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The Language of
New Media

The Interface

In 1984 the director of *Blade Runner*, Ridley Scott, was hired to create a commercial to introduce Apple Computer's new Macintosh. In retrospect, this event is full of historical significance. As Peter Lunenfeld has pointed out, *Blade Runner* (1982) and the Macintosh computer (1984)—released within two years of each other—defined the two aesthetics that, twenty years later, still rule contemporary culture, miring us in what he calls the “permanent present.” One was a futuristic dystopia which combined futurism and decay, computer technology and fetishism, retro-styling and urbanism, Los Angeles and Tokyo. Since *Blade Runner*'s release, its techno-noir has been replayed in countless films, computer games, novels, and other cultural objects. And although a number of strong aesthetic systems have been articulated in the following decades, both by individual artists (Matthew Barney, Mariko Mori) and by commercial culture at large (the 1980s “postmodern” pastiche, the 1990s techno-minimalism), none of them has been able to challenge the hold of *Blade Runner* on our vision of the future.

In contrast to the dark, decayed, “postmodern” vision of *Blade Runner*, the Graphical User Interface (GUI), popularized by Macintosh, remained true to the modernist values of clarity and functionality. The user's screen was ruled by straight lines and rectangular windows that contained smaller rectangles of individual files arranged in a grid. The computer communicated with the user via rectangular boxes containing clean black type rendered against a white background. Subsequent versions of GUI added colors and made it possible for users to customize the appearance of many interface elements, thus somewhat diluting the sterility and boldness of the original monochrome 1984 version. Yet its original aesthetic survives in the displays of hand-held communicators such as Palm Pilot, cellular telephones, car navigation systems, and other consumer electronic products that use small LCD displays comparable in quality to the 1984 Macintosh screen.

Like *Blade Runner*, Macintosh's GUI articulated a vision of the future, although a very different one. In this vision, the lines between the human and its technological creations (computers, androids) are clearly drawn, and decay is not tolerated. In a computer, once a file is created, it never disappears except when explicitly deleted by the user. And even then deleted items can usually be recovered. Thus, if in “meatspace” we have to work to remember, in cyberspace we have to work to forget. (Of course while they run, OS and applications constantly create, write to, and erase various temporary files, as well as swap data between RAM and virtual memory files on a hard drive, but most of this activity remains invisible to the user.)

Also like *Blade Runner*, GUI vision came to influence many other areas of culture. This influence ranges from the purely graphical (for instance, the use of GUI elements by print and TV designers) to the more conceptual. In the 1990s, as the Internet progressively grew in popularity, the role of the digital computer shifted from being a particular technology (a calculator, symbol processor, image manipulator, etc.) to a filter for all culture, a form through which all kinds of cultural and artistic production were mediated. As the window of a Web browser replaced cinema and television screen, the art gallery wall, library and book, all at once, the new situation manifested itself: All culture, past and present, came to be filtered through a computer, with its particular human-computer interface.¹

In semiotic terms, the computer interface acts as a code that carries cultural messages in a variety of media. When you use the Internet, everything you access—texts, music, video, navigable spaces—passes through the interface of the browser and then, in turn, the interface of the OS. In cultural communication, a code is rarely simply a neutral transport mechanism; usually it affects the messages transmitted with its help. For instance, it may make some messages easy to conceive and render others unthinkable. A code may also provide its own model of the world, its own logical system, or ideology; subsequent cultural messages or whole languages created with this code will be limited by its accompanying model, system, or ideology. Most modern cultural theories rely on these notions, which together I will refer to as the “non-transparency of the code” idea. For instance, according to the Whorf-Sapir hypothesis, which enjoyed popularity in the middle of the twentieth century, human thinking is determined by the code of natural language; the speakers of different natural languages perceive and think about the world differently.² The Whorf-Sapir hypothesis is an extreme expression of the “non-transparency of the code” idea; usually it is formulated in less extreme forms. But when we think about the case of the human-computer interface, applying a “strong” version of this idea makes sense. The interface

1. Stephen Johnson's *Interface Culture* makes a claim for the cultural significance of computer interface.

2. Other examples of cultural theories that rely on the “non-transparency of the code” idea are Yuri Lotman's theory of secondary modeling systems, George Lakoff's cognitive linguistics, Jacques Derrida's critique of logocentrism, and Marshall McLuhan's media theory.

shapes how the computer user conceives of the computer itself. It also determines how users think of any media object accessed via a computer. Stripping different media of their original distinctions, the interface imposes its own logic on them. Finally, by organizing computer data in particular ways, the interface provides distinct models of the world. For instance, a hierarchical file system assumes that the world can be organized in a logical multilevel hierarchy. In contrast, a hypertext model of the World Wide Web arranges the world as a nonhierarchical system ruled by metonymy. In short, far from being a transparent window into the data inside a computer, the interface brings with it strong messages of its own.

As an example of how the interface imposes its own logic on media, consider "cut and paste" operations, standard in all software running under the modern GUI. This operation renders insignificant the traditional distinction between spatial and temporal media, since the user can cut and paste parts of images, regions of space, and parts of a temporal composition in exactly the same way. It is also "blind" to traditional distinctions in scale: the user can cut and paste a single pixel, an image, or a whole digital movie in the same way. And last, this operation also renders insignificant the traditional distinctions between media: "cut and paste" can be applied to texts, still and moving images, sounds, and 3-D objects in the same way.

The interface comes to play a crucial role in the information society in yet another way. In this society, work and leisure activities not only increasingly involve computer use, but they also converge around the same interfaces. Both "work" applications (word processors, spreadsheet programs, database programs) and "leisure" applications (computer games, informational DVD) use the same tools and metaphors of GUI. The best example of this convergence is a Web browser employed both in the office and at home, both for work and for play. In this respect information society is quite different from industrial society, with its clear separation between the field of work and the field of leisure. In the nineteenth century Karl Marx imagined that a future communist state would overcome this work-leisure divide as well as the highly specialized and piecemeal character of modern work itself. Marx's ideal citizen would be cutting wood in the morning, gardening in the afternoon, and composing music in the evening. Today, the subject of the information society is engaged in even more activities during a typical day: inputting and analyzing data, running simulations, searching the Internet, playing computer games, watching streaming video, listening to music

online, trading stocks, and so on. Yet in performing all these different activities, the user in essence is always using the same few tools and commands: a computer screen and a mouse; a Web browser; a search engine; cut, paste, copy, delete, and find commands.

If the human-computer interface has become a key semiotic code of the information society as well as its metatool, how does this affect the functioning of cultural objects in general and art objects in particular? As I have already noted, in computer culture it becomes common to construct a number of different interfaces to the same "content." For instance, the same data can be represented as a *2-D graph* or as an *interactive navigable space*. Or, a Web site may guide the user to different versions of the site depending on the bandwidth of her Internet connection. Given these examples, we may be tempted to think of a new media artwork as also possessing two separate levels: content and interface. Thus, the old dichotomies *content—form* and *content—medium* can be rewritten as *content—interface*. But postulating such an opposition assumes that that artwork's content is independent of its medium (in an *historical sense*) or its code (in a *semiotic sense*). Situated in some idealized *medium-free realm*, *content* is assumed to exist before its material expression. These assumptions are correct in the case of the visualization of quantified data; they also apply to classical art with its well-defined iconographic motives and representational conventions. But just as modern thinkers, from Whorf to Derrida, insisted on the "nontransparency of the code" idea, modern artists assumed that content and form cannot be separated. In fact, from the "abstraction" of the 1910s to the "process" of the 1960s, artists have continued to invent concepts and procedures to assure the impossibility of painting some preexistent content.

This leaves us with an interesting paradox. Many new media artworks have what can be called an "informational dimension," the condition that they share with all new media objects. The experience includes retrieving, looking at and thinking about quantified data. Therefore, when we refer to such artworks, we are justified in separating the levels of content and interface. At the same time, new media artworks have more traditional "experiential" or aesthetic dimensions, which justify their status as art rather than information design. These dimensions include a particular configuration of space, time, and surface articulated in the work; a particular sequence of the user's activities over time in interacting with the work; a particular formal, material, and phenomenological user experience. And it is the work's in-

terface that creates its unique materiality and a unique user experience. To change the interface even slightly is to change the work dramatically. From this perspective, to think of an interface as a separate level, as something that can be arbitrarily varied, is to eliminate the status of a new media artwork as art.

There is another way to think about the difference between new media design and new media art in relation to the content—interface dichotomy. In contrast to design, in art the connection between content and form (or, in the case of new media, content and interface) is motivated; that is, the choice of a particular interface is motivated by a work's content to such degree that it can no longer be thought of as a separate level. Content and interface merge into one entity, and no longer can be taken apart.

Finally, the idea of content preexisting interface is challenged in yet another way by new media artworks that dynamically generate their data in real time. While in a menu-based interactive multimedia application or a static Web site, all data already exists before the user accesses it, in dynamic new media artworks, the data is created on the fly, or, to use the new media lingo, at run time. This can be accomplished in a variety of ways: procedural computer graphics, formal language systems, AI and AL programming. All these methods share the same principle: a programmer sets up some initial conditions, rules, or procedures that control the computer program generating the data. For the purposes of the present discussion, the most interesting of these approaches are AL and the evolution paradigm. In the AL approach, the interaction between a number of simple objects at run time leads to the emergence of complex global behaviors. These behaviors can only be obtained in the course of running the computer program; they cannot be predicted beforehand. The evolution paradigm applies the metaphor of evolution theory to the generation of images, shapes, animations, and other media data. The initial data supplied by the programmer acts as a genotype that is expanded into a full phenotype by the computer. In either case, the content of an artwork is the result of a collaboration between the artist/programmer and the computer program, or, if the work is interactive, between the artist, the computer program, and the user. New media artists who have most systematically explored the AL approach are the team of Christa Sommerer and Laurent Mignonneau. In their installation "Life Species," virtual organisms appear and evolve in response to the position, movement, and interactions of visitors. Artist/programmer Karl Sims also made key contributions

to applying the evolution paradigm to media generation. In his installation "Galapagos" computer programs generate twelve different virtual organisms at every iteration; visitors select an organism that will continue to live, copulate, mutate, and reproduce.³ Commercial products that use AL and evolution approaches include computer games such as the *Creatures* series (Mindscape Entertainment) and "virtual pet" toys such as Tamagochi.

In organizing this book, I wanted to highlight the importance of the interface category by placing its discussion right in the beginning. The two sections of this chapter present examples of different issues raised by this category—but they in no way exhaust it. In "The Language of Cultural Interface," I introduce the term "cultural interfaces" to describe interfaces used by stand-alone hypermedia (CD-ROM and DVD titles), Web sites, computer games, and other cultural objects distributed via computers. I analyze how the three cultural forms of the cinema, the printed word, and a general-purpose human-computer interface contributed to shaping the appearance and functionality of cultural interfaces during the 1990s.

The second section, "The Screen and the User," discusses the key element of the modern interface—the computer screen. As in the first section, I am interested in analyzing continuities between the computer interface and older cultural forms, languages, and conventions. This section positions the computer screen within a larger historical tradition and traces different stages in the development of this tradition—the static illusionistic image of Renaissance painting; the moving image of the film screen; the real-time image of radar and television; and the real-time interactive image of the computer screen.

3. http://www.ntticc.or.jp/permanent/index_e.html.