s work was published in 2008 there was a significant tangle of concepts that had been put forward and which needed cleaning up. After recounting the questions and problems alluded to above – difficulties shared to some extent by researchers of other kinds of complex visual media such as film and television – O’Neill notes that the study of the design of screens has lagged far behind its potentialities. As an example he mentions the use of the pictorial icon: although screen-based interactive media ‘are extremely semiotic in character’, participants often engage them through simulations of archaic, physical real-world forms (O’Neill, 105). The result gives us a pictograph of a metal trashcan for deletions, a manila file folder for a directory, a representation of a piece of paper for document. Certainly these icons are anachronistic and in many cases inefficient.²¹

In order to develop a semiotics of UX/UI, O’Neill draws from several semiotic and philosophical currents. He builds, contests and to some extent reconciles everyone from Eco and Hjelmslev, to Peirce, Barthes, Heidegger and Sebeok. Ultimately, he adopts a theory of ‘embodied cognition’ which permits him to attempt to unify the action of interaction with the semiotics of comprehension.

The state of semiotics with respect to interaction is in its infancy. Perhaps the key in adapting semiotics to interactive media is to realize that whereas older media, such as posters, books and television, were meant to be read or watched as solely communicative, contemporary smart phones, laptops and other digital platforms are intended to be actively *utilized* to perform work. In that sense, books and television are like supervisors telling you to dig a ditch; new media is the shovel. The digital media, in addition to informing, entertaining and persuading through words and images, also permits you to work with it as an implement.

But unlike conventional tools such as the shovel, typewriter or printing press – machines with the capacity to do a single kind of work in the old world – this new digital work is not linear in its affordances. The digital user is able to branch out in all directions, so that the work is highly diversified and improvisatory.

The creative process with digital media demands one final analogy. Old work with graphic machines was like playing music from sheet music. It had to be defined, written out, through-composed. The new work is like jazz. One starts with a root musical theme in a given key, but where precisely the riff travels is anyone's guess. So how does one plan for the myriad of possible sequences and leaps that a user may play? Mapping and describing these movements represents the biggest challenge for a semiotics of interaction design.

CURRENT STATE OF SEMIOTICS AND GRAPHIC DESIGN

Graphic design as a discipline has been more responsive to technological change than to self-reflective theories. Ironically, this very sensitivity to tech is now acting as a catalyst for semiotic contributions. The arrival of digital tools in the 1990s ushered in a period of especially rapid change in the methods of graphic design production. One of the results of digitalization is a new level of graphic design ubiquity. Graphic design had been present before in books, newspapers and magazines, but now the general public was not only acutely aware of design but were given access to the designers' toolbox. Starting with the development of 'desktop publishing' programs in the 1990s, and continuing with programs for DIY web and app design, production techniques that had been the province of specialized practitioners within design studios and ad agencies became accessible on everyone's device.

Not only are the tools at hand, but libraries of images, either curated or open, await on continuous social media feeds. The general public is now provided with internet resources for examining visual culture from Kyoto to Santiago. Each of us is exposed to hundreds of graphic communications, from all over the world, every hour. A single newly uploaded design proliferates, influencing other designs within the week, unfettered by lethargic print schedules, magazine circulation or national borders. The ease with which one can 'cop a look' found on the internet puts pressure on the concepts of copyright, plagiarism and intellectual property. It's not that these legal concepts cannot be defined (although that is difficult enough) – it's that they cannot be policed.

An inexhaustive list of some of the positive and negative implications of this widespread availability of tools and exposure to graphic design includes:

Positive aspects of graphic design ubiquity

1. Accessibility to a variety visual displays expands
2. More iterations can be produced in the process of designing
3. A single individual can author, design and mass publish
4. Publishing and distribution can happen almost immediately
5. Mixing and appropriation of styles, genres and vernaculars
6. Democratization of design (no curators)

Negative aspects of graphic design ubiquity

1. Concept of intellectual property under threat
2. Memetic imitation leads to 'follow the herd' mentality
3. Authority and expertise have decreased importance
4. Democratization of design (no curators)

The democratization of design is listed in both categories: it can be considered a positive or a negative influence depending on one's perspective. Global graphic design practices encourage the development of a merged visual mono-culture, mixing elements of all cultures. This is seen in choices of colour, in the return of ornament (long spurned in the West), the style of graphic elements and universal adoption of place-specific genres (e.g. tattoo art, anime and manga). Whether this globalized mono-culture effect is considered a positive development or a negative one is an open question.

Growing awareness that semiotics is the centre of graphic design

This new ubiquity of graphic design practice leads one to ask: What, in the end, comprises the unique, proprietary knowledge that graphic designers possess that defines their discipline? If everyone has access to the technology of design, and if design is based primarily upon the use of technology, then graphic design would seem to have no 'special' place or practice. This is causing a re-examination of what it means to be a graphic designer, and leading to a growing awareness that, at heart, what we do is not defined through our technology at all. Rather, the defining expertise of graphic design lies in creative decision-making that moves towards some purposeful end, and all the various technologies simply afford a means to reach that end. Without exception, this decision-making concerns the forming of functional systems of visual signifiers. The core of graphic design is to be found in understanding the meaning-laden connections between the visual signs we create and the people to whom they are communicated; semiotics, then, becomes not only essential but indeed, the very heart of the profession.

New conceptual tools

Perhaps reflecting this growing realization of the semiotic essence of the practice, new kinds of conceptual tools are being developed to guide creative decision-making in the design process. A few of these are mentioned here but many more may be expected to emerge.

Page grammar

In *Reading Images*, Kress and van Leeuwen propose that when one sees a display surface, that surface is subtly broken into five semantically entangled sections. For Western cultures, top and bottom, centre and margin take on specific 'information values'. This entails that every fixed page can be divided into quadrants, with an added zone in the centre of the page, and these five areas suggest latent interpretations (Kress and van Leeuwen (1996: 208) (Figure 13.3).

Although one must always be cautious of being overly rigid when assigning definite interpretants to general syntactical categories,²² Kress and van Leeuwen more than anyone since Arnheim (1954, 1969), reawakened interest in the semiotic dynamics of the visual compositional surface itself.

Beyond introducing the information value of page position, *Reading Images* also opened investigations into two other semiotic qualities of graphic displays: 'salience' (importance, or presence), and 'framing' (connecting/disconnecting, belonging-to/not-belonging-to).

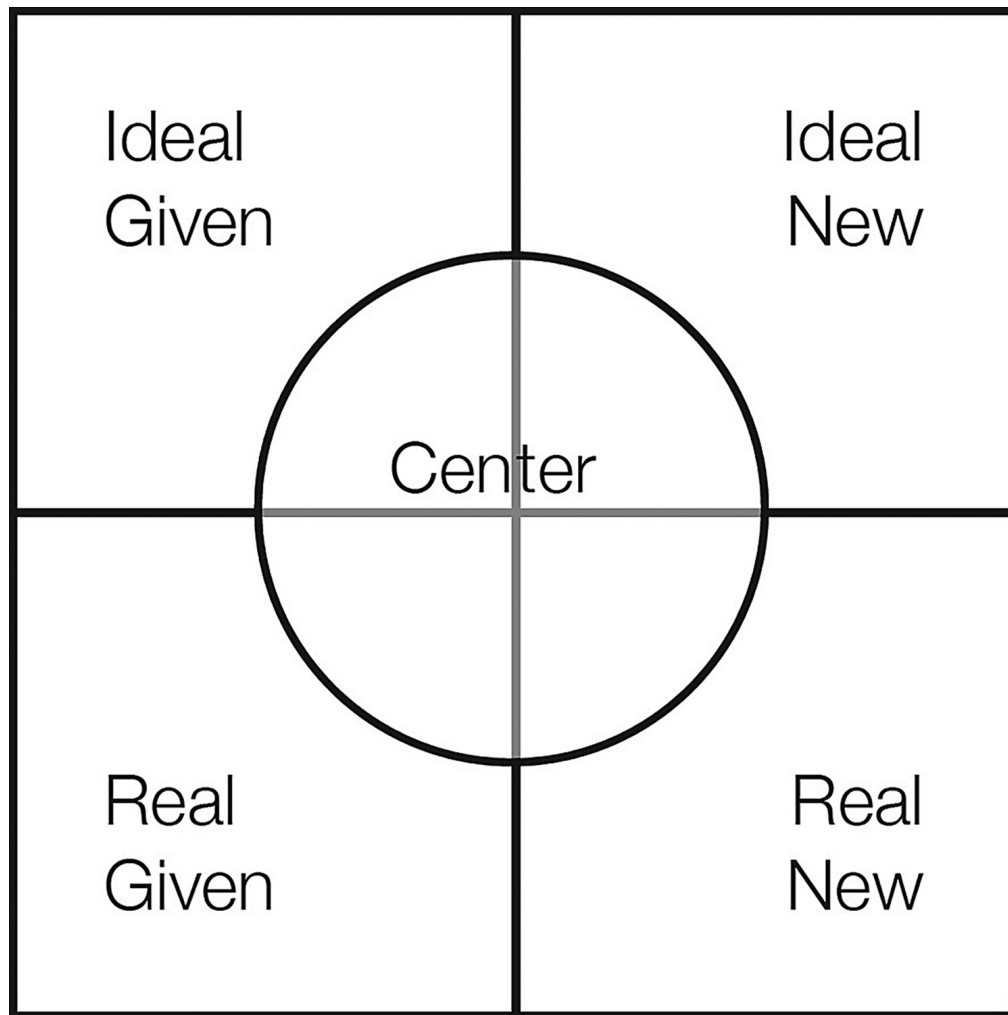


FIGURE 13.3 Page grammar. Diagram after Kress and van Leeuwen (1996).

Zones of interaction

O'Neill introduces several important questions that present opportunities for future study in UX/UI semiotics. He suggests that interactivity may begin to blend with 'product semantics' (Krippendorf 2006, Vihma 1995). He extends Kress's page grammar into 'zones of interaction' within UX/UI. Since interactivity implies an embodiment of visual communication in a way not present in traditional media, he introduces a semiotics of embodied cognition.

Semantic profiles and the functional matrix

Several 'conceptual tools' for graphic design practice based on pragmatist semiotics have been introduced by Skaggs. Two of these are semantic profiles and the functional matrix (Skaggs 2017a).

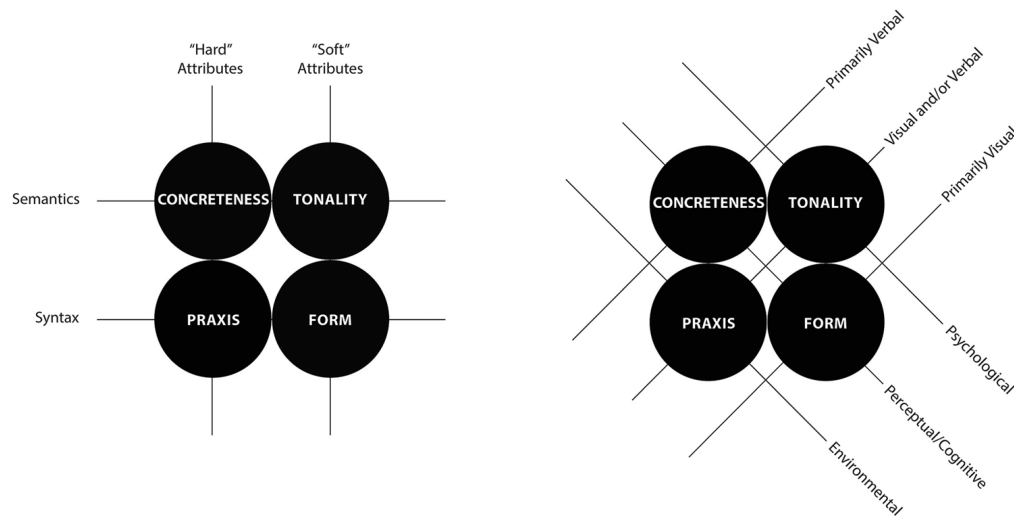


FIGURE 13.4 Functional matrix.

Based on the premise that there are four modes in which a visual display influences the viewer, divided between affective and cognitive registers, establishing a design's semantic profile allows the 'personality' of the designed display to be overtly determined as a goal against which iterations may be judged. The affective register concerns *presence* and *expression*. The conceptual register comprises *denotation* and *connotation*. A degree of relative emphasis, or valence ('salience' in multimodal terminology), is determined for each of these four influences. The result places the project into one of a number of classes or categories of semantic action.²³ Semantic profiles can be used in post-design analysis, or in the research phase of a project to target the appropriate interaction of the visual display.

The functional matrix (Figure 13.4) sets up oppositions between syntactic, semantic, denotative and connotative functions. The resulting matrix is used as a guide for the designer to ensure all aspects of a project are taken into consideration. The functional matrix, somewhat like Greimas's semiotic square, exposes certain inherent tensions in the attributes of a design – tensions which cannot be expurgated and therefore with which a designer must work.

Connotation cluster analysis

Carina Ren and Anders Munk (2019) conducted a study of connotations having to do with the arctic when considered in the context of gastronomy. Their results, making use of Graph API (Application Programming Interface), data-mined over one hundred million Facebook posts and sorted them into a graphical cluster analysis (Figure 13.5). The graph, based on which concepts were most closely related, revealed four distinct gastronomical 'basins': drinks, meats, fish and ice desserts.

This kind of massive data mining, combined with cluster analysis, is likely to prove increasingly useful in providing input for graphic design, where these techniques can reveal visual cultural 'hot spots'. Especially when combined with semiotic devices, such information, perhaps combined with A.I. and machine learning techniques, will aid the designer in image selection, hierarchical structures of text and compositional styles.

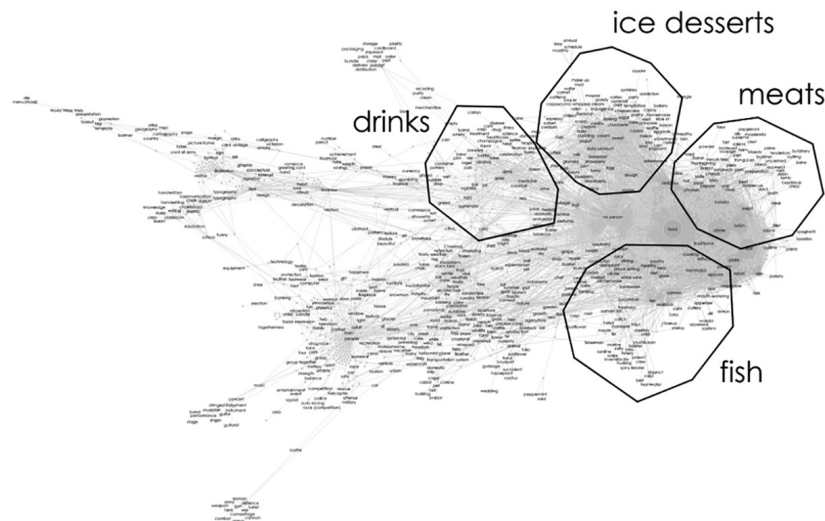


FIGURE 13.5 Ren and Munk (2019): Cluster analysis of gastronomical terms from inhabitants of the arctic.

PRIORITIES AND QUESTIONS

Integration of paradigms

These new techniques and conceptual tools indicate the potential for semiotics to contribute to design thinking. But before design can effectively incorporate semiotics, it would be helpful if there were more clarity or resolution of differences in the semiotic families. Poststructuralist, pragmatist and transitional semiotics already make substantial contributions, but their differing terminologies and conceptual platforms cause confusion. It would be helpful if a single clear consolidated semiotic method for design could emerge, a prospect that is delayed by the incongruity of semiotics' famously interdisciplinary structure.

How might such a partial reconciliation (at least) come about for graphic design? One possibility is to apply each branch as a set of specialized tools operating in particular, limited domains. For instance, given its linguistic dyadic character, perhaps Saussurean semiology's insights into the performance of explicit networks of cultural codes could mesh with transitional semiotic methods to focus on broad social, behavioural, and demographic studies where explicit coding is at play, while Peircean semiotics becomes maps a larger and more fundamental theory on semiosis (sign process) within the envelope of which the others perform.²⁴

Two related areas will need to be addressed, one lexical, the other empirical. Terminology needs to be agreed upon, in some cases modernized, in other cases simplified. This will be difficult, fraught with disagreements among scholars, but it is important to do this work. Within pragmatist semiotics alone, there is no consensus over such basic terms as *sign*, *sign vehicle* and *representamen*, or *ground*, *context* and *frame of reference*. Have we Peirceans yet settled on a word for the triadic set of relations itself?²⁵ How can semiotics hope to play an important role going forward if there remain important stumbling blocks around fundamental concepts?

The empirical initiatives can be expected to come from advances in such areas as cognitive semiotics and integrated information theory. Indeed, these studies, which shift the focus from abstract paradigms to the materiality of neurons, will undoubtedly introduce their own vocabulary, stimulating the evolving lexicon. Ultimately, it would be advantageous to have a single agreed-upon paradigm that accommodates the three semiotic branches while also providing a bridge to the physicalist aspects of cognition. That's the holy grail.

Category variance

Much of semiotics has to do with classifying the behaviour of the signs before us. Category variance has to do with recognizing that something may not be uncontroversially a member of a single class. While adherence to a category may be common in linguistics or logic, classes within visual semiotics are more difficult to pin down. It is widely recognized that in Peirce's second trichotomy (which specifies three ways a sign may refer to its referent) a sign may be at once both an icon of x while being also an index of y . But the more extreme variance I am thinking of occurs in many situations within graphic design; a sign may be both an icon of x and to some degree also an index of x . If we accommodate such 'degree-variance', then all three elements of the icon-index-symbol trichotomy may be present in various mixtures so that a sign's relation to its referent is as commonly mixed as the three primary colours of paint on an artist's palette (Skaggs 2019).

So too, especially with regard to connotation, a sign generally refers simultaneously to a variety of referents, and may manage this polysemy through proportionate combination of all three modes. In this view, the semantic sign-referent relation is best regarded not as a dipole or even a tripole, but as a triangular surface, or *gamut*, in which iconicity, indexicality, and symbolcity constitute apexes, maximal conditions, the plane between them mapping semantic space (Figure 13.6).²⁶

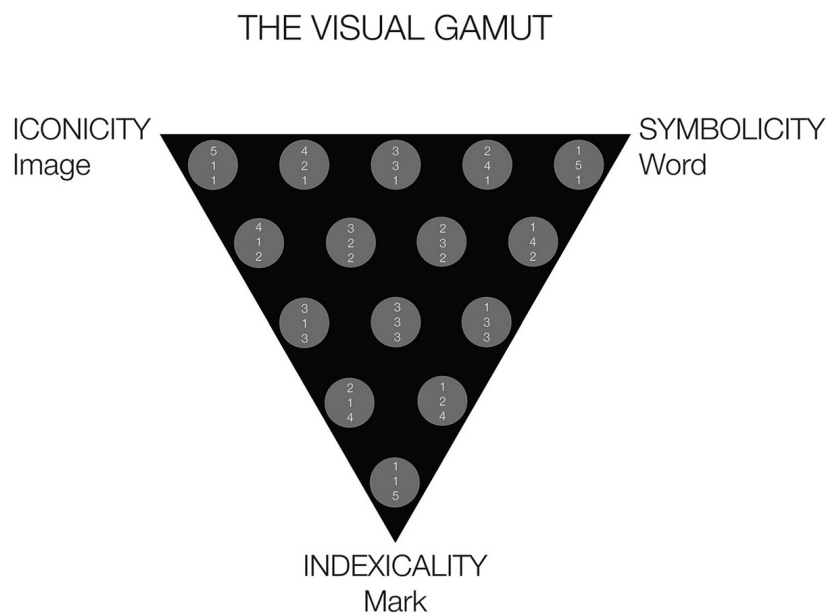


FIGURE 13.6 The Visual Gamut with fifteen nodes illustrating blends of iconicity, indexicality and symbolcity.



FIGURE 13.7 Signature of designer Saul Bass, c. 1980 (Wikimedia Creative Commons Attribution-Share Alike 4.0 International licence).

For any semiotic moment (i.e. frame of analysis), the entire panoply of reference must be taken into account, and it is expected that these multiple sign/referent relations will engage different regions of the gamut surface between symbolic, indexical and iconic nodes. So, for example, every person's signature is both symbolic and indexical but occasionally even iconic (Figure 13.7).

The increasing awareness that graphic design involves not only the binaries of word and image (symbol and icon) but also the indexicality of touch and gesture (Ingold 2018, Skaggs 2017a,) introduces new arenas of investigation for the semiotic analyst.

Generative creative concepts

Should a consolidated semiotic paradigm be adopted, it will then be important to determine the best practices for employing that paradigm not only descriptively in post-design analysis of visual culture, but also prescriptively within the creative act of designing. These are questions that have not been adequately answered, and until they are, graphic designers will probably continue to only dip a toe into semiotics rather than take the plunge that might be expected of a discourse so central to what they do.

Integrated Information Theory

Integrated Information Theory (IIT) is an attempt to unite cognitive/neurological brain science with process engineering. IIT develops from the premise that consciousness consists in the largest integrated whole output of clustered neuronal interactions. Many IIT concepts are translatable into Peircean schemas in which the interpretant is the effect of a sign/object to a receiving 'quasi-mind' (1906: CP 4.536). In that case, all the input into the neural cluster constitutes the sign, the effect on the neural nets is the interpretant, perceived content is the immediate object, the output of the neural cluster is the 'more developed sign' (c. 1897: CP 2.228) leading to further semiosis (Skaggs 2017b: 322–3).

It remains to be seen if and how semiotic theory plays a part in the development of IIT, or how IIT might influence visual and graphic design procedure. One suggestive

implication is that eventually the digital/neural bridge could be built from the nexus of these theories, resulting in direct neural input, bypassing usual sense reception entirely. (Although it is not at all clear what graphic design would become once vision is taken out of the mix!)

CONCLUSION

Graphic design and semiotics are like cousins who grew up in distant towns, learning of each other late in life. Although they are roughly the same age, and closely related as one is essentially the visual manifestation of the other's object of study, until recently they hardly knew the other existed. They have matured in such different conditions and in such dissimilar environments, that their dialects make it hard to have a dialogue. But now they meet and understand they have a lot to talk about. Indeed, graphic design is the laboratory par excellence for studying visual semiotics, and semiotics is the tool of choice for foregrounding the semantic aspects of graphic design. They belong together – and more so all the time.

NOTES

- 1 The nature of pictoriality is an open question, however. One might imagine a definition that is less restrictive than the one assumed here (an iconic portrayal of a subject), but in so doing, one expands the term well beyond what most people mean by the word 'pictorial'.
- 2 Some might want to further constrain this definition to two-dimensional signals or to static signals, but I prefer a broader envelope. By the definition given here, a television commercial would be considered an instance of graphic design.
- 3 Eco, following the line of thought of Hjelmslev, describes this intransitivity of fine art as returning attention to the *materiality* of the sign vehicle (1976: 261–78). Jakobson calls this the *poetic* function of communication: a message for its own sake. Design is for the sake of utility to a purpose other than itself. Skaggs and Hausman (2012) stress intransitivity as fundamental to art-making.
- 4 Dwiggins, W. A. 'New Kind of Printing Calls for New Design' Boston Evening Transcript 29 August 1922 [*The Origins of Graphic Design in America 1870–1920* by Ellen Mazur Thomson (New Haven and London: Yale University Press, 1997), pp. 184–9.]
- 5 Paul Shaw (2014).
- 6 David Jury (2012), Philip Meggs (1983).
- 7 Poyner (2003) identifies five strategies to accomplish this: opposition, deconstruction, appropriation, techno and authorship. All five lead the receiver to question what they are seeing, to destabilize the apparent authority of the originator of the message, and to cause the audience to become viewers as much as readers of the message.
- 8 Katherine McCoy (1991).
- 9 In highlighting the Cranbrook work it is important to note that others, in both the United States and Europe, contributed to deconstructivist design and the weakening of the modernist paradigm. Especially noteworthy as other early contributors are Wolfgang Weingart in Switzerland, and April Greiman and Rick Valicenti in the United States. The work of these designers is easily found online and in design journals such as *Graphis* and *Communication Arts*.
- 10 Different pragmatists and neo-pragmatists have used varying terms for these three elements. The most common of the alternative terms are representamen/sign/sign vehicle and object/

referent. I will use sign, referent and interpretant, and reserve the term ‘semiotic moment’ when the intent is to describe the triadic relations as an analysable whole.

- 11 Johanna Drucker (1994) addresses this point when she speaks of the near-invisibility, to linguists, of the important semiotic effects of a change of typeface or position of words on a page. While ‘linguists could not recognize the visual material of the linguistic signifier sufficiently to theorize its active role’ (1994: 46) examining the visual materiality of the experimental typography of the early-twentieth-century avant-garde helps us to gain a broader perspective. Drucker uses both deconstructive concepts and Peircean perspectives in her analysis of Dadaist and Futurist typography.
- 12 Indeed, it was likely the influence of Peirce on early programmers at PARC/Xerox, in the development of graphic interfaces for computers, that led them to label the pictographs of trash cans, file folders, loudspeakers and so on, ‘icons’.
- 13 To avoid this ambiguity, it is best to emphasize the action of relating by using the adverbial forms of these terms: an *iconic* relation, an *indexic* relation, a *symbolic* relation.
- 14 Møllerup. *Marks of Distinction*. London, Phaidon Press, 1997.
- 15 Krampen (1965: 12–14): *Design Quarterly* 62, Walker Art Center Minneapolis.
- 16 Another example: ‘rhematic indexic legisign’. While Peirce’s justifications for his terminology make sense from a theoretical perspective and are understood by the specialist, they have undoubtedly retarded the spread of his ideas.
- 17 Morris postulated three branches of semiotic investigation: syntactics, the study of signs with respect to their material, physical or perceptual constitution; semantics, the study of the relations between signs and their referents; and pragmatics, the study of the relation of the sign to users, especially the effects signs have on a public.
- 18 C. M. Johannessen (2010: 120): *Forensic Analysis of Graphic Trademarks: A Multimodal Social Semiotic Approach*. University of Southern Denmark PhD Dissertation.
- 19 The following discussion will lean heavily on Shaleph O’Neill’s *Semiotics of Embodied Interaction* (2008), which provides an excellent basis for those wishing to investigate the particular challenges of the interactive environment.
- 20 The pointing finger, which derives somewhat from Mickey Mouse’s gloved hand, is itself an icon of a more ancient marginal index: the ‘printer’s fist’ of the fourteenth to eighteenth centuries.
- 21 This nostalgic tendency is changing. Telephony, for example, once a function performed by a particular object, is now a function that is diffused through many different objects and platforms, both physical and virtual. Indeed, the fluidity of new media may be expected to ‘splash-back’ upon traditional media as interactive media alter the cultural codes. Metaphors of screen interactivity spread ‘backward’ throughout graphic design, extending into the static, non-interactive spaces.
- 22 An example of this rigidity may be found in the practice of graphology which purports to assign personality or character traits based on very specific mannerisms in handwriting. While it may be possible to identify a person through comparing samples of their handwriting, as each person’s expression through their handwriting (as well as other ways of moving) is probably unique to them, there is no independent empirical evidence to support the more extreme claims made by the graphologists. Their practice is based on a much too rigid code.
- 23 The number of semantic classes is a function of how many degrees of valence the analyst chooses to use for the four semantic operations, as an exponent so that 4^2 (16) or 4^3 (64).
- 24 Doing this smoothing-over-differences work cannot really hope to reconcile the distinction between dyadic and triadic approaches to ‘the sign’ at the most fundamental level, yet there may be a way to *move the emphasis* of analysis back and forth between triadic and dyadic, depending upon the purposes at hand.

- 25 Some use ‘representamen’ as an element of the triad, calling the triad the ‘sign’ but others (including Peirce himself) also use ‘sign’ as the name for one of the triadic elements, leaving the triad itself unnamed. Personally, for many years now I prefer ‘sign’ for the unit of the triad and have been calling the entire triadic set the ‘semiotic moment’.
- 26 Skaggs (2017a, b).

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