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## **Metaphors, Visual Blends and the Ideology of Information Technology**

### **Abstract**

In this article I argue from linguistic and visual evidence that the information highway metaphor is having tremendous ideological effects in shaping U.S. politics over technology. I apply Lakoff and Johnson's theory of conceptual metaphor to the linguistic and visual evidence, but then argue that Fauconnier and Turner's theory of conceptual blending is useful to explain the visual and linguistic evidence in its full complexity. I conclude by summarizing the ways in which current ideological uses of conceptual metaphors and conceptual blends are assimilating the older innovative software design metaphors for operating systems.

### **1. Summary: The New Internet Politics**

The original luster of optimism about the internet and the world wide web has begun to fade both as the technology has matured and as financial concerns about a web site's bottom line have begun to play an increasing role in the content of a web site. The internet has embarked on a transition from its origin as a conduit for global information exchange into an advertising driven commercial marketplace. In earlier studies of political speeches and news media articles about technology policy (Rohrer 1997a, 1997b), I analyzed the metaphors of the internet and argued that much of the political rhetoric concerning the internet was conceptualized as an elaborate conduit metaphor where the internet is conceived as the flow of goods that can travel to the user (the *cyberspace* conceptual metaphor) or by using a spatialization of time metaphor in which the internet is conceived as a transformative social program that will bring about a better future by creating jobs, stimulating the economy, etc. (U.S. Vice-president Al Gore's *cyberfuture* metaphor). I also investigated several other alternatives for characterizing

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the internet and world wide web, but concluded that they had not then captivated enough public attention to present viable opposition.

In this article I explore how the internet has come to possess a hidden ideology which largely takes place in visual blends. Visual blends are visual representations of one or more conceptual metaphors which, like conceptual blends (Fauconnier and Turner 1998), prompt considerable inferential work on the part of the viewer.

I begin by arguing that the transition to a cybermarketplace constitutes a successful conceptual blend of these two metaphor systems which has effectively squelched all alternatives. I analyze the humor of a political cartoon to explain how two different metaphor systems can be recruited together into a novel visualization of a conceptual blend. In fact, parts of the cybermarketplace blend are now being built into web browsers as features like “channels,” “push” technology, the “active desktop,” etc. In the United States, Microsoft finds itself the target of anti-trust suits regarding allegedly monopolistic practices, including its integration of such browser technology into the operating system itself.

Further, the failure of most internet corporations to make a profit has driven the graphic designers to new heights of desperation in advertising. While the human computer interface has long shared an intimate relationship with conceptual metaphors such as the *DESKTOP* metaphor, I present several examples of a recent perversion of this innovation in computer design. These are visual blends in which the successful elements of the *DESKTOP* metaphor such as command and option buttons are now being coopted as elements of advertisements, where they serve no operating system function but instead intended to deceptively lead an unsuspecting user to the advertiser’s web site.

I conclude by arguing that the recent history of the ideology of the internet has shown that while it might be true that absolute power might corrupt one absolutely, it is even truer that modern capitalism can corrupt a metaphoric innovation even more quickly.

## **2. Visual Blending: The Cybermarketplace Under Construction**

Imagine the following political cartoon: a highway overpass, a road sign reading “Info Super Highway,” and trucks whizzing along the highway. These cues all evoke the frequently employed metaphor of the

*INTERNET AS AN INFORMATION HIGHWAY.* Under the usual version of this metaphor, the highway is seen as the conduit for the commerce of the information age. The cables of the internet make up the highways, while goods such as software, entertainment and the like travel over these highways from the supplier's computer to the consumer's computer.

But MacNelly's cartoon (see figure 1) comes with more intriguing elements: Underneath the overpass, standing in its shade, a pot-bellied highway construction worker holds up a sign to slow traffic. Likewise, sawhorses are also supposed to slow and redirect the traffic around him. Of course, in standing under the overpass the flagman is utterly ineffectual at slowing any traffic—the trucks above him whiz on by, oblivious to his presence, their speed marked by the artistic convention of drawing blurred lines along the path of motion. It is our first clue that something is amiss in this picture. As is the case for much humor, the punch of this cartoon relies on our desire to make sense of such incongruities, to integrate them into a meaningful conceptual whole.



Figure 1—MacNelly Cartoon

Two other prominent textual clues help us unpack the meaning of this cartoon. First, the flagman's sawhorses read "Gov't Regulation." This is

another slightly incongruous element—such sawhorses, when employed at a highway construction site, typically read “Property of Illinois Department of Transportation” or some similar governmental agency. This vital clue, “government regulation,” prompts us to reason that the cartoon is poking fun at the U.S. government’s technology policy. Just as a real flagman standing beneath the highway would be totally ineffective at slowing traffic on the real highway, the government’s effort to regulate the information highway is supposed to be similarly hapless. On this reading, the artist is pointing out that the government’s efforts to regulate commerce on the information highway are absurd and unwanted. Government regulators, like the construction worker, are entirely out of place by trying to regulate the internet as they try to slow traffic down on it by hampering the free flow of goods with burdensome regulations.

To give such a reading is to read the cartoon in a straightforwardly metaphoric way using the *INTERNET AS AN INFORMATION HIGHWAY* metaphor which I introduced at the beginning of this article. However, the second prominent textual clue prompts further work on the viewer’s part. A large caption hangs across the cartoon, not quite connected to any of the visual elements in the background. This caption reads “Under Construction.” Of course, in one sense, “under” can be taken to refer to the fact that the construction worker is physically standing beneath the highway; however, the caption is unusual in that the highway does not appear to be in the process of construction, but rather already built. The commoner meaning in American English of the phrase “under construction” would not be spatial, but instead this second temporal sense of being in progress, or incomplete. The fact that this phrase hangs over the background like a caption might make us think that the highway depicted is only a model, a mock-up, an architect’s blueprint. With this clue in mind, we might think that the highway is still to be constructed, and that it will be built in the future. Of course, this insight remains still slightly incongruous, given the some of the details found in the drawing. Elements such as the shade under the highway and the speed lines indicating the motion of the trucks are not usually represented in an architect’s model. Despite this incongruity—to which I will return later—I think this line of interpretation will prove promising.

Political cartoons are not normally intended as museum pieces, to be enjoyed without the company of their surrounding context, so perhaps I

should set our cartoon in context. I first saw it in June 1995, about eighteen months after U.S. Vice-president had given a famous and controversial speech announcing the Clinton administration's National Information Infrastructure Initiative in December 1993 (analyzed in detail in Rohrer 1997a, 1997b). That address touched off a storm of controversy about the government's role in internet activity which continues to this day in the United States. One of the key points of contention in this debate is the extent of government investment in and regulation of the internet. Gore first drew an elaborate and conscious parallel between the economic prosperity that the post-World War II United States enjoyed as a result of the investment in the interstate highway infrastructure, and future economic prosperity in the 21<sup>st</sup> century as a result of investing in information infrastructure. Gore proposed that the U.S. government continue to play a leading role as a capital investor in building high-speed information networks, particularly between universities.

That much was relatively uncontroversial; some government investment in funding cutting edge technology at the university level is widely accepted in the United States. However, Gore's vision of a single unified network of highways on which all variety of information might travel had metaphoric entailments for technology policy which irked many in the technological and business communities. Particularly controversial was Gore's argument that the government should ensure good access to information in order that libraries in rural areas, poor inner city neighborhoods and other economically less attractive areas were not bypassed by the information highway. Also controversial was Gore's insistence that the roads of the information highway must be "two-way roads," by which he meant that users should be able to actively participate in what information they sought rather than simply receiving broadcast information. Technologists argued that technological innovations and market pressures would be stifled if government tried to ensure by regulation that all types of information should reach every community and every household, and business leaders feared that the government would use its partnership in developing the technology to regulate how and where business made capital investments in the information infrastructure. This cartoon appeared in the midst of such debate.

I want to suggest that the highway in the visual blend of the cartoon does not just draw on the information highway conceived as a conduit

to deliver consumer goods, but also draws on Gore's technology policy metaphorically understood as the highway which leads into the future. Of course nearly everyone acknowledges that the success of the internet has been a driving force in transforming contemporary culture. One of the commonest metaphors for understanding the changes the future will bring is that future experiences are like those we encounter as we journey down a highway. (As an first example, consider that the cover art of Microsoft chairman Bill Gates' book "The Road Ahead" is a road stretching into the horizon.) The reason that this figure is so common in American English is that we have a deep-seated conceptual metaphor in which we understand *TIME AS SPACE* (Lakoff and Johnson, 1980; Lakoff 1993). Places along the road are understood as future destinations, while the past is understood as places along the road behind us. When combined with the *INFORMATION HIGHWAY* metaphor, this metaphor explains how the fact that internet technology is transforming the future can be understood as traveling the road ahead. For example, in my previous research I showed how we often speak of new technologies such as digital video-on-demand which are "*just around the corner*" or "*due to arrive shortly*." Among the other examples I gathered from news media reports of the political debate over the information highway was a striking quote from a Texas congressman who said that major corporations had "*billions parked alongside the information highway*." The ensuing article reported that he had made it clear that what he meant was that it was time for the U.S. government to produce a legislative framework in which secure investment in building the information highway could take place. Such language is evidence that there is another side to the *INFORMATION HIGHWAY* metaphor than the moving *information-goods* along a *cable-information highway* already outlined.

I have called this particular version of the *INFORMATION HIGHWAY* metaphor the *cyberfuture* special case in order to distinguish it from the more ordinary *cyberspace* case of the metaphor. While the cyberspace version focuses on the information highway as a conduit for goods, the cyberfuture version focused on the information highway as the road which leads into the future. Gore's proposals touched off controversy because in his speech he articulated a vision which blended together incongruous elements from both the cyberspace and the cyberfuture metaphor systems—much as happens in our political cartoon. The fear inferred from this blend—and an archetypical fear of the radical indi-

vidualist and pro-business strains of the American political milieu—was that Gore’s proposal amounted to a return to a kind of state-enforced liberal socialism, which is the direction that those particular American political factions deplored. Such fears have a historical basis in the fact that former Senator Al Gore, Sr., the vice-president’s father, had championed government investment in the transportation infrastructure as a jobs program.

If we interpret the cartoon in this way, then it, like Gore’s speech, is a deliberate blend between the cyberfuture and the cyberspace versions of the metaphor. Notice another subtle element, aside from the vagaries of the “Under Construction” caption, that coheres with the cyberfuture version of the metaphor. All the traffic depicted in the cartoon is going in one direction, much like the unidirectional and irrepressible flow of time into the future. This element dramatizes our sense of the inevitability of the future: The information highway is being built and carrying us into the future, regardless of whether or not the government planners who promise an infrastructure initiative are really in a position to plan the information highway. Rather than simply poking fun at the government’s ineptness in regulating the internet by slowing traffic (the flow of goods) down, the visual blend here also pokes fun at the government as slowing down the *corporations-traffic* which are engaged in a head-long rush into the future.

My point is that not only that we have at least two different ways of resolving the various incongruities in the cartoon, depending on which metaphoric connections we make, but that elements from both metaphors are integrated in this visual blend. We might prompt the differing lines of interpretations with the question: Is the highway under construction, or is the government under *the* construction? If we see it that the information highway has already been built and the government is simply ineffectually standing under the construction, then we have the straightforward metaphoric interpretation I gave first, though it remains incongruous with exact phrasing of the caption. If we see it as the highway is still under construction and the government policy is also under construction, then we see the cartoon as depicting Gore’s proposal as a kind of deeply transformative force on the American political future. Of course, the point of the cartoon remains that the government is ineffective, but it also has the deeper meaning that it is as ineffective in plan-

ning the future as it is in regulating the present. Both metaphors are blended in the cartoon, and that makes both readings possible.

### **3. Theoretical Context: Conceptual Metaphor, Conceptual Blending and Visual Images**

As is no doubt obvious by this point, MacNelly's cartoon is a sophisticated one which engenders numerous readings and varied interpretations. However, it also happens to be an excellent illustration of how some of the more prominent theories in cognitive interact. Conceptual metaphor theory, as set out by Lakoff and Johnson (1980; 1998; Lakoff 1987a, 1991), makes its claim to fame by explaining how much of our linguistic structure can be explained by our automatic, unattended conceptualization. Such metaphors and metonymies involve a systematic conceptual mapping from a source domain to a target domain that is deeply entrenched in our cognition and utilizes image schematic patterns established in our long term memory (Johnson 1987). For example, we know from the course of our development that agents are responsible for their causal effects, and so we have an entrenched conceptual metonymy in which THE AGENT OF AN INSTITUTION STANDS FOR THE ACTIONS DONE BY THAT INSTITUTION; hence, in understanding the cartoon we readily make the shift between the highway construction worker as agent of the government and the government's efforts to regulate or plan the information highway. The kind of conceptual mapping performed using this metonymy is so conventional and automatic that we do not ordinarily consciously notice its role as we construct meaningful interpretations.

Often the heights of human creativity can be explained as extensions to existing conceptual metaphors, but sometimes they cannot. Though a surprising number of creative metaphoric expressions consist of extensions to the ordinary conceptual metaphor system (especially in poetry—see Lakoff and Turner 1989, Turner 1991), not all creative metaphoric expressions involve systematic conceptual metaphors (as reported in Lakoff 1987b). Partly as a response to this difficulty,<sup>1</sup> Fauconnier

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<sup>1</sup> Fauconnier and Turner are careful to point out that explaining novelty is only a partial motivation for conceptual blending theory. They insist that it is not merely driven by attended creative processes, but is instead a general purpose cognitive operation which underlies many unattended features of cognition as well, pointing out that though most

and Turner (1995; 1998; Turner 1996) developed the theory now known by the name conceptual integration networks, or more simply as conceptual blending. Conceptual integration is an account of the cognitive operations of mapping and projection that is particularly apt at explaining complex metaphor-like phenomena, such as those which require projection from more than one input to the target, those visual images which require the integration of numerous metaphors and metonymies (Coulson 1995; forthcoming), those which require binding semantic lexemes to non semantic phenomena such as syntactic constructions<sup>2</sup> (Mandelblit 1997) or phonetic variants such as puns. Conceptual integration theory differs from conceptual metaphor theory in that it does not only operate over conceptual domains, but over even higher level cognitive structures called mental spaces (Fauconnier 1995). Mental spaces are more flexible cognitive constructs which can, for example, consist of the amalgamation of a conceptual metaphor. Though not exact, one can analogize some the differences between the theories of conceptual domains and mental spaces to the differences between long term and working memory. Conceptual domains and image schemata are deep structures expressed and learned from early childhood experiences, while mental spaces are flexible online assemblies constructed as we speak.

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previous “authors, however, take blending to be somewhat exotic, marginal manifestations of meaning. We will show here that the process is in fact central, uniform and persuasive” (Fauconnier and Turner 1998: 136). In my view, the strongest evidence for blending as a general operation of cognition and which also distinguishes it as being more than simply a refinement of a conceptual metaphor theory is its success in bringing together the explanations of how semantics can be integrated with grammatical, rhetorical and phonetic constructions, such as those set out in the theories of cognitive grammar of Langacker, Talmy and Goldberg. In several previous lectures I have referred to this problem the “What is conceptual metaphor in grammar?” problem, and have suggested that the germ of the answer can be found in Nili Mandelblit’s dissertation. See next footnote for examples and further explanation.

<sup>2</sup> Mandelblit’s work focused on modeling how Goldberg-like constructions are blended with lexemes not normally permissible in those constructions. For example, she gave the sentence “the sergeant *waved* the tanks into the compound” is slightly anomalous because the verb “waved” not normally a ditransitive verb. Similarly Goldberg gives the famous anomalous example of a lexeme acquiring ditransitivity from a construction: “She *sneezed* the napkin off the table,” and the most anomalous example I have heard to date comes from Per Aage Brandt “He *charmed* the pants off the girl.” However entertaining such dramatic examples get, Mandelblit’s point is that all the integrations performed in binding constructions to lexemes are underlaid by the general operation of blending, even the less noticeable and hence unattended ones.

In conceptual integration theory, structure from two or more input spaces is projected into a third mental space in which the integration takes place (the blend). The blend gets partial projection from each the inputs and can develop emergent structure of its own. For purposes of clarity, a fourth mental space, the generic space, is usually given in order to explicitly represent that structure which is common to the input spaces. The mental spaces contain elements which can be mapped across spaces to one another. Additionally, they contain frames which organize these elements and their topological relationships or functional roles to one another and these frames may be projected to the blend space independently of the specific elements. A general schema for conceptual integration, after Fauconnier and Turner (1998), is presented in figure 2.

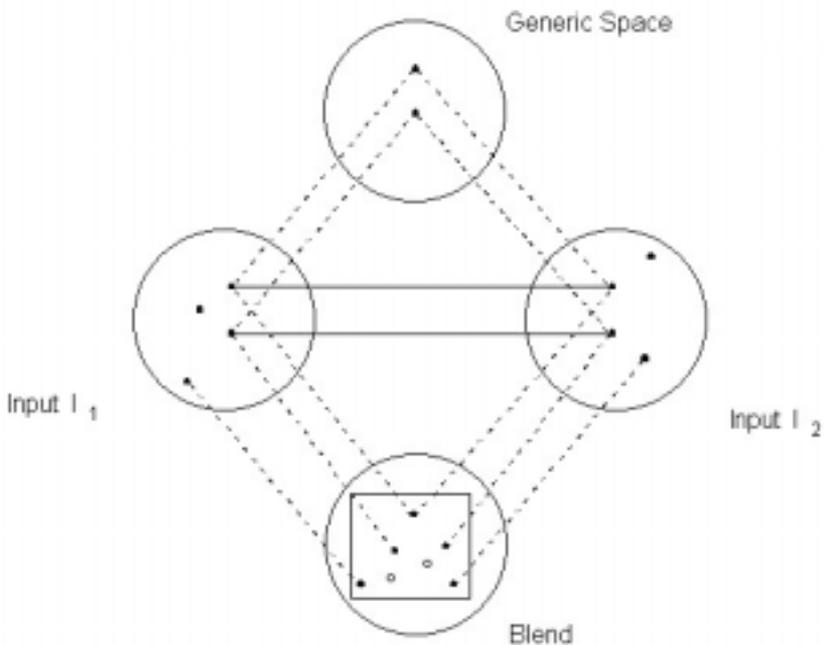


Figure 2—Conceptual Blending Schema

Visual blends, as concrete visual images of conceptual blending processes, can serve as good illustrations of the blending framework, as I will now do using the cartoon example already discussed. In the MacNelly cartoon, the generic space contains many of the standard elements of transportation highway construction such as the highway, the flagman, the usual topological relationship between the flagman and the highway (he stands beside it), and the traffic moving on the highway. The input spaces to the final blend depicted in the cartoon are each metaphoric, as the cartoon draws on both the cyberspace and cyberfuture versions of the *INFORMATION HIGHWAY* metaphor. One input space contains metaphoric elements pertinent to the cyberspace metaphor, such as the conception of cables as highways, highway construction as the laying of cable, traffic as the information-goods moving along those cables, and the flagman as the government regulator who occasionally slows down traffic so that further construction can take place. The second input space contains metaphoric elements pertinent to the cyberfuture metaphor, such as the information highway as the plan for ensuring that the United States will be a strong economic competitor in the future, the traffic as the corporations, individuals and other groups which wish travel into the cyberfuture, the flagman as a government planner who is responsible for developing the plan for an information infrastructure that will lead us into the future, and highway construction as actually implementing that plan. Notice that the elements in the input spaces are not exact counterparts of one another; traffic is moving goods along cables in one space while it is corporations moving into the future in another. Similarly, the flagman and construction worker has a unitary representation in the visual representation, but the technical people who actually do the building of the information highway often have a disdain for government planners, and actively dislike being equated with them as they view their role of building the information highway as being at cross purposes to the planning or regulating of it. From their perspective, they are engaged in speeding traffic up, while regulators and planners just get in the way and slow things down. This kind of less than perfect integration of counterparts contributes to the instability of the visual blend of the cartoon, which in turn leads to the multiple interpretations advanced previously.

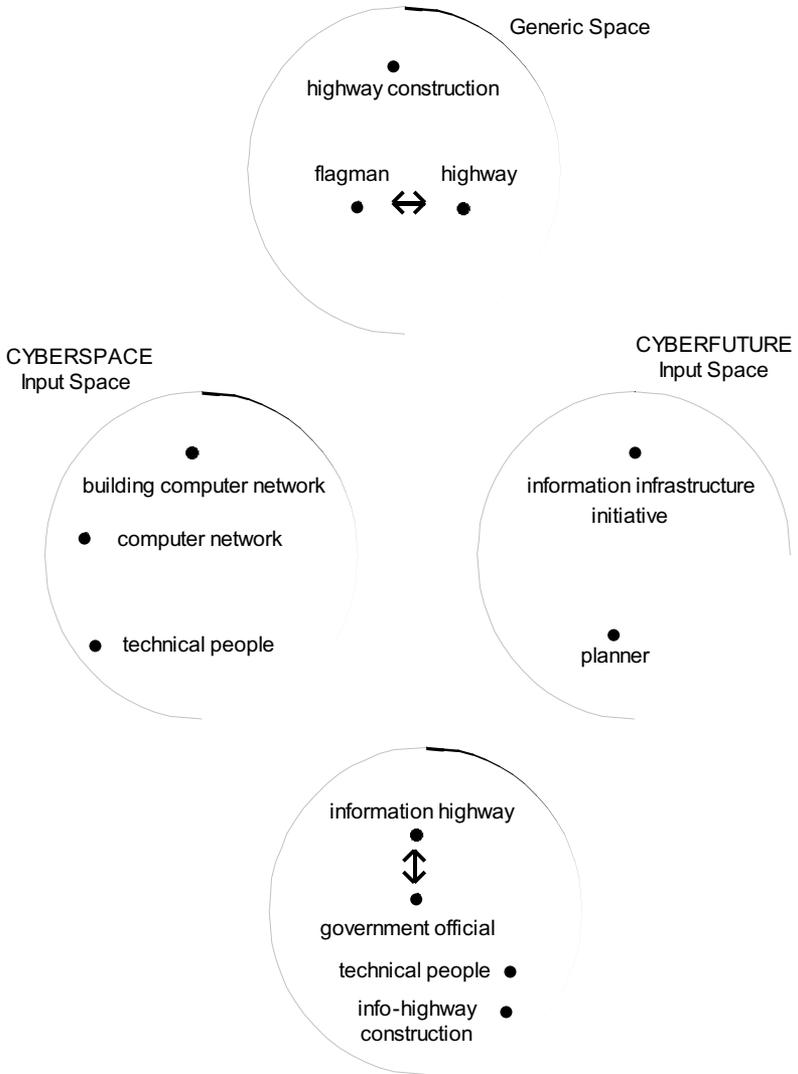


Figure 3—The visual Blend in the MacNelly Cartoon

The blend is visually represented by mixing verbal cues with a fairly standard representation of the generic space. For example, the phrase “information super highway” is depicted on a road sign typical of those signs used on American freeways, and I have already discussed the details of the placement of the phrases “gov’t regulation” and “under construction.” However, various visual and textual details come from only one space to the blend. For example, traffic moves in two directions on transportation highways. Consider that on the cyberspace version of the information highway as we ordinarily imagine ourselves as traveling on the information highway to a information supply site and then bringing home information or goods (Maglio and Matlock 1998). Also, at a more technical level, Gore notes in his speech that the transmission of the information must be two-way in order for us to be selective about what information to bring back, in contrast to the broadcast-based models of information technology where the suppliers send out the same information regardless of who wishes to receive it. However, the element of two-way traffic is not in the visual representation of the cartoon; we see traffic moving in only one direction, an element thus more consistent with the cyberfuture input space. There is also emergent structure within the blend; in order to represent the futility of government efforts to regulate and plan the information infrastructure, the flagman is given the unorthodox topological relationship to the highway of standing *under* it rather than *beside* it. Though in the generic space, this topological relationship is not explicitly represented in either of the inputs; but the ironic contrast of the blend to the normal topological relationship between these elements in the generic space is much of what makes this cartoon humorous. Similarly, the incongruity mentioned earlier between seeing the highway as a cyberfuturistic model of what is to be built and the presence of shade in the cartoon can be now be seen as visually depicting the government as lazy, and inept by depicting the flagman as resting in the shade under the highway—providing even more humor to be extracted from the blended space.

In general, visual blends such as those frequently employed in cartoons are another area of phenomena in which it is useful to adopt the theoretic framework of conceptual integration to supplement the insights produced by applying conceptual metaphor theory to visual images. As I have shown, many visual images have metaphoric and metonymic components which can be blended together into richly tex-

tured visual images. This cartoon depicts something which we might usefully call the *cybermarketplace*, a blend which incorporates elements both of the information highway as a conduit for goods and as a transformative ideological force in society. In the rest of this paper I will take a more critical turn by analyzing the ways in which this particular blend has begun to be perceived by many as an ideological danger. I shall take as my topic various controversies over the ways in which the computer interface and its desktop metaphor has been assimilated into the cybermarketplace blend. As a caveat however, I should explicitly point out that while I will criticize the changes in the desktop metaphor that this specific blend is instigating, I do not think that blending in general is ideologically suspect (while metaphor is not). Instead I think blending is a cognitive mechanism, on a par with conceptual metaphor, that can be and is deployed in various ways to a multitude of ideological ends. Finally, it should be made explicit that the conception of cognition here includes the level of cultural communication and artifacts as well as the level of individual psychological performance (see Hutchins 1995 and Rohrer 1998 for further commentary on this expanded notion of cognition).

#### **4. Commercializing the Desktop: Browsers, Televisions, and Operating Systems**

Blending does not come without consequences. Microsoft is currently the target of an antitrust suit in the United States over some of the ways in which it has implemented the cybermarketplace blend. To understand the motivation and issues behind this lawsuit, one needs to understand a little bit about the history of innovations in the operating system software design in particular, and the importance of metaphor and blending to software design in general.

In the late 1970s designers at Xerox's Palo Alto Research Center were experimenting with ways to improve human computer interaction, and they built a computer interface called the Star system. The essential idea behind the Star system was to give the computer a graphical user interface (GUI) in which ordinary computer tasks would look and work as much like ordinary office tasks as possible. In particular, the Star interface made use of the idea of the computer screen as a window which could zoom to show all or part of a document at a time, and treat-

ed directory structures as file folders and files as objects represented by icons that could be spatially manipulated using a mouse or other pointing device. The early Macintosh operating system refined their approach to the virtual office and systematized it as the *DESKTOP* metaphor, and later Microsoft's Windows operating system would draw its inspiration from both the Mac and the earlier systems. This innovation made computers much more intelligible and easier for the novice to learn to use, because it drew on an elaborate and systematic metaphoric mapping from something which many users already had experienced—working in an office environment. The shift from a conversational to a GUI interface also provided users with a heightened sense of agency, for rather than presenting information in a manner which primarily engaged our semantic sense, the desktop GUI simulated a virtual world which engaged multiple sensory modalities (Rohrer 1995). Finally, the desktop is also provided for another level of consistency by providing a toolbox of input and output routines that standardized the features of the interface for different application programs. The conceptual mapping of the *DESKTOP* metaphor system is given in Table 1.

<i>INTERFACE AS DESKTOP metaphor</i>	
DESKTOP (source domain)	HUMAN-COMPUTER INTERFACE (target domain)
Desktop	fi Screen
Documents	fi Files
Directories	fi Folder
Storage	fi Drive icons
Moving physical objects	fi Dragging icons
Putting physical objects down	fi Dropping icons
Deleting documents	fi Dropping icons in trash (recycle bin)
Focusing on a task	fi 'Zooming in' opening window
Putting away a task	fi 'Zooming out', closing window

Table 1—The Conceptual Mapping of the *DESKTOP* Metaphor

It is important to see that the *DESKTOP* metaphor was not an isolated application of metaphor to software design, but was instead part of a

widespread revolution in software design. In general, the greatest innovations in software design over the last twenty-five years have been metaphoric in nature. Steven Levy makes this point succinctly:

“Metaphor, it turns out, is the key to making computers comprehensible. It was not until the late 1970s when two Harvard Business School students named Dan Bricklin and Bob Frankston used a metaphor easily accessible to people who worked with money—accountants, economists, bookkeepers and anyone who ever wrote a business plan—that personal computers crossed the line from a hobbyist obsession to a compelling tool. The metaphor was that of a spreadsheet—the grid of rows and columns by which one calculated profit and loss. Their electronic spreadsheet VisiCalc, and it had many advantages over its paper counterpart, not the least of which was that it liberated users from having to tediously recalculate the entire spreadsheet to reflect changes caused by changing a single number. This freedom allowed people to experiment without penalty, and it actually changed the perception of a spreadsheet from a document of hard costs into a modeling tool by which one tested business scenarios. The software metaphor was not only superior to the real thing ... it *became* the real thing. Now when people speak of spreadsheets, they do not refer to the green graph paper on where spreadsheets used to live—those are useless now. Spreadsheets are tools on a computer.” (Levy 1994:69)

Notice that not only is the metaphor crucial to understanding how the computer works, but that the habits of interacting with the computer become so entrenched that it is unthinkable to return to the source domain of paper spreadsheets. As I argued in an early paper on conceptual metaphor theory and the human computer interface (Rohrer 1995), what makes a metaphor successful in its ability to exploit low-level structures of perception such as the image-schematic similarity between (i) the change in the perceived size of a paper document when one moves it from a corner of the physical desktop to the center space right in front one’s eyes and (ii) the way the Macintosh desktop simulates such human zooming in on a document by providing a sequence of increasingly larger rectangles during the few moments it takes to open a computer document from its iconic representation. Though such metaphoric connections are crucial to understanding the desktop, Levy is making another equally important point about conceptual integration. What begins as a successful conceptual metaphor can be quickly transformed into a domain of its own; an entire generation of students is now growing up acclimatized to the computer-based spreadsheets, graphic design programs, etc. Thus in their analysis of the desktop as a con-

ceptual blend, Fauconnier and Turner (1998: 156-7, 175-9) emphasize that the desktop's success rests on its ability to be manipulable as a concrete integrated whole, though actions such as clicking and dragging objects using the mouse are really not native to either computer operations or physical world interactions. As the metaphor transitions into a completely integrated blend whose actions are entirely automatic and unconscious, this blend acquires a totalizing power over our conceptualization of that activity. As we begin to live by the metaphor and think using the blend as a conceptually integrated whole, it in turn can serve as a source for further metaphoric and blending processes.

With the recent success of the internet and the world wide web, many enhancements to the basic operating system metaphor of the desktop have been proposed and implemented. In particular, Microsoft deliberately set out to integrate internet technology into its operating system. For example, they developed a feature known as the 'Active Desktop' in which information (such as stock prices, news, etc.) could be "pushed" across to the user's desktop background continuously. Furthermore, users could click on Microsoft-designated channels on their desktop to obtain information from the web sites of information suppliers. The net effect was to turn the desktop interface into more of a television interface; that is, to blend the desktop into the cybermarketplace. The motivations were economic: as the web was becoming more and more driven by advertising dollars and advertisers pay for reaching the widest and highest spending consumers, Microsoft believed it could profit from a shift to a more broadcast-based rather than an exploration-based paradigm for supplying information.

In the process, however, they integrated components of what was formerly known as a browser application into the operating system itself. Browser applications, such as Netscape Navigator or the Microsoft Explorer, were the fundamental vehicles for retrieving information from the world wide web. When Microsoft released its integrated operating system, Netscape accused Microsoft of engaging in anti-competitive practices by no longer creating adequate hooks to the standard toolbox of operating system functions for a stand-alone browser application (that is one, not built by Microsoft) to work properly. Further, Microsoft could then attain an additional unfair competitive advantage over other browser manufacturers by building its browser technology into the operating system itself. The federal government, which had

already been involved in investigating Microsoft for other allegedly anti-competitive and monopolistic practices, then sued Microsoft under United States anti-trust law.

What is crucial to see is that what motivated the operating software redesign was Microsoft's particular vision of the cybermarketplace blend, in which the active agency of the user's ability to browse the internet was being replaced by a broadcast-based model in which the internet was used to deliver information continuously to a more passive consumer (who could then choose to act further upon it, of course). One of the issues in the lawsuit is an objection to the totalizing ideological component of this shift; however, this objection is legally encoded as letting consumers decide, under a free-market system, whether this transition into the cybermarketplace is best accomplished at the operating system or application level of software. Thus one of the central issues of the lawsuit was whether or not the interests of consumers were being furthered or not by the shift to a more broadcast-based model of information retrieval, and in citing the issue of establishing fair competitive opportunities to determine whether users would in fact like such features integrated into their operating system, the attorneys general of nineteen states joined the federal government's lawsuit on behalf of their consumers. This is an enormous anti trust lawsuit that will have long lasting ideological implications, and the ideological conflict has its roots in Gore's vision of cybermarketplace which would stem from developing a U. S. technology policy similar to highway transportation policy.

At bottom, the practical issue that the courts must decide in this suit is whether or not the government should be involved at the level of regulating innovations in operating system design in order to ensure that all corporations have public access to the information highway's infrastructure, and the profit-making opportunities envisioned in Gore's cybermarketplace. On one hand Microsoft, which developed its operating system without public funding, has a genuine property claim to the right to develop its software as it sees fit, but on the other hand the government's argument is that as an operating system is an essential component providing public access to the information highway, other corporations besides Microsoft should have a fair chance to make a profit

from such access, and the government's interest in protecting the public good outweighs Microsoft's property rights.

I will return to the ideological considerations later in the paper, but first allow me to explain another rich example of the conceptual blend of the cybermarketplace. In a previous section, I noted that one of the reasons that conceptual blending was a theoretic framework which applied to more kinds of phenomena than conceptual metaphor was its ability to explain blends between semantic and phonetic phenomena, as in puns. Consider the role of the phrase in snigger quotes in the following excerpt from a Reuters commentary that speculates on possible remedial solutions should the government win its anti-trust case against Microsoft:

“Prosecutors could seek a one-time structural change or take a regulatory approach. Justice Department Antitrust Division chief Joel Klein has in the past expressed a preference for one-time solutions that avoid continuing oversight and keep the government out of decisions better made by the market in the country's *fast-moving* high-tech industries.

One structural approach would break the company into several identical “*Baby Bills*,” each with complete copies of Microsoft's intellectual property. That approach has been endorsed by former Judge Robert Bork, an antitrust expert who advocates breaking the company into three pieces.

Another structural approach would split the company into two very different parts: one that builds the Windows operating system and another that builds applications, such as Microsoft Office. But there are no clear boundaries between the operating system and applications. Part of what is in contention at the trial is Microsoft's decision to integrate a Web browser into its operating system” (Lawsky 1999).

This passage begins by observing that one-time structural solutions are preferable to a regulatory approach. Here the government's actions are understood as possible obstacles on the rush into the cyberfuture by fast-moving high-tech industries. One of the possible solutions, however, is to break Microsoft up into several identical small companies. This is again based primarily on the cyberfuture metaphor, but seeing how requires performing a tricky piece of conceptual integration in the cybermarketplace blend which is encapsulated in the punning phrase “*Baby Bills*.” Making the connections necessary to understand this part of the cybermarketplace blend requires recruiting a considerable amount of contextual and historical knowledge, as well as some stan-

dard conceptual metonymies and metaphors. The first standard metonymy is that *THE LEADER OF AN INSTITUTION STANDS FOR THE INSTITUTION*, and requires that we know contextually that Bill Gates is the chairman of Microsoft and that “Bill” can hence stand for “Microsoft.” The others stem from the commonly known contextual knowledge that many of the various local phone companies in the United States are called the Bell companies, in part because of the metonymy that the bell on the phone stands for the phone company (a *PART-WHOLE* metonymy projected), and partly because the inventor of the phone was named Alexander Graham Bell (*THE AGENT STANDS FOR THE INSTITUTION*).

Those connections are relatively simple compared to the full richness of the rest of the contextual knowledge, which requires knowing the historical details of how anti-trust law has been applied in the United States, some of which are now obscure even to many Americans. We have of course a common conceptual metaphor in which a corporation is a person, and American Telephone & Telegraph (AT&T) used to have an advertising character nicknamed Ma Bell. Ma Bell was a folksy operator based on the operators which used to perform manually the switching operations needed to connect the caller with the receiver. In order to cut labor costs and automate its phone connection system, AT&T developed some of the most sophisticated early computers to handle the switching tasks, which ironically replaced the operators upon whom the Ma Bell character was based. Now because AT&T was a licensed monopoly, it was precluded in selling the computer technology it had developed on the open market. When it became apparent to AT&T that it was losing out on a valuable business opportunity, it sought entry to the emerging market in computer hardware. The first negotiations failed, and lawsuits ensued. In what proved be a protracted and difficult set of anti-trust cases, AT&T was granted that right if it would give up its local phone service companies and allow other companies to compete in the long-distance calling market. The net result of the most famous U.S. anti-trust case was that Ma Bell (AT&T) had a long and protracted labor in which she metaphorically gave birth to (AT&T was broken up into) a number of “Baby Bells” (smaller local phone companies). Hence, given the phonetic similarity of Bill and Bell, the proposal that the current anti-trust suit result in Microsoft’s

being broken up yields the dreadful pun that Microsoft might give birth to a bunch of “Baby Bills.”<sup>4</sup>

Notice that the pun here coheres with the cybermarketplace blend of the cyberfuture and cyberspace conceptions of the information highway. An element from the cyberspace space, of course, is that the entire lawsuit turns on deciding how commerce is to take place over the internet—whether the communication must take place on “two-way roads,” as Gore insisted. AT&T is Microsoft’s counterpart in this blend, and as the originator of two-way instead of one-way information networks (telephones vs. broadcast television), AT&T is often considered to be one of the pioneers on the information highway. But just as in the case of the historical analogy to the way that building the interstate highway system transformed American business, a historical analogy is made to how AT&T was transformed into a different kind of corporation by government intervention and planning—a contribution from the elements of the cyberfuture space. The cybermarketplace blend is already having substantial impact in shaping the real world.

## 5. Even the Interface is for Sale: The Ideology of the Internet

I might be pilloried in some quarters for saying this, but Microsoft is not the only culprit in the emerging ideology of the internet as a cybermarketplace. In fact, there are even more widespread and insidious manifestations of this blend. Consider that images—such as visual blends—can take up lots of a computer’s hard drive space. After I began to research visual blending, I also had to do some research into purchasing some additional drive storage space for my computer. I knew I was interested in possibly purchasing a removable hard-drive system called Jaz, but I wanted to read some product reviews before I made a purchasing decision. Since I knew that Ziff-Davis was the name of the publishing house that puts out magazines such as *PC Magazine* and *Computer Shopper*, I went to their web site (ZDNet) to do some product evaluation.

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<sup>4</sup> We could of course minimally understand the pun simply by knowing that the result of the AT&T trial was that it was broken up to a bunch of “Baby Bells,” but appreciating the full richness of the blend requires recalling many of the connections which gave rise to the original pun of “Baby Bells.”

What I found instead was a devious and somewhat deceptive visual and conceptual blend between the interface for the search engine and the advertising that pays for the service. Consider the following screen shot from my browser that day (figure 4). Look particularly at the blue “Search ZDNet” graphic in the center of the image. First, the search engine graphic is shaped somewhat like the dialog control box that my applications present to me in Windows or on a Macintosh, and shows that I’ve searched for the phrase “Jaz.” The darker blue border serves to set off the header from the contents of the box, and much like the options dialog box in (for example) Microsoft Word, the same blue border is repeated in the midst of the graphic to set off a virtual “file card” with different search options on it. However, this second card contains not really an information search like the first, but instead would have me search for the phrase “Jaz” on the advertiser’s (NECX) web pages. My first tell-tale clue that this was a blend was the faint black text under the border which almost unnoticeably identifies this second card as an “ADVERTISEMENT.”



Figure 4—Search Engine Dialog Box Advertisement Visual Blend

Clicking on the “Get it!” button took me quickly into the NECX web site so that I could make an instant online purchase. Both conceptually and visually, the information search engine has been blended with the advertising search engine. This example is a subtle representative of a huge national debate in the United States over the changing nature of the internet. As the web becomes more commercial, many search engine services have begun to “weight” their search results toward commercial products and companies who advertise with them. This bias may be accomplished by giving preference to domains that end in “.com”, or by returning the web sites of advertisers first, or in a number of other ways. The bias can also be built-in at the front end of building information search engines; for example, one major search engine service (Excite) recently announced that it would expedite integrating certain listings into its search engine for a hefty fee—while web site information from other organizations would continue to take several weeks to process.

As a second example of an interface blend, the is both a little more subtle and restrained than the unacknowledged presentation of search engine information as if it was utterly unbiased when in fact it is biased, it is particularly illustrative of the blending of the visual elements of the computer’s operating system and application programs with advertising on the web. This trend is not simply limited to search engines however; consider the small banner advertisement which I found accompanying an article I was reading while browsing a major online news-service. This advertisement contains two radio (or option) buttons and a command button, all standard elements of operating systems, application programs and even the survey forms commonly found on web pages. But instead of activating the correct radio button option, clicking the button next to the “have my own web server” phrase takes you to the web site of the advertiser. Clicking the other option button or the command button does precisely the same thing—as in fact does clicking anywhere on the graphic. Instead of being an element of the interface, the buttons are now just part of an advertisement.



Figure 5—Desktop Elements and Advertisement Visual Blend

Another particularly onerous set of examples is the use of even more exact duplicates of a dialog box (figures 6 and 7), command buttons, and accompanying icons to fool the user browsing the internet into clicking the box and unintentionally arriving at another web site. As such they are particularly insidious, and therefore are what I mean when I say that there is a “hidden” ideology to the internet. Such blends are not uncommon in banner advertising on the web. In fact, since the web browser typically communicates the operating system of the user’s browser to the web server, a sophisticated site can present an advertisement which is an exact duplicate of a Windows 95, 98, 3.1, or Macintosh dialog box, depending on what kind of computer and operating system is being used to browse the web site. Thus a Mac user would get a Mac dialog box copy in their advertisement, while a Windows 95 user would get a Windows 95 dialog box advertisement. The visual blend of the operating system elements with the advertisement is thus made to be as integrated as possible with the user’s visual experience—though it deceptively does something the user didn’t expect. And as many web sites are paid for the number of click-throughs from the advertisement to the advertiser’s pages, the reward for such potential deceit is high.

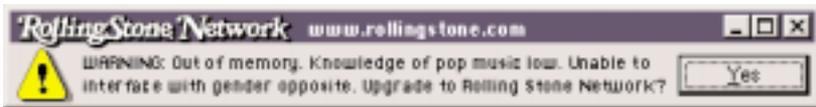


Figure 6—Windows Dialog Box Advertisement Visual Blend

A final trick being utilized by advertisers who design such operating system and advertisement visual blends is the incorporation of the stylized movements of the users interacting with copies of the interface’s dialog boxes. Notice the small black mouse pointer in figure 7. What I have supplied in the static version of this figure is only the first frame

of a several frame long animated graphic file. Similar to the real mouse pointer of the real interface, the fake mouse pointer moves across to the pop-up interface labeled “pictures,” and selects another option. The movements are very eye catching and attention attract, perfect from the standpoint of an advertiser’s desires in presenting consumers with a visual blend.



Figure 7—Moving Macintosh Dialog Box Advertisement Visual Blend

The net result of this blending of advertising with the visual elements of the operating systems may well be that computers are actually now becoming *more* difficult to use. As I pointed out before, one of the great advances in recent human computer interface design has been a relative standardization in what the visual elements of the operating system meant; in the commercial arena, one of the earliest examples was the now-famous *DESKTOP* metaphor of the Macintosh. The desktop metaphor popularized the visual conceptualization of the computer’s programs, directories and files as objects in the physical world, which could be manipulated by using the mouse and mouse-clicks. But the key programming advance behind the visual conceptualization of the desktop metaphor was not just the metaphoric consistency of the controls, but consistency engendered by their placement in the Macintosh “toolbox.” The Macintosh toolbox was a set of standard input and output routines for programmers that contained the standard visual elements such as the dialog boxes, command buttons, radio buttons, pop-up lists, and so on that I have been pointing out are now being used in advertisements. All application programs could use the same input and output routines in the same toolbox as each other, and this was a large part of what gave the Macintosh its distinctive “look-and-feel.” For the first time, application programs from different vendors looked alike and worked in relatively analogous ways. This consistency made it easier to extend the knowledge gained from working with one program to another. When Microsoft designed Windows, it copied many of these ele-

ments. The well-known result (aside from famous Apple's "look-and-feel" lawsuit) is that the differences between the Apple and Microsoft software platforms narrowed. The overall benefit to users was that nearly all computers had become relatively more consistent and easier to use. However, this recent development of the blending of the visual elements of the operating system into advertisements on the web may confuse users and eventually eradicate those gains. The trust in a consistent user interface that the desktop metaphor and the Macintosh toolbox originally spawned has begun to erode. Thus, the advent of this kind of visual blend in web advertising means that the operating system is for sale, and that may spell the death of the *DESKTOP* metaphor.

## **6. Conclusions: Conceptual Integration, Ideology and the Internet**

When most people write about the ideology of the internet, they typically mean that because historically the demographics of internet users in the United States has been predominantly white, male, well-educated and high-salaried professionals with Libertarian and Republican leanings, many internet news sources have shamelessly catered to their political beliefs. It should be obvious by this point that I am talking about something far more radical and far-reaching when I write about the hidden ideology of the internet. The capacity of capitalism to subsume and pervert technological innovation is particularly ironic, considering the importance of technological innovation to capitalism.

Over the last few years of presenting these ideas to a number of divergent audiences, I have spoken with many programmers and other technical people who are particularly outraged about the way in which their innovations have come to be ideologically co-opted by economic forces beyond their control. Much of the annoyance comes from the desire to see good technical innovations succeed or fail on their own merits, regardless of the needs of advertising. Other frustrations come from the perception that an advertising free information exchange has become littered with unwanted advertisements which act as a drain on the entire system and slow the traffic down on it (in this context I have heard, for example, of the world wide web disparagingly being referred to as the "world wide wait"). Hence, many technical people abhor the idea that the INFORMATION HIGHWAY metaphor and the cybermarket-

place shapes their thinking about the internet. However, no other serious alternatives have yet arisen to Gore's blend of the cyberspace and cyberfuture metaphors. Instead, as I have been documenting, we have instead seen the cybermarketplace blend attempt to assimilate more and more metaphors into its fold.

Conceptual blending is a general cognitive operation, and as I have been illustrating it is one which is culturally widespread as well as cognitively situated. This fact in turn points out that the notion of cognition used in cognitive linguistics requires a widely situated and expansive notion of cognition, but tracing out such a theory is a subject for other papers (for one such attempt, see chapter 5 of my dissertation, Rohrer 1998). But with respect to the current context, I have shown that blending is a profoundly important one in the visual images such as those used in advertising. Within advertising, it can be utilized both to draw our attention and make us conscious of wanting an item, or it can be utilized below the threshold of our conscious awareness to make us do something other than what we think we are doing. The fact that it is a central process in advertising design does not make blending itself an ideological scourge; it is rather a font of creative thought, and such mechanisms of thought can serve as the carrier of ideological viewpoints just as easily as they can serve to bring us great poetry or literature. But its ideological prowess is worth noting, and is worthy of reflection. Perhaps the lesson of the cybermarketplace is that our cognitive operations can only be partially directed and controlled, for they are as situated in our cultural activities as in our cognitive heads.

### **Acknowledgments**

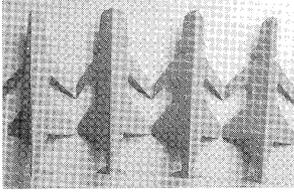
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## Literature

- Coulson, S. (1995). Analogic and metaphoric mapping in blended spaces: Menendez brothers virus. In *Center for research in language newsletter* 9 (1).
- Coulson, S. (forthcoming). What's so funny: Conceptual integration in humorous examples. Draft of a paper under submission for *The poetics of cognition*. Edited by Vimala Herman. Cambridge University Press.
- Fauconnier G. (1997). *Mappings in thought and language*. Cambridge: Cambridge University Press.
- Fauconnier G. (1995). *Mental spaces: Aspects of meaning construction in natural language*. Cambridge: Cambridge University Press.
- Fauconnier G. and Turner M. (1998). Conceptual integration networks. In *Cognitive science* 22 (2). 133-187.
- Fauconnier G. and Turner M. (1995). Conceptual integration and formal expression. In *Metaphor and symbolic activity* 10 (3). 183-204.
- Goldberg, A. (1994). *Constructions*. Chicago: University of Chicago Press.
- Gore, A.. (1993). Remarks by Vice President Gore at the National Press Club on December 21, 1993. Washington D.C.: The White House, Office of the Vice President, Press Release.
- Hutchins, E. (1995). *Cognition in the wild*. Cambridge: MIT Press.
- Johnson, M. (1987). *The body in the mind: The bodily basis of meaning, imagination and reason*. Chicago: University of Chicago Press.
- Lakoff, G. (1987a). *Women, fire and dangerous things*. Chicago: University of Chicago Press.
- Lakoff, G. (1987b). Image metaphors. In *Metaphor and symbolic activity* 2 (3). 219.
- Lakoff, G. The contemporary theory of metaphor. In Ortony, Andrew (ed.) *Metaphor and thought*, 2nd. ed., Cambridge University Press, 1991.
- Lakoff, G. and Johnson, M. (1998). *Philosophy in the flesh*. New York: Basic Books.
- Lakoff, G. and Johnson, M. (1980). *Metaphors we live by*. Chicago: University of Chicago Press.
- Lakoff, G. and Turner, M. (1989). *More than cool reason: A field guide to poetic metaphor*. Chicago: University of Chicago Press.
- Langacker, R. (1987/1991). *Foundations of cognitive grammar*, Vol. I, II. Stanford: Stanford University Press.

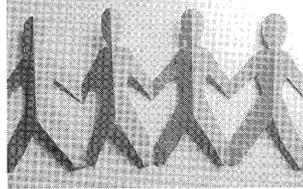
- Lawsy, D. (1999). Prosecutors pondering Microsoft remedies. *Reuters online*, February 15, 1999.
- Levy, S. (1994). *Insanely great: The life and times of the Macintosh, the computer that changed everything*. New York: Viking.
- MacNelly. (1995). Under construction. Cartoon appeared in the *Eugene Register-Guard*, June 29, 1995. 10A.
- Maglio, P. and Matlock, T. (1998). Metaphors We Surf the Web By. In *Workshop on personal and social navigation in information space*, Stockholm, Sweden.
- Mandelblit, N. (1997). *Grammatical blending: Creative and schematic aspects in sentence processing and translation*. Ph.D. Dissertation, Department of Cognitive Science, University of California at San Diego.
- Rohrer, T. (1998). *When metaphors bewitch, analogies illustrate and logic fails: Controversies over the use of metaphoric reasoning in philosophy and science*. Ph.D. Dissertation, Department of Philosophy, University of Oregon. Ann Arbor, Michigan: University Microfilms International.
- Rohrer, T. (1997a). Conceptual blending on the information highway: How do metaphorical inferences work? In *Discourse and perspective in cognitive linguistics*. Amsterdam: John Benjamins.
- Rohrer, T. (1997b). Historical inevitability and the information highway: How metaphors shape science policy. In *Metaphern, Medien, Wissenschaft*. Westdeutscher Verlag: Institut für Deutsche Sprache, Mannheim, Germany.
- Rohrer, T. (1995). *Feelings stuck in a GUI web: Metaphors, image schemata and the human computer interface*. Online ms., Center for the Cognitive Science of Metaphor, Philosophy Department, University of Oregon,  
<http://metaphor.uoregon.edu/metaphor.htm>.
- Turner, M. (1991). *Reading minds*. Princeton, New Jersey: Princeton University Press.
- Turner, M. (1996). *The Literary mind*. New York: Oxford University Press.



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