IRIE
International Review of Information Ethics Vol. 8 (12/2007)

Michael R. Curry:

Being there then: Ubiquitous computing and the anxiety of reference

Abstract:

It is common today to see the world as increasingly unpredictable, and to see that unpredictability as a major source of anxiety. Many of the proposed cures for that anxiety, such as systems like Memex and MyLifeBits, have sought solutions in systems that collect and store a thorough record of events, at a scale from the personal to the global. There the solution to anxiety lies in the ability to play back the record, to turn back the clock and be there then. Both this anxiety and its solution are best seen not simply as remedies for an immediate problem—of terrorism, for example—but rather as evidence of a more deep-seated set of cultural changes, which emerged early in the twentieth century. Paradoxically, the technological solutions offered, whatever the scale, embody the very thing, a lack of a connection to a community, that is both the source of the anxiety and a fundamental impediment to its elimination.

Agenda

Author:

Prof. Michael R. Curry

Department of Geography, University of California, Los Angeles, California

☎ +1-310-825-3122, ✉ curry@geog.ucla.edu, 💻 : http://baja.sscnet.ucla.edu/~curry/

ISSN 1614-1687

Today there exists a particular anxiety, one that emerges from a desire to feel secure in a world in which the disease seems to be a lack of certain knowledge. How can we know whether this person is really a terrorist, or is really not a pedophile? One proposed cure has envisioned certainty as achieved through the creation of a fully digitized account of the world, or at least of some part of it. We see this today in David Gelernter's Mirror World and in Gordon Bell's more recent and rather stranger MyLifeBits, but we also see it, earlier, in Vannevar Bush's Memex and in Ted Nelson's Project Xanadu. We see these cures, that is to say, in systems for ubiquitous computing.

As pervasive as it is today, this anxiety did not exist in the same way through much of the nineteenth century. Indeed, there is little doubt that the most recent solutions would through much of the nineteenth century have been seen by many as merely new and cumbersome solutions to a problem that had long been solved, and solved more elegantly. Rather, the rethinking of the anxiety of uncertainty, in a form that has seemed to make ubiquitous computing a solution, arose only during the late nineteenth century's transformation into a mobile and networked world of strangers.

But this is not to say that in its framing of and solution to the problem of uncertainty, ubiquitous computing did not have antecedents. We find them in the philosophy of language, in concerns about linguistic reference that extend back as far as Frege (1952 [1922]); and we find them in the late nineteenth century's orgy of inventions for identification and classification of humans (Caplan & Torpey, 2001; Cole, 2001). If those antecedent solutions in one sense bear a striking similarity to those offered by Gelernter and Bell, they at the same time differ in important ways. Indeed, a comparison of the models offered by Gelernter, Bell, and others with those offered within certain post-Fregean works in the philosophy of language will suggest that the former are in a very fundamental sense flawed, that they cannot achieve what they set out to do.

In what follows I shall briefly describe the way in which four systems for ubiquitous computing—Memex, Xanadu, Mirror Worlds, and MyLifeBits—deal with the issue of certainty. I shall pay special attention to the most recent of these, MyLifeBits. I shall then suggest the ways in which recent work in the philosophy of language, and especially that by Saul Kripke, suggests fundamental difficulties with the ways in which in each the issue of certainty is handled.

From Memex to MyLifeBits

Vannevar Bush, director during the Second World War of America's Office of Scientific Research and Development, is today perhaps best known for his development, as early as 1936, of the idea for what he termed the "Memex,"

> *a device in which an individual stores all his books, records, and communications, and which is mechanized so that it may be consulted with exceeding speed and flexibility. It is an enlarged intimate supplement to his memory (Bush, 1945).*

Bush's Memex would organize information through a process of association.

> *It affords an immediate step, however, to associative indexing, the basic idea of which is a provision whereby any item may be caused at will to select immediately and automatically another....*
>
> *Wholly new forms of encyclopedias will appear, ready-made with a mesh of associative trails running through them, ready to be dropped into the Memex and there amplified [Emphasis added] (Bush, 1945).*

A person would input readings, photographs, and notes, and then organize them in the way that seemed best; she could then provide the records and the system of associative trails to another person, for integration into another Memex. There would, ultimately, be what amounted to a network of Memexes, although it would be what used to be called a "sneaker," and not electronic, network.

The way forward from Bush's Memex was not simple and straightforward; indeed, it leads in three rather different directions, to Project Xanadu, to Mirror Worlds, and now to MyLifeBits. What they have in common s that each of these systems saw the Memex as a prototype of a system for information management, one within which and from which one might keep track of a wide range, or perhaps all, of the events in the world. The Memex was, one might wish to say, a prototype of the informational reincarnation of the Panopticon.

By the 1960s Ted Nelson was beginning to attempt to create a digital version of the analog Memex. Nelson has for many years struggled to develop and implement Project Xanadu (www.xanadu.com), a system reminiscent of the World Wide Web—though its initial versions predated the development of the Web—but substantially more ambitious. Like Bush's Memex, the hypertext model laid out by Nelson works fundamentally through a process of association. More complex than the later Web, it imagined a system for knowledge collection, organization, and interchange using bi-directional hyperlinks. The result would be, as Nelson put it, "New Freedoms through Computer Screens" (Nelson, 1974).

It is worth noting here that the model that underlies Project Xanadu is reminiscent of the curiosity cabinet, or Wunder-kammer, a forerunner of the modern museum. The curiosity cabinet, which flourished from the fifteenth to seventeenth centuries, was seen as a representation of the world.

> *Knowledge in a Curiosity Cabinet was not segregated into separate disciplines as it is in modern scholarship. The pursuit of knowledge was a synthesizing activity, based more on qualitative comparison than on quantitative analysis. Aesthetics and science, mathematics and mysticism, ethics and natural history were all interconnected, intertwined into an all-encompassing system of visual correspondence and poetic resonance. Any number of associations between objects could be made in a Curiosity Cabinet, and the objects thus participated in a variety of categories simultaneously ("Microcosms: Cabinets of curiosity", 2001).*

The world is engaged on the premise that it is ordered, and that the order is not yet, but may be, though never fully, known (Findlen, 1994).

As with the Memex and Xanadu, one function of the curiosity cabinet was information retrieval. The pattern of associations that operated to connect items within the curiosity cabinet at the same time had a mnemonic function; once one encountered and contemplated the cabinet it began to operate as a means of information storage, and the associations were means of retrieval of that stored information.

Twenty-five years after Nelson began work on his Project Xanadu, David Gelernter published *Mirror Worlds* (1992). With mirror worlds, he declared, we would "Put the universe in a shoebox." Mirror worlds

> *are software models of some chunk of reality, some piece of the real world going on outside your window.... A Mirror World is some huge institution's moving, true-to-life mirror image trapped inside a computer—here you can see and grasp it whole.... (Gelernter, 1992, 3-17 passim).*

This is a geographical vision.

> *The "geography" perspective is a natural starting point, sometimes.... In a City Mirror World, you see a city map of some kind. Lots of information is superimposed on the map, using words, numbers, colors, dials-the resulting display is dense with data; you are tracking thousands of different values simultaneously (Gelernter, 1992, 16).*

Indeed, though it is rather more complex than that, one can see the mirror world as a richly annotated map of the world, one that in large measure operates via a process of layering of digital and especially statistical information over that map. It is a system that takes seriously the cartographic grid and the notion of a world wherein everything has a location, a world where an absolute system of space provides the framework.

On MyLifeBits: Naming, necessity, and the anxiety of reference

Gordon Bell's MyLifeBits is both a more and a less ambitious story. Bell has described his goal as the creation of a "portable, infallible, artificial memory" (Bell & Gemmell, 2007, p. 58), one that allows him to be "there without really being there, then." For him this has meant digitizing the material elements of his informational life—articles, letters, financial documents, photographs, compact discs, and so on. So it has involved a process of collection. It has in addition involved the process of capture, through a kind of technological exoskeleton in which is embedded a camera that regularly captures images of his environment and an audio recording device that captures what he says and hears. He can record his telephone conversations, and he can trace and record his spatial location.

Moreover, he envisions a system that will include data captured from sensors, such as one's pulse, blood pressure, blood-sugar level, and blood-alcohol content can be continuously monitored. In the end, MyLifeBits is imagined as a full-scale telemetry system, capable of continuously reporting to its user, and to designated others, the state of her mind and body, and her environment. One can roll back the system to an earlier state and be "there, then."

So if Mirror Worlds is an information storage and retrieval system that is meant to represent the world "as it is," MyLifeBits represents the world "as I see it." Both Xanadu and Mirror Worlds imagine a fixed, public, and networked information system into which people connect; in MyLifeBits the system is at least in principle private and personal. Like Xanadu, and Memex, MyLifeBits connects information through trails of associations. Spatially, Mirror Worlds operates upon a cartographic and spatial model; we look at the world as if from above. In contrast, Project Xanadu, and Memex before, appeal to an image very much like the one that was embodied in the curiosity cabinet; it is an image wherein the user is in the world. Indeed, it seems to me that MyLifeBits embodies what can only be described as a complex, hybrid, and perhaps self-contradictory understanding of space. It is an understanding that draws upon elements of the cartographic view of Mirror Worlds, while at the same time appealing to the associations central to Memex and Xanadu.

One common critique of MyLifeBits is that it might better be named "BitsOfMyLife." After all, and like every archive, it involves a tremendous amount of selection and censorship. Not every state of every edited document is saved. Computer keystrokes are not logged. Photographs are taken episodically. And even assuming a system in which audio and video *are* constantly recorded, there remains censorship. Bathroom visits, sex, illness. Some things cannot be recorded because of legal restrictions. And people sleep. Are dreams recorded?

This critique surely points to problems with the system. But it seems clear that there are deeper problems with it, ones connected with its spatial hybridity. We might divide the difficulties with MyLifeBits into two parts, the first of which concerns naming. Here it will be useful to refer back to an argument articulated by Arthur Danto. Danto asks us to imagine someone who

> *knows whatever happens the moment it happens, even in other minds. He is also to have the gift of instantaneous transcription: everything that happens across the whole forward rim of the Past is set down by him, as it happens, the way it happens. The resultant running account I shall term the Ideal Chronicle (Danto, 1985).*

What would be missing from that ideal chronicle—or from MyLifeBits? As Danto points out, statements of the form of "The forty-third President of the United States was born today" would be impossible. And this is a problem, because as we look at the past we make statements like that all the time. We are, that is, constantly rethinking, recategorizing, and renarrativizing the past. We are attributing causal efficacy to events. And this suggests that what we get when we "rewind the tape" in MyLifeBits will seem far more discontinuous with the present than we might think. In an important sense, we will get not information, but mnemonics, bits and pieces that remind us of how we now think of that which we have partly forgotten, partly re-remembered.

Even assuming the possibility of dealing with the problem of naming, there remains a deeper problem with MyLifeBits, one related to the ways in which the systems conceptualize space, time, and experience. Put most simply, the associations that are at the heart of MyLifeBits and of Memex (and indeed, though in a different way, like the generalizations that are at the heart of Mirror Worlds) are unable to capture the experience of necessity and certainty that attends much of everyday life.

Here we will find it useful to think of the last several hundred years as divisible into three rather different periods. This is in fact a wild generalization, but here a useful one. The first period extended from the sixteenth to the eighteenth centuries. I have already suggested that in this era the curiosity cabinet provided at least one model for thinking about and experiencing the world; Foucault famously spoke there about a world organized in terms of similitudes (Foucault, 1973). Not coincidentally, this was also the era in which what for some time was counted as the paradigmatic geographic form, the region, was invented (Kimble, 1951). As I have suggested elsewhere, there is a connection between this formulation of the region and the curiosity cabinet; the regional or chorographic understanding of geography is in effect based on a principle of similitudes (Curry, 2005).

The nineteenth century ushered in a second way of thinking, geographically, about the world. Here Zygmunt Bauman (2004) has described it as the century during which the concept of identity, where a person could be reduced to a type (weaver, shopkeeper, Democrat), became fully developed. This development was accompanied by what Ian Hacking (1982) termed an "avalanche of numbers," and of the formalization of a geometrical model of space on the landscape. If the region retained a kind of currency, it was a region that was beginning to lose its sense of being natural; the region, increasingly, was to be described in terms of statistical models and generalizations useful to the state.

At the same time, the nineteenth century was an era in which, in philosophical work, a way of thinking about language and about meaning and reference, and in a certain way a silence about the individual (or the particular) and about the proper name, began to take on a new form. It was in 1843, in the decade of Hacking's avalanche, that John Stuart Mill published the first of many editions of his System of Logic (1872 [1843]). And 1892 saw the publication by German logician Gottlob Frege of his of seminal "Sense and reference" (1952 [1922]). Both dealt directly with the question of the individual, and their work in a sense defined the landscape of Anglo-American philosophical discourse over much of the twentieth century.

Frege argued that a proper name has a connotation (or as he put it, a sense), and claimed that it is the sense of a proper name that allows us to "fix" its reference. I can pick out Bill Clinton because I know things about him. But he was quick to note that there is a rub: I may be able to pick out an individual or object even in cases where almost everything that I know about it is untrue. If that is true, what is the source of the certainty that I feel when I speak about my friends Samuel or Frances? Here, philosophers were quick to notice that this seemed a wishy-washy account of how reference works.

But as the twentieth century progressed, an alternative began to emerge, and it emerged, in part, as an attempt to remedy the central failing of the earlier alternatives, their inability to make sense of the relationship between identity and classification, and between identification and certainty. An early sense of an alternative began to emerge in the 1930s, in work by Wittgenstein (2001). But it emerged in a stark and now-familiar way in Saul Kripke's 1972 *Naming and Necessity* (Kripke, 1972; quotations below are from the revised reprint, Kripke, 1980). There Kripke offered an alternative analysis of reference, one that suggested that people like Frege and Russell had gotten it all wrong, and one that in the popular press was acclaimed as containing the first new ideas in philosophy since Aristotle (Branch, 1977). Criticizing the view that reference is fixed by appeal to some cluster of descriptions, he dismissed that view as having nothing to do with what really happens. Rather, he suggested,

> *Someone, let's say, a baby, is born; his parents call him by a certain name. They talk about him to their friends. Other people meet him. Through various sorts of talk the name is spread from link to link as if by a chain. A speaker who is on the far end of this chain, who has heard about, say, Richard Feynmann, in the market place or elsewhere, may be referring to Richard Feynmann even though he can't remember from whom he first of Feynmann or from whom he ever heard of Feynmann....*

He doesn't have to know details about Feynmann,

> *But, instead, a chain of communication going back to Feynmann himself has been established, by virtue of his membership in a community which passed the name from link to link, not by a ceremony that he makes in his study (Kripke, 1980, 91).*

My point in mentioning Kripke is not to suggest that he somehow "got right" what others had not. Rather, the point is that he attempted to understand the way in which reference works in the case of actual people, that he concluded that central there was the role of communities of language users, and that he pointed to the need to recognize identification as operating within a context in which the history of the use of a word is right at the heart of its proper use. In using a name we imagine that it ought in principle to be possible to "play the tape backwards," back to the initial baptism of Richard Feynmann, the carbon atom, you, or me. We go back, there, then.

Kripke is responding to what I suggested at the outset to be a particular anxiety, one that did not exist in the same way in the nineteenth century. This turns out to be just the anxiety to which Bell's MyLifeBits responds. It emerges from a desire to feel secure in a mobile and networked world. It is

a world in which the stable region seems to have come unglued, and in which the only possible curiosity cabinet would be a constantly changing kaleidoscope—like, perhaps, the World Wide Web. At the same time, it is a world in which the apparent alternative to the modern Wunder-kammer, to Bush and Nelson, has been the more than a little unnerving Mirror World, a world that seems all too much like a Benthamite Panopticon.

But how might one in the contemporary world retain the sense of certainty of identification that one finds in Kripke, and the hope for an extinction of forgetting that one finds in Bell? If a now-lost, routinized everyday life was the source both of certainty and of memory, does the demise of such a life mean the demise of memory and certainty?

For Bell there remains the hope that technology will come to the rescue. But what is lacking in MyLifeBits is the glue that Kripke believed would tie together the links in the causal chain. For Kripke recognizes that it is not enough for the use of a particular term to be continued through time by a certain person. There is a community that "passe[s] the name from link to link," and this passing is a social action.

Kripke, alas, is not at all clear what he means by "community," but here we can perhaps profit from recent discussions of performativity by Derrida (1977) and Butler (1999; 1997). Both refer to what they term "citationality," to the ways in which individuals use language and engage in actions through a process of appropriation and imitation. And both speak of these uses as "iterative," where the copy is in perhaps subtle ways different from the original.

One can see chains of users and actors as constituting communities just to the extent that individuals can see themselves as agreeing in what they do. So on this view, the solution to the problems of memory and reference lies in citation and iteration. Recall, though, that as Danto suggested memory and reference both undergo changes as the past is recast in terms of the present. Or as Butler and Derrida would put it, what both promises and prevents social change is just the openness and closedness of citationality and iterability; and both follow inexorably from the fact that action and speech are social.

On this view, what either dooms or makes dangerous MyLifeBits is that it is not an intrinsically social system, one whose meaning or truth is guaranteed by what Kripke referred to as the community, and also, perhaps unfortunately, as "the marketplace." If MyLifeBits operates outside of a community it creates merely a solipsistic and increasingly irrelevant set of what are at best mnemonic devices and at worst trivia. On the other hand, if it operates within a marketplace there is perhaps more to worry about, at least to the extent that we are talking about a real marketplace, with its monopolies, oligopolies, corruption, and, increasingly, obsession with image. There, those who have the resources to create and manage their lifebits might very well acquire just the sort of power that Project Xanadu, with its goals of Computer Lib, Dream Machines, and New Freedoms through Computer Screens, hoped to prevent.

References

Bauman, Z. (2004). Identity: Conversations with Benedetto Vecchi. Cambridge: Polity Press.

Bell, G., & Gemmell, J. (2007). A digital life. Scientific American, 58-65.

Branch, T. (1977, August 14). New frontiers in American philosophy. The New York Times Magazine, 12 ff.

Bush, V. (1945). As we may think. The Atlantic Monthly, 101-108.

Butler, J. (1999). Gender trouble: Feminism and the subversion of identity (10th anniversary ed.). New York: Routledge.

Butler, J. P. (1997). Excitable speech: a politics of the performative. New York: Routledge.

Caplan, J., & Torpey, J. (Eds.). (2001). Documenting individual identity: The development of state practices in the modern world. Princeton: Princeton University Press.

Cole, S. A. (2001). Suspect identities : a history of criminal identification and fingerprinting. Cambridge: Harvard University Press.

Curry, M. R. (2005). Toward a geography of a world without maps: Lessons from Ptolemy and postal codes. Annals, Association of American Geographers, 95(3), 680-691.

Danto, A. C. (1985). Narration and knowledge. New York: Columbia University Press.

Derrida, J. (1977). Signature event context. Glyph, 1, 172-197.

Findlen, P. (1994). Possessing nature: Museums, collecting, and scientific culture in early mod-

ern Italy. Berkeley: University of California Press.

Foucault, M. (1973). The order of things: An archaeology of the human sciences. New York: Vintage Books.

Frege, G. (1952 [1922]). On sense and reference (P. Geach & M. Black, Trans.). In Translations from the philosophical writings of Gottlob Frege (pp. 56-78). Oxford: Basil Blackwell.

Gelernter, D. (1992). Mirror worlds: Or the day software puts the universe in a shoebox: How it will happen and what it will mean. New York: Oxford University Press.

Hacking, I. (1982). Biopower and the avalanche of printed numbers. Humanities in Society, 5, 279-295.

Kimble, G. H. T. (1951). The inadequacy of the regional concept. In L. D. Stampp & S. W. Wooldridge (Eds.), London essays in geography (pp. 151-174). London: Longman.

Kripke, S. (1972). Naming and necessity. In D. Davidson & G. Harman (Eds.), Semantics of natural language (pp. 253-355). Dordrecht: Reidel.

Kripke, S. (1980). Naming and necessity. Cambridge: Harvard University Press.

Microcosms: Cabinets of curiosity. (2001). Retrieved 27 May 2007, from `http://microcosms.ihc.ucsb.edu/essays/002.html`

Mill, J. S. (1872 [1843]). A system of logic (8th ed.). London: Longmans Green Reader and Dwyer.

Nelson, T. H. (1974). Computer lib/Dream machines: new freedoms through computer screens--a minority report. Chicago: Available from Hugo's Book Service.

Wittgenstein, L. (2001). Philosophical investigations, the German text with a revised English translation (G. E. M. Anscombe, Trans. Third ed.). Oxford: Blackwell.