

**THE WHOLE EARTH, THE DIGITAL EARTH, AND THE ECLIPSE OF
WONDER***

Michael R. Curry
Department of Geography
University of California, Los Angeles
Los Angeles, CA 90095

Presented at the
Annual Meeting
Association of American Geographers
Pittsburgh, PA
4-8 April 2000

At the end of the 1960s Stewart Brand's *Whole Earth Catalog* was one of many places where a popular idea was promoted. That was the idea that there was something so remarkable about the image of the whole earth, taken from space, that those who saw it could not help but be touched. They would see that the earth is a whole, that we exist on a single planet.



And the invisibility,

* The author wishes to thank Mark Meadow, Bruce Robertson, and the other participants in the Microcosms Project at the University of California, Santa Barbara, for ideas and encouragement. See the Microcosms site at <http://microcosms.ihc.ucsb.edu/>

from space, of political boundaries would show those boundaries for what they are, foolish abstractions. For Brand the image would be a reminder, a kind of mnemonic device, that would turn people's attention to the details of their relations with the environment. The downward slide that he perceived in the quality of life in the twentieth century, where people had blinded themselves to the natural world, might be curbed.

That particular promise of the image of the whole earth has dimmed, yet in the 1990s we have seen new appeals to an image that on the face of it is similar indeed to the one that Brand celebrated. Consider the following:

Imagine, for example, a young child going to a Digital Earth exhibit at a local museum. After donning a head-mounted display, she sees Earth as it appears from space. Using a data glove, she zooms in, using higher and higher levels of resolution, to see continents, then regions, countries, cities, and finally individual houses, trees, and other natural and man-made objects. Having found an area of the planet she is interested in exploring, she takes the equivalent of a "magic carpet ride" through a 3-D visualization of the terrain.... To prepare for her family's vacation to Yellowstone National Park, for example, she plans the perfect hike to the geysers, bison, and bighorn sheep that she has just read about. In fact, she can follow the trail visually from start to finish before she ever leaves the museum in her hometown.¹

This is from a lecture by Vice-President Gore in 1998, at the California Science Center.

Or the following:

Members of the general public, including school children, are obtaining detailed information about any place on Earth through an intuitive interface that looks like a large manipulable globe. They rotate the globe to put any region in the forefront, or simply speak to the system to ask it to show a particular place or region. As they zoom in, they see ever increasing detail. The default view shows what the planet looks like at the current moment from the chosen perspective, but the user can ask for clouds to be removed, for the

¹ Albert Gore. "The digital earth: Understanding our planet in the 21st century." California Science Center, Los Angeles, CA 1998.

entire planet to be illuminated, or for thematic information such as political boundaries, population densities, endangered species, or land values to be shown. One person uses the system to travel back in time to look at agricultural patterns in southern Mexico in 1450. Another turns the time back half a billion years, and then watches continents form and move into their present positions. Yet another travels into a possible future world in a global warming scenario; to produce the images, the system invokes a Global Climate Model developed several years earlier in a research center that has been made available to the public through this digital earth. Although people without technical training easily use the digital earth, scientists and policy makers also use data from digital earth as input to their models....²

This is from a recent publication of the National Center for Geographic Information and Analysis. And finally, from a 1992 piece,

Mirror worlds?
What are they?

They 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....

The 'geography' perspective is a natural starting point, sometimes. The picture on your screen represents a real physical layout.... Now you see inside a school, courthouse, hospital, or City Hall.... Eavesdrop on decision-making in progress....³

This last is from Yale computer scientist David Gelernter's book, *Mirror Worlds*.

Gelernter, of course, received a negative review of this work from Theodore Kaczynski.

Each of these cases appeals to Brand's image of the earth from above.

² David Mark. "Geographic Information Science: Critical Issues in an Emerging Cross-Disciplinary Research Domain: Report from Workshop on Geographic Information Science and Geospatial Activities at the National Science Foundation".

³ David Gelernter. *Mirror worlds: Or the day software puts the universe in a shoe-box: How it will happen and what it will mean*, 1992.

The transparent earth

But each adds several things to the original image. One is the possibility of zooming in in order to attain greater and greater levels of detail. It seems to me that what is being suggested here is the possibility of what some have termed “transparency,” the idea that the world can be represented in a way such that one can simply look, and then see what is going on. I choose this term advisedly, in order to point to another recent work, one connected I believe to the three examples that I have given above. This work is David Brin’s *The transparent society: Will technology force us to choose between privacy and freedom?*⁴

At the same time, each of these images adds a second feature; each suggests the possibility of overlaying a wide variety of information over the “real” image, in order that one be able to see the relationships between image and process. In that way what are sometimes termed “augmented” representations are created. These augmented representations are, of course, familiar enough to geographers, who more than most are used to seeing air photos onto which data such as elevations have been superimposed.

In *The transparent society*, Brin argues that we are moving into an era in which these technologies are ubiquitous. Information about almost everything will be collected somewhere, and increasing amounts of it will be available, some for free, some for a price. Some people, he notes, argue that this dramatic increase in the availability of information is creating a problem, eroding an already diminished level of personal privacy. Many of those people would argue for the development of stricter regulations concerning the collection and use of those data.

⁴ David Brin. *The transparent society: Will technology force us to choose between privacy and freedom?* 1998.

But Brin will have none of this, for two reasons. On the one hand, he argues, regulations tend to benefit only people in power. If more regulations are created, those people will be able to use them for their own benefit, while the rest of us will be no better off than before. To use Neal Stephenson's Snow-Crash image, there will be those who live in the digital equivalents of gated communities, and those who will live in what amount to converted U-Stor-It buildings.⁵

And on the other hand--this is the positive part of Brin's argument--all of this privacy isn't such a good thing anyway. In fact, in a society in which most information is available, it will be easier to hold people accountable for their actions, and they will be less likely to engage in actions for which they do not wish to be held accountable. People will be *forced* to take responsibility for their actions.

Indeed, and for this reason, Brin has argued that transparency ought to apply to almost everything that people do. It ought to extend beyond that which can be seen, to that which can be heard, indeed, to essentially everything that happens. He is willing to offer exceptions only for the most intimate acts. To doubters Brin suggests that much of what we characterize as privileged, private, and secret is characterized in that way simply out of habit. In the end, we are all like those government agencies that declare everything, even the questions that they are asked, "Top Secret." In fact, he predicts, if this material were made open we would soon cease to notice.

So from Brin's perspective the development of a transparent society, leaving aside a few troubling but minor issues, would be wholly for the good. Still, his work has generated a great deal of controversy. Many have suggested that he has underestimated the

⁵ Neal Stephenson. *Snow crash*, 1992.

necessity for a private life. Others have seen the world that he describes as one in which every datum has become a commodity, and in which the only autonomy belongs to corporations, to those entities that in the United States have managed to stay in an extended state of adolescence, acting as though they have many rights and few responsibilities.

There is no doubt some irony in the fact that Brin has taken so much heat, while those who have promoted the images with which I began have been widely praised, or at least ignored. If, after all, one is to give credit for raising, and not avoiding, contentious issues, Brin seems more to be commended than do the authors of a recent NCGIA report on data mining, who opined that

mobile GIS providers will require users to accept tracking of their virtual and physical activities in space and time.... This will require resolving some difficult privacy issues before these data collection methods are full [sic] accepted. ⁶

Having pointed to difficulties to be faced, the authors then move on, suggesting that for them, to “resolve” the difficulties may simply a matter of silencing those who raise them.

On this score I’m with Brin; I believe that these technologies do indeed raise important issues, and that those issues need to be faced, and not simply dismissed. And it seems to me that as geographers we need to take Brin especially seriously, just because his prescriptions are very much in the spirit of those made by people who are actively involved in promoting geographic information systems.

The whole earth

Still, it seems to me that Brin’s analysis is deeply flawed. And this is because contrary to his wishes a world of radical transparency would not be a moral world. It

⁶ Harvey J. Miller and Jiawei Han. “Discovering geographic knowledge in data-rich environments”, p. 59.

would be a world in which it would not be possible effectively to engage in moral discourse, or to judge actions as right or wrong, good or bad.

The nature of these difficulties can best be seen if we proceed in stages, reconsidering first Brand's image of the whole earth, and then the augmented representations that we see in Gore et al.

Recall that Brand suggested that when people see the image of the whole earth they will in a sense be awakened, to the fact that we all live on a small planet. Brand lays this out as a matter of a kind of Platonic recollection, of something that we, at least culturally, have forgotten.

Now, it seems to me that there really is something to what Brand suggested, but that he himself has failed to see it. It is true that many people see something special about the image of the whole earth. Indeed, many people who look at it would describe themselves as being struck by it. The question here is, what does that mean? I would suggest that we can begin better to understand what is going on if we turn away from the visual to the case of language.

If we look at metaphor, we find something very much like the situation with the image of the whole earth. In hearing or reading a metaphor for the first time, a person typically experiences a kind of disjuncture. That is there is no easy and automatic transition between the elements being metaphorically linked. There is, rather, a need for a kind of mental work, just because the two elements aren't usually imagined as "going together."

There is much to be said about this disjuncture, but I should like to point to one aspect of it. That is, that after encountering a metaphor for the first time I may feel as though I have made sense of it, that I have "gotten it." If I use the metaphor in speaking with some other person, I likely expect that that person will have an experience rather

like mine. And if I find some evidence that the person has grasped the metaphor in the same way that I have, I very likely will for that reason feel a sense of community with that person. Metaphor, as Ted Cohen put the matter, functions to “cultivate intimacy.”⁷

Here understanding a metaphor is very much like getting an in-joke; both function as means for the establishment of community. Having shared an in-joke, people now feel as though there is some point around which they can communicate, some point of commonality or agreement. They feel as though there is the possibility of entering into discourse. Indeed, it seems to me that it is just this belief that underlies the possibility of engaging in discourse of any sort, and particularly moral discourse. Without a sense that there is a community of communicators, there can be no agreement in moral judgments. As Wittgenstein put it, “If a lion could talk, we could not understand him.”⁸

It may seem a long way from metaphor and in-jokes to an image of the whole earth, but as Barbara Stafford has shown, the two are connected, so that one can learn something about the one by looking at the other.⁹ And so, I look for the first time at the image of the whole earth, and there is a moment of putting it in its place, of situating it. Further, if I see someone else seemingly doing the same, I imagine a point of connection between us. The image becomes a symbol of our being able to communicate. And of course, and as Brand hoped, one way in which it becomes an image of our being able to communicate is by its pointing to the universality of the human predicament; we are all stuck here on a small planet in the midst of a very large black void.

⁷ Ted Cohen. “Metaphor and the cultivation of intimacy.” In *On metaphor*, edited by Sheldon Sacks, 1979.

⁸ Ludwig Wittgenstein. *Philosophical investigations*, 1968, p. 233.

⁹ Barbara Maria Stafford. *Visual analogy: Consciousness as the art of connecting*, 1999.

But if that image is to have the pragmatic effect of creating a sense of a broader human community, and thereby enabling a more generalized moral discourse, it is essential that it create that momentary sense of disjuncture, the sense in the viewer that there is something unexpected to it. It needs to engender the sense of paradox that arises from holding in one's hand a photograph, a worldly everyday object, that was palpably and perplexingly not taken from this world.

But this is just what the image of the whole earth has not been able to do. The image, lovely as it may be, lacks for most people the ability to create the sense of juxtaposition that would enable it to function as a means of community building, and the basis for a broadened form of moral discourse. In part that is because the source of the image is so clear; in the late 1960s anyone who read the news knew that the image was coming.

Indeed, and for that reason, the image of the whole earth becomes merely a talisman that reflects back the images of the earth that its viewers already hold. It is the beautiful blue marble, or the global marketplace. In either case, it is a fractious world of competing moralities.

The classified earth

If the image of the whole earth, of the transparent earth, has not as Brand hoped been able to motivate a broader sense of morality, a second set of problems arise when we look to the images of the earth raised by Gore et al. And these, too, are connected to the matter of image and metaphor.

A friend of mine tells of running into Brand just after the first whole-earth image was made available. Excited, Brand thrust the image into her face. "Look at this." She responded, "Oh yeah, I've seen that before." He looked back at her, distressed, and said, "You couldn't have, this is the first one." But her reaction was very much of a piece with that of John Glenn, who on his first trip into outer space commented that there was noth-

ing new--he had been briefed and re-briefed, to the extent that it was all old hat. Indeed, if we look to the image of the whole earth, we see a world that has been well-rehearsed. It is a world of forests and clouds and oceans. In the end, it is all rather flat. Having looked at it, one has no new questions to ask.

One might wish to say that this flatness arises from the pictorial nature of the image; it is, after all, a picture. Yet this sense of flatness carries over if we turn from the whole earth to the digital earth. This is because in large measure the representation of the digital earth consists of elements derived from technological devices. Satellites provide images; consumers provide data about their behavior as they make purchases; instruments provide data about the state of the environment.

In each case, the act of acquiring the data is at once an act of classifying the data. So in an important sense, the digital earth is also a classified earth. Indeed, and for this reason, the often-used distinction between “real” representations and “augmented” representations is not a useful one; just to the extent that these classified data are used, what is being represented is *not* simply the real, but rather consists of generalizations and typifications. This is, of course, as true of the natural world as of the human world.

Brin seems to assume that we can and should expect that this sort of collection and analysis of data of a wide range of forms will continue apace. And in fact, this form of representation is well along the road to Brin’s transparent society. In a way, of course, this classified world is just the legacy of Aristotle. But in the modern world, where both landscape and individual have become increasingly legible, and where attachments to place have been superseded by a wide range of other attachments, the urge to classify has resulted in the development of new tools. And these tools have been used to create what are increasingly compelling representations of individuals, what are sometimes termed

virtual individuals, or digital personae.¹⁰ In effect, these geodemographic tools--and here I use the term "geodemographic" quite loosely--recast each individual as a set of individual identities, which may be only loosely connected one with another.

(There is perhaps a bit of irony in the fact that it has been through the use of the tools of modernist science--quantification, classification, and computing--that the world has come to be filled with people whose fragmented and decentered identities fill the postmodern mold so excoriated by those who most actively promote the use of those scientific tools.)

Now, it seems to me that Brin fails to recognize the way in which the transparent society becomes such a world of multiple and virtual identities. And in fact, we see that failure if we look to the way in which he talks about exceptions that he makes to the "all is visible" rule. For he clearly believes that there are certain sorts of activities that need to be protected, that need to be able to occur within the sanctuary of a private place.

Why is this? I think that it is because he sees the private as providing a place where the individual is able to escape the world of multiple identities and be herself. In this sanctuary one can kick back, relax, be comfortable in one's own true self. And in fact, if one does not see this spelled out in Brin's *Transparent Society*, one does see it in the ways in which he represents individuals in his fiction. In works like *The Postman* there is a clear sense that a person has a real, singular identity.

And in missing the way in which identities become multiple within a transparent society, Brin also misses a central feature of life within those societies, which is that just

¹⁰ Philip E. Agre. "Understanding the digital individual." *The Information Society* 10 (1994); Roger Clarke. "The digital persona and its application to data surveillance." *The Information Society* 10 (1994); Alfred W. Crosby. *The measure of reality: Quantification and western society, 1250-1600*, 1997; James C. Scott. *Seeing like a state: How certain schemes to improve the human condition have failed*, 1998.

to the extent that those multiple identities emerge from within multiple contexts, one can and indeed always is at any given time in more than one place. I am in my office and in California and in a university, or in my car and in a city and in a state. Or I am at a professional meeting and in a city and in a hotel. Each of these places is the context within which actions make sense, and within which one can engage in moral action.

This is not merely a quibble. For as Helen Nissenbaum has shown, unless we recognize this fact we will be unable to make sense of critical questions, like the relationship between the private and the public, and the actual and potential roles of public places.¹¹

At the same time, just insofar as it points to the interrelationship between multiple individual identities and the multiple places wherein they are enacted, it points to the daunting problem increasingly facing anyone who is trying to decide whether to engage in this action or that one. Across these multiple contexts there can be no real adjudication, and no “balancing,” because to engage in balancing is just to take on another identity, as a person engaged in balancing.

In a certain way all of this will sound familiar; is it not, after all, the sort of claim that Goffman was making some forty years ago?¹² But I would argue that today there are two differences. First, the very technologies that Brand and Brin and Gore discuss help institutionalize and concretize these roles. If they were once talked about, they are now increasingly built into the ontology of everyday life. And second, while Goffman was truly a sociologist, discussing human social life, in the move to the whole earth and the digital earth the discourse of agency has been extended, to the natural world and even the

¹¹ Helen Nissenbaum. “Protecting privacy in an information age: The problem of privacy in public.” *Law and Philosophy* 17 (1998).

¹² Erving Goffman. *The presentation of self in everyday life*, 1959.

world of objects. Here I have in mind, for example, sociological work by Michel Callon, John Law, and Bruno Latour.¹³ Their work, attributing agency to virtually everything that exists, strikes many as extreme. Yet it is just the sort of discourse that we hear every day on Wall Street.

Beyond the digital earth

Where does this leave us? I have suggested two things. First, there have been a range of moves--by a range of people--directed at making the world visible and transparent. These moves, and especially to the extent that they involve a technologically mediated form of data collection and representation, promote the creation of a world in which people's lives are fragmented, and those fragments are taken seriously, where the part is taken metonymically as the whole. Here the behavior of these virtual individuals comes to be seen as making sense only within only limited contexts. Paradoxically, the most advanced communications technologies seem to support the creation of a social environment that is nothing if not relativist.

Second, the early attempt by people like Stewart Brand to invoke the visual image of the whole earth, an image that underlies these later digital earths, was unsuccessful, in large measure because the potential audience was already jaded, because its technological context robbed the image of the possibility of being new.

This is not, though, exactly the end of the story. And that is because if we turn again to one of the images invoked in Gore's digital earth there is an element that I have

¹³ Michel Callon. "Some elements of a sociology of translation: Domestication of the scallops and the fishermen of St. Brieuc Bay." In *Power, action, and belief: A new sociology of knowledge?*, edited by John Law, 1986; Bruno Latour. *The pasteurization of France*, 1988; John Law. *A sociology of monsters: Essays on power, technology, and domination*, 1991.

not considered. That element is wonder. Note that Gore describes his visitor to digital earth as “zooming in,” and taking “the equivalent of a ‘magic carpet ride’ through a 3-D visualization of the terrain.” The suggestion is that when faced with the digital earth a person will undergo what Descartes termed

A sudden surprise of the soul which causes it to apply itself to consider with attention the objects which seem to it rare and extraordinary.¹⁴

Descartes, I hasten to add, took the traditional tack, of seeing wonder or curiosity as a motive for seeking knowledge, but one that would in the end be transcended.¹⁵ And indeed, if we look more closely at Gore’s description of digital earth, or that of David Mark in the NCGIA document, we see that this excision of wonder is precisely the goal.

But as Peter Platt has shown,¹⁶ there is another approach, one that can be found in this century in authors like Foucault, in a sense in Longinus, and more substantially, in the sixteenth century, in Patrizi.¹⁷ As Foucault put the matter, wonder

Evokes the care one takes of what exists and might exist; a sharpened sense of reality, but one that is never immobilized before it; a readiness to find what surrounds us strange and odd; a certain determination to throw off familiar ways of thought and to look at the same things in a different way; a passion for seizing what is hap-

¹⁴ Rene Descartes. “The passions of the soul.” In *The philosophical works of Descartes*, 1983, p. 362.

¹⁵ For a longer history of the concept of wonder, see Lorraine Daston and Katharine Park. *Wonders and the order of nature, 1150-1750*, 1998.

¹⁶ My comments here draw on Platt’s works; see Peter G. Platt. *Reason diminished : Shakespeare and the marvelous*, 1997 and Peter G. Platt. “Believing and not believing: Wonder and the theater of marvels.” Paper presented at the Conference on “Return to Wonder”, Santa Barbara, CA, 3 March 2000.

¹⁷ Michel Foucault. “The masked philosopher.” In *The essential works of Michel Foucault, 1954-1984*, edited by Paul Rabinow, 1997; Cassius Longinus. *On sublimity*, 1965; Francesco Patrizi. *Della poetica*, 1586.

pening now and what is disappearing; a lack of respect for the traditional hierarchies of what is important and fundamental. I dream of a new age of curiosity.¹⁸

This is not curiosity, or a sense of wonder merely as a feeling, as an affective relationship with the world that directs attention away from the world. And neither does wonder, here, function as a means to an end, at least where that end would be the effacement of wonder, and its replacement with some solid explanation. It is not, then, a servant to what Donna Haraway has so aptly termed the view of the scientist as “modest witness.”¹⁹

Rather, I think that it needs in a fundamental sense to be seen as an appeal to a way of understanding the world that is far more evident in those cases where that understanding emerges from interaction, with the world and with other people. It is more common in societies that do not have writing, and it is no accident that early curiosity cabinets. Created in an era in which wonder was considered a useful epistemological category, were organized in ways that paralleled beliefs about the operation of mind and memory.²⁰ These, as we know, relied upon a recognition of the embodiedness of memory, and in fact, emerged long before the invention of the idea that humans have separable minds and bodies.

It seems to me that what is missing in the image of the whole earth, and more so in the digital earth, is a recognition that this way of engaging the world, through wonder and memory and the body, remains very much alive. Far from having been destroyed by the successive inventions of writing, print, and new information technologies, and by

¹⁸ Foucault. “The masked philosopher.”

¹⁹ Donna Jeanne Haraway. *Modest* Witness@ Second*Millennium.FemaleMan* Meets*OncoMouse : feminism and technoscience*, 1997.

²⁰ Frances Amelia Yates. *The art of memory*, 1966.

their recasting knowledge as simply a matter of results, it has merely lain in the penumbra that those technologies cast.

And in that context I would argue that the very grave difficulties that are raised by the propagation of the idea of the digital earth will not be resolved by an appeal to even as appealing an image as that of the whole earth. Neither will they be resolved by the metaphorical zooming in that Brin has proposed, by a universalizing of the gaze.

Rather these difficulties, which begin with the affective flattening of the earth, and continue through the fragmentation of place and individual, have no hope of being resolved as long as the destabilizing function of curiosity is effaced, and the centrality of wonder to the creation of knowledge is denied.

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