

The Relevance of Semiotics to the Internet: How Web Designers use Metaphors in Web Development

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Abstract

Multimedia based development has matured over the years. Developers have heeded the message to ensure that there is quality interface design and they make careful use of metaphors to improve communication between computer and user.

A look at semiotic theory and interface design guidelines confirms that metaphors are still essential communication components in human-computer interface design. This paper looks at how the relatively immature Internet reflects those essential components.

Metaphors

Semiotic theory

Semiotics is often called 'the study (or theory) of signs'. "It involves the study not only of what we refer to as 'signs' in everyday speech, but of anything which 'stands for' something else" (Chandler, 2000a). Semiotics focuses on the ways producers create signs and the ways audiences understand those signs (Littlejohn, 1999, p330).

A significant amount of semiotic theory revolves around the use of language with a particularly literary focus coming from the work of Ferdinand de Saussure. Saussure identified that different languages use different words for the same thing and that an object

and the word for that object usually have no physical connection. For example, the word 'computer' has no physical resemblance to an actual computer but is an arbitrary 'sign' representing it (Littlejohn 1999, p70). Saussure differentiates between the sign (or signifier) along with what it denotes (the signified), and these two component parts are considered separately (Everard, 1997).

Another important figure in semiotic theory is Charles Saunders Peirce who defined semiotics as a relationship among a sign, an object, and a meaning (Littlejohn 1999, p62). The sign represents the object, or referent, in the mind of an interpreter. Peirce referred to the representation of an object by a sign as the interpretant. For example, the word tree is associated in your mind with a certain type of plant. The word is not the plant, but the association you make (the interpretant) links the two. All three elements are required in a three-way relationship in order for signs to operate (Littlejohn 1999, p62).

Objects (as well as subjects) have a dual existence. First they are what they are; a rock is a rock, a photograph is a photograph, and a person is a person.... On the other hand, a rock may "refer" (connote) to more than what it is. It may refer to a period of time and be representative of the geological time period. A rock may also be seen as representing a type of weapon, depending on what a person does with it. A rock ... may refer to the attributes of strength, protection, and longevity. The company may thus be framed as being solid as a rock.

A rock as a rock is it self, not a representation ... unless it is positioned to refer to something else. A rock becomes a representation when it refers to something else (Communication Theory - Module 3, Accessed 2000).

Reading through this quotation it is hard not to notice the close resemblance to the idea of metaphor in the fundamental definitions of semiotics.

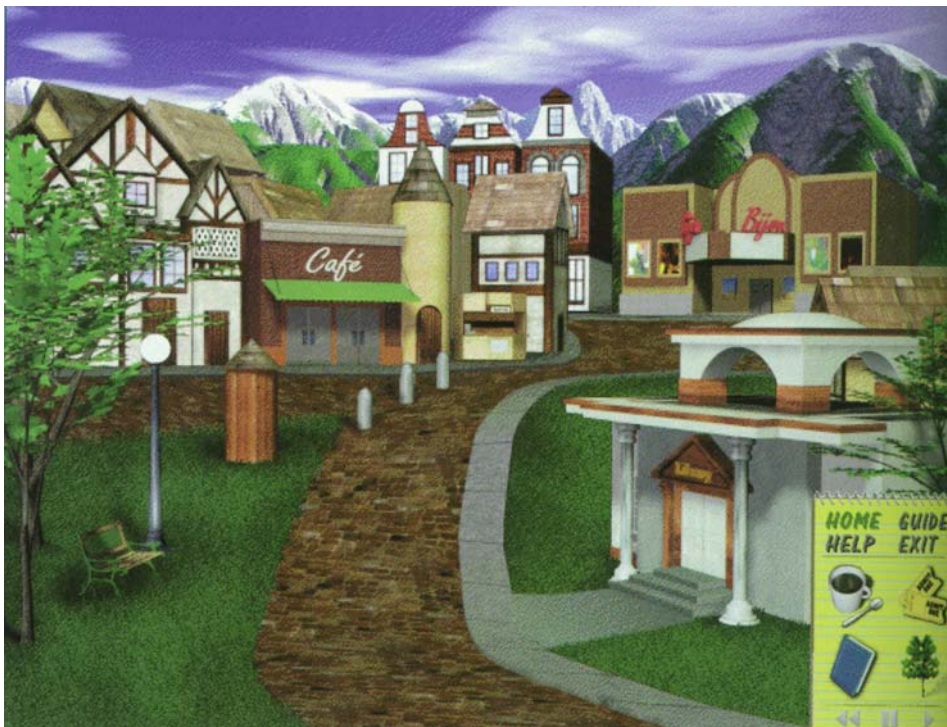
The Metaphor and Semiotics

The Oxford Dictionary definition of a metaphor is the "application of a name or descriptive term or phrase to an object or action where it is not literally applicable." In this way, the metaphor is itself a semiotic sign providing meaning obtained from what is referenced. More than that, the metaphor adds to other communication by providing the association of a meaning to an unfamiliar object rather than only a familiar one. This extra ability of metaphor adds an extra layer to Peirce's sign-object meaning model. Extending from the tree example above, when we introduce the concept of a 'family tree' to someone for the first time, we allow the preexisting identity of a tree to help provide meaning to the way we can look at family history. The metaphor acts as a super-interpretant, providing an interpretation where none would normally exist. This super-interpretation makes the metaphor a vital tool in

computer interface development as it can be used as a powerful sign for the audience viewing it.

Interface Design

Interface design appears to have followed a development sequence from initial text based screens, through graphic enhanced, picture and icon rich screens, to highly developed, metaphor based interfaces. These development stages do not appear to be the result of semiotic analysis but more as an anecdotal discovery by a few key developers. Early adventure games started as electronic 'choose you own adventure' stories where you read the paragraph and typed in what you were going to do next. Graphic based adventures followed where images enhanced each screen but the user was still expected to select an option or type in the next action. Current adventure games use a joystick, mouse or other device to interact directly with the 'virtual world'. In these environments metaphors abound. A similar sequence has happened for information kiosks, interactive children's software, training software and even some database development. The following screen is from a management training program on an interactive CD. "Learning sessions take place in several locations within a 3-D Alpine village: in the cafe over a cup of coffee, in the library, at the theatre and on a bench in the village park with a friendly stranger who just happens to be knowledgeable about management training."



Even the vendor at the newstand is helpful about management issues (Interface 1997, p62).

Today, graphical metaphors are pervasive throughout our understanding of computer systems (Smyth, Anderson, Knott, & Altry 1995, p339). The use of windows, trash or recycle bin, menus and buttons are part of normal computer use. Metaphors were adopted because they allowed new users to quickly learn new concepts by applying their existing knowledge to the metaphor. The importance of metaphor in system design is strongly recommended.

One of the most important issues to be considered in system design is how best to convey the functional attributes and action-oriented possibilities of the system to the user via the human-computer interface. Current thinking suggests that a particularly powerful technique is the use of metaphors based on real world, and therefore familiar, objects and activities to represent system properties (Anderson, B., Smyth, M., Knott, P., Bergan, M., Bergan, J. & Alty, J. 1994, p179)

As computer systems have become more capable and images more prevalent, quality graphic design has enabled systems to achieve their potential to communicate. (Marcus, 1995, p425). The use of metaphors has improved the speed of learning a system, even with naive users, by making it easier to preserve a mental model of what is happening (van der Veer 1990, p146, Gardiner 1987, p229). With this level of commitment to the use of metaphor in interface design, it is an obvious expectation that the Internet would follow suit.

The Metaphor and the Web

The world of the web is the perfect hot house for metaphor development. The ground has been prepared from years of interface design experience and developers have access to well-developed text and graphical tools. Even the terminology of the 'web' and 'browser' are metaphorical and make use of metaphor in the way they function.

The two main browsers that web pages appear in, namely Netscape and Explorer, use iconic metaphors to assist the user. The default page or home page appears in the browser when an iconic representation of a 'house' is clicked. Both browsers use a red coloured icon to stop a page from loading. Netscape's octagonal sign resembling the internationally recognised traffic stop sign. Both browsers use metaphors in the icon used for finding things on the page, binoculars for Netscape and a magnifying glass for Explorer. This use of metaphoric signs is a well established technique in browser software.

Web pages that use good integrated metaphors have been shown to communicate better, facilitate performance and significantly reduce functional errors by those using it (Smilowitz accessed 2000). The same study suggests that "The function labels (terminology) carries much of the weight in conveying the interface metaphor to the user, and therefore should be carefully chosen. The icons while visually appealing and practical in terms of conserving

screen real estate do not appear to effectively convey the metaphor.” (Smilowitz accessed 2000). It’s not the pictures that are important, it is the metaphor, the semiotic sign, that improves the communication.

As with interface design, web designers are encouraged to use metaphors in their development (Henke, 1997). The significant emphasis on using metaphor to improve communication leads to a logical assumption that web developers would make extensive use of metaphor on the pages they develop.

The Metaphor and Web design

It is surprising to note that metaphor is not much of a communication tool in the hands of web page developers. Even the software development companies, heavily into metaphor when it comes to their CD development, have overlooked the use of metaphor on their web sites.

The Discovery Channel has a long history of software development with extensive use of metaphor. Their website is much like everyone else’s – a few hypertext links. The use of hypertext for navigation forms no relationship to their real function. The function of the hypertext links has to be learned and may not be intuitive for new users.

Compare the Discovery Channel website to the navigation on their interactive CD ‘Nile: Passage to Egypt’, where the navigation is icons set in the bow of a boat within a travel metaphor.

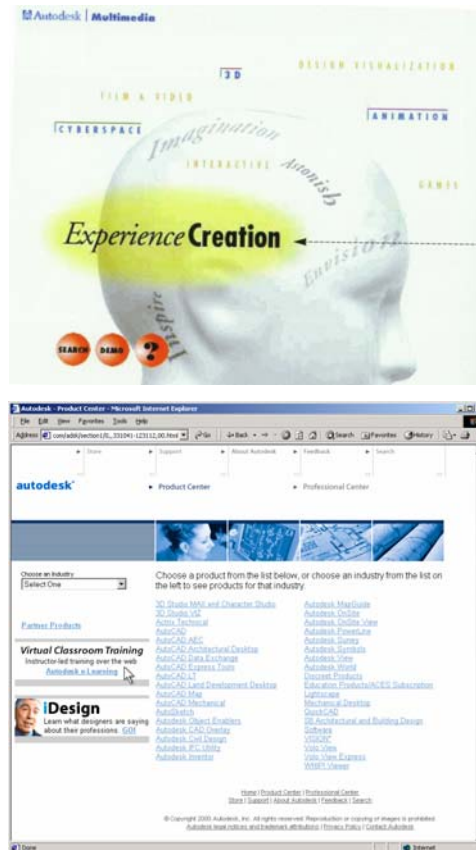
Here the user is presented with the automatic feeling that they are intended to travel and are shown the range of tools. Without any preparation a user can guess what to do and that they are not going to jump from place to place but will only be able to go to places on the shore of this waterway. The internet pages, on the other hand, leaves the user having to guess what they can do, without the support of a metaphor.

The level of web based semiotic representation is summarised by Philippe Codognet.

“Web pages are usually full of small images that act as user-friendly and aesthetically appealing ways of navigating through the network. These are symbolic signs, in the sense that their object must be conventionally established in order to help the reader to orient himself in a homogeneous and unlimited cyberspace. In general, all pages at one Web site (physical/logical place hosted by some institution) are homogenized in order to use the same symbols to designate basic moves in the hypertext documentation (usually at the top or bottom of the pages), in such a way that the reader can quickly learn their conventional meaning.” (Codognet accessed 2000)

This summary identifies the use of icons, which have been shown to be of minimal value (Smilowitz) but does not mention the metaphors that a quality website should contain in order to improve communication.

A more surprising discovery is a web site that in 1997 had a metaphorical look to it, that now has a more generic web look to it.



The first image is the from the Autodesk multimedia website as it was in 1997. (Interface, p10). The picture on the right is as it is in 2000. [Autodesk is a multimedia development company specialising in software for 3-D rendering and animation]. The metaphor on the original page communicates visually and makes for “an easily navigable and graphically pleasing site.” (Interface, p10). The 2000 version looks like any other web page and has lost the super-interpretant value of metaphor.

The important goal of a website is communication, and metaphor is a significant component of successful communication using a computer interface, and yet it does not appear to have been adopted. There are two considerations that may help to explain this lack of acceptance. The first is that the Internet may not have reached the stage of development where metaphors are used and secondly that the Internet is so pervasive that it does not need the super-interpretant value provided by the metaphor.

Stage or Genre

As mentioned earlier most new computer based technologies begin with text, become graphic enhanced, and then make use of metaphors. Websites have gone through a text-based stage, and now could be considered graphic enhanced. It is reasonable to consider that websites will move to the use of metaphor as the next stage. The author of a website dedicated to the identifying quality internet development suggests there is a new stage that web design will move on to, namely third-generation websites.

A third-generation site uses typographic and visual layout principles to describe a page in two dimensions. Third-generation site designers carefully specify the position and relationships of all elements on the page, retaining fine control of the layout. Third-generation sites use metaphor and visual theme to entice and guide, creating a whole experience for surfers from the first splash screen to the exit. (Creating Killer Websites, accessed 2000)

The transition to third generation, metaphoric sites could be seen as a natural progression. But that does not explain why a 3-D design company would go from an image oriented metaphoric site to a more generic web page.

The establishing of web sites as a genre of their own has the potential to take away the power of metaphor. Semiotic study shows that, given time, signs take on a meaning of their own and no longer need to use semiotic techniques to aid in communicating ideas. It is reasonable to assume that web page formats and the use of icons and hyperlinks are now considered normal in the same way that a computer menu no longer relies on the menu concept to be understood.

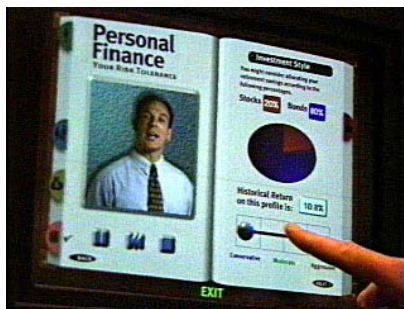
What are recognized as 'realistic' styles of representation reflect an aesthetic code. Over time, certain methods of production within a medium and a genre become naturalised. The content comes to be accepted as a 'reflection of reality' (Chandler, 2000b).

The idea is that the web is its own reality. As the Internet browser becomes a common everyday interface, like a telephone, the signs used to assist the communication withdraw into the background. Perhaps web designers will never need to resort to the use of metaphor to communicate.

Conclusion

A paradox exists between the value of metaphor and the function of web pages. There are companies advertising their interactive CDs, full of metaphors, on a site where metaphors

don't exist. There are web pages where statements on the value of metaphor in interface design lie in a site absent of any form of metaphor for navigation or content. One site viewed in 1999 lists a Kiosk and a website designed for the same client by the same design firm.



The Kiosk, on the left, is in the form of a metaphorical book with tabbed pages identifying things to look at. The web page uses no metaphor at all, relying on the ‘familiarity’ of buttons and hypertext to communicate (Marcolina, 1997).

Saussure suggests that “Strictly speaking there are no signs but differences between signs” (Ferdinand de Saussure, 1997) and also that “Signs are stored in your memory, for example, not in syntagmatic links or sentences, but in associative groups” (Ferdinand de Saussure, 1997). That being so, the lack of distinction between web sites and the lack of memorable metaphors means that web designers are missing out on important facets of communication. There is a potential for a learning revolution if web designers discover metaphors.

So, how do web designers use metaphors in web design – apparently not very well.

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