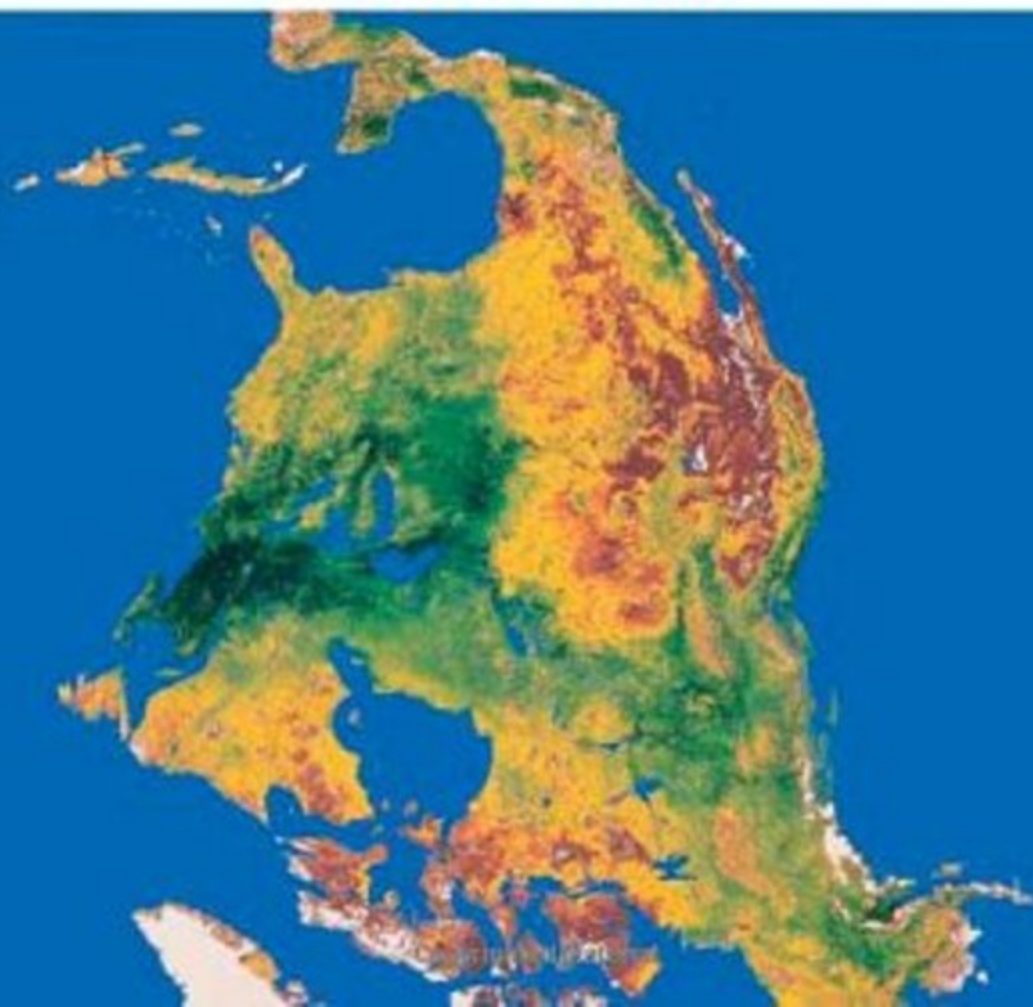# Rethinking the Power of Maps

Denis Wood

Rethinking the Power of Maps

RETHINKING THE POWER OF MAPS

Denis Wood

with John Fels and John Krygier

For

George F. McCleary, Jr.

best teacher I ever had

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Rethinking the Power of Maps

Maps Work

Power is a measure of work. Which is what maps *do:* they *work.*

Maps work in at least two ways. First, they operate effectively. They work; that is, they don't fail. On the contrary, they succeed, they achieve effects, they get things done. *Hey! They work!* But to do this maps must work in the other way as well, that is, *toil,* that is, *labor.* Maps sweat, they strain, they apply themselves. The ends achieved with so much effort? The ceaseless reproduction of the culture that brings maps into being.

Now: work is the *application* of a force through a distance, and force is an *action* that one body exerts on another to change the state of motion of that body. The work of maps? To apply social forces to people and so bring into being a socialized space.[1] The forces in question? Ultimately they are those of the courts, the police, the military. In any case they are those of . . . *authority.*

In our lives maps are everywhere. This is because, by *authorizing* the state of affairs which through their mapping they help to bring into being, maps replace, maps *reduce the necessity for,* the application of armed force. For armed force, maps substitute . . . the force of the authority of the map.

This is to say: maps leverage words. Effectively, then, a map is an engine, where an engine is a machine that converts energy to work, and a machine is any device that helps get work done. Maps are engines that convert social energy to social work:

$$\text{energy} \rightarrow \text{engine} \rightarrow \text{work}$$
$$\text{social energy} \rightarrow \text{map} \rightarrow \text{social space}$$
(or equivalently)
$$\text{social energy} \rightarrow \text{map} \rightarrow \text{social order}$$
(or equivalently)
$$\text{social energy} \rightarrow \text{map} \rightarrow \text{knowledge}$$

Maps convert energy to work by linking things in space. They achieve their linkages by bringing together onto a common presentational plane propositions about terri-

tory. These propositions take the form that things of selected categories *are* where the maps say they are. That is, maps achieve their linkages by putting selected things together onto a common plane. This is the plane of the map. This plane with its propositions *is* the map.

These linkages of things—these territories—enter the social realm as *discourse functions.* A discourse function is a way a person has to affect the behavior of another in a communication situation. That is, a discourse function also is a way of doing work.[2] The fact that a map is a discourse function means that it has a regular role in the discourse, in the talk, that shapes our world. The role a map plays in this discourse is generally descriptive. This is to say that it's rarely narrative or interrogative, not much interpellative or imperative (though it *can* be all these things). The descriptions maps effect affect behavior by binding people to each other through the territory they mutually inhabit.

Two Simple Examples

This is really straightforward when you think about the maps that are made of congressional voting districts, voting precincts, zoning, school districts, and leaf collection areas (Figure I.1). Each of the maps in these examples binds people together by describing on a common plane (that of the map) two kinds of behavior: *dwelling* and *things we want to attach* to dwelling (voting, paying taxes, receiving services). That is, the mapmaker *links, connects, ties* these behaviors together by describing them on the common plane of the map. The binding is accomplished *through, by means of,* this coterminous description. As this coterminous description binds, it simultaneously stores, reifies, and projects the act of binding: "These two things go together," the map proposes, and as a consequence, we who live *here* . . . are expected to send our kids to school *there.*

To assent to the proposition that these things belong together is to indulge in the behavior the map's makers desire, for the map is nothing but an assertion of the state of the world desired by its makers. If your kids already go to the school the map proposes, no change in your behavior is required. But if change *is* required, as in modern school systems it so regularly is, this change is made in response to a force. In the case at hand, the force is exerted *by* a school board *through* the map.

The proposition advanced by such a map need not be accepted. Indeed, it is almost always contested. What results is a battle between maps advancing alternative propositions. Few maps see the light of day without such battles. In the end the stronger force prevails—which is to deny none of the changes, compromises, revisions that the battle produced—and a map is published which no longer . . . can be contested. *This* map's proposition may be *resisted,* but the forces working through the map will permit your kids to attend *only* the school proposed.

The force behind *this* map? It *is* that of the school board, but behind the school board is the force of law. Ultimately it is that of the police, the military. Those who lived through it cannot forget the images of the National Guard enforcing the rights of black kids in the South to attend schools previously closed to them as their attendance zones were redrawn in the wake of *Brown v. Board of Education of Topeka.* When required, the gloves come off (Figure I.2).

The *power* of the map is such that this display of force is rarely called for. Once
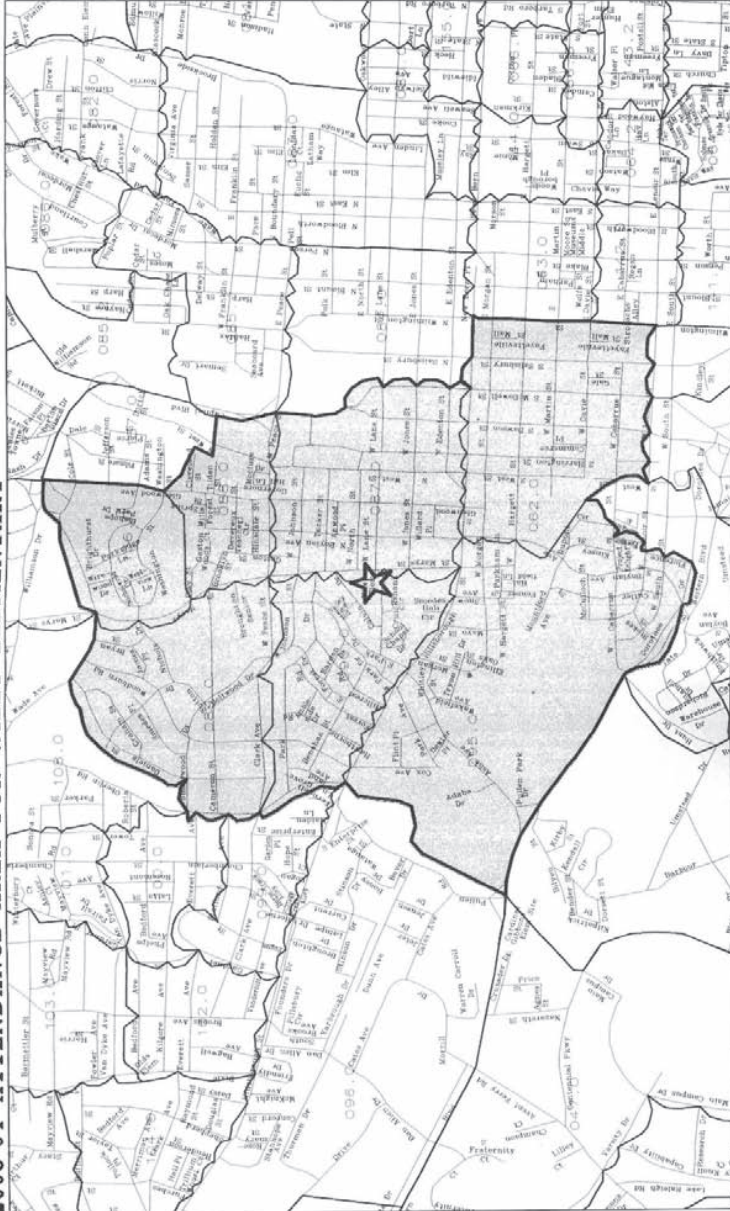
FIGURE I.1. 2003–2004 attendance area for Wiley Elementary. The base attendance area for Wiley Elementary consists of seven "nodes" – the shaded areas–the codes for which may be hard to read in this reproduction (the node in the lower right is 062.0). If you live in one of these nodes, Wiley is where the Wake County Public School System wants your kid to go to school. (*Source:* Wake County Public School System)

FIGURE I.2. When required, the gloves come off. U.S. National Guard troops were required to escort black students to their classes at Central High School in Little Rock, Arkansas, in 1957. Students *will* attend the school the map says they should. (*Source:* U.S. Army)

a map has been published, it is pretty much taken for a description of the way things actually *are.* And if this is the way things *are,* what's the point of resistance? The map's *propositional* character becomes . . . hard to see.

No map works in any other way, though the behaviors they bind may vary widely. Instead of *dwelling* and *going to school,* they could be *knowing this* (for instance, about *topography,* say that of Barro Colorado Island) and *knowing that* (for instance, about *the occurrence of a tree,* say that of *Ocotea skutchii*). "These two things go together," says the map, and as a consequence, to know two things . . . is to know a third (say, that *Ocotea skutchii* is a slope specialist). The *knowledge* that is brought into being this way—that is *constructed* this way—is no different from other *behaviors* that are brought into being by a map (Figure I.3). After all, *knowing* this or *knowing* that, and *going* here or *going* there, are equally behaviors, are equally caught up in the larger frame of social action.

I want to say this isn't about power (as the school board example so patently is) but about knowledge (this Barro Colorado example) but . . . *what's the difference?*

Making a Map of Mars

A sequence of maps in an exhibition I curated for the Smithsonian makes this point more clearly. At stake was the 1993 publication by the United States Geological

Survey of a geologic map of Southern Mangala Valles (on Mars) created by Bob Craddock.

In the sequence were five large items: (1) what looked like an air photo of the Martian surface; (2) a geologic map of western equatorial Mars; (3) a diazo print of Bob Craddock's first draft covered with reviewers' comments; (4) Bob Craddock's final draft on a blueline print; and (5) the map as published by the U.S. Geological Survey.

The air photo in fact was a photo*mosaic* of a piece of Mars about the size of South Carolina. This had been assembled from high-resolution digital imagery beamed back to earth from the Viking Orbiter and then computer processed. This processing was not carried out uniformly. For instance, Bob Craddock reprocessed some of it to reveal detail hidden in the shadows. He also decided which marks on the image had been made by the imaging process and which represented potential evidence of geologic processes on Mars.

Bob Craddock had then turned his attention to an older map of Martian geology by David Scott and Kenneth Tanaka, which the survey had published in 1986. This too was based on Viking imagery and—superseding earlier maps based on Mariner 9 data—had been at the time of its publication the last word in Martian geology. Bob Craddock transferred the geologic units that Scott and Tanaka had interpreted to his photomosaic. Because his photomosaic constituted even higher quality data, Bob Craddock did not agree with everything on the older map.

This is sort of the stage school boards are at when they review the enrollment
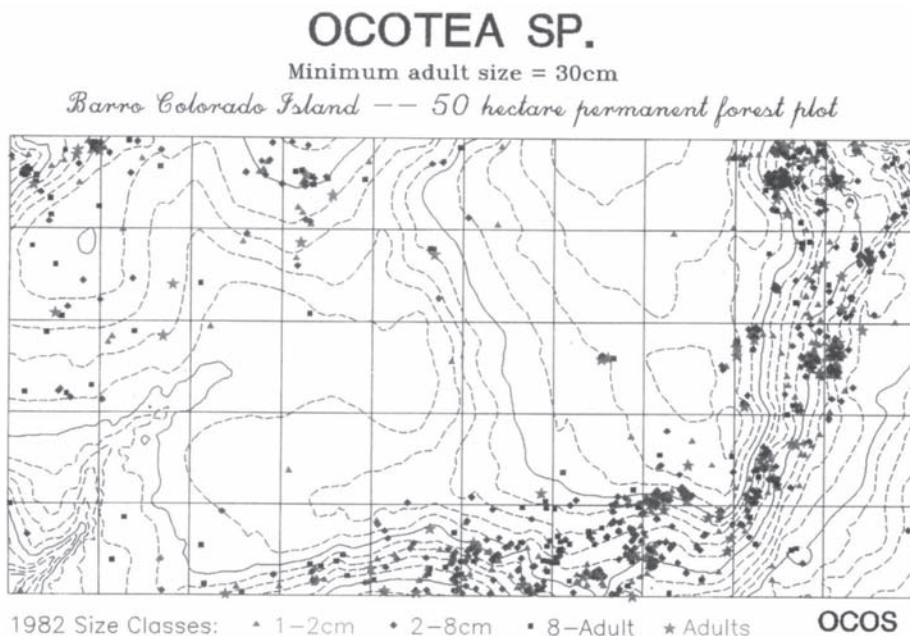
FIGURE I.3. The distribution of *Ocotea skutchii* on Barro Colorado Island. This map links the topography of Barro Colorado Island in Panama with the occurrence of the tree *Ocotea skutchii*. It makes it plain that *Ocotea skutchii* is a slope specialist. (*Source:* Smithsonian Tropical Research Institute)

projection for the *coming* year (the more recent Viking imagery) and the assignment scheme used the *previous* year (the older interpretation, the older map, of Martian geology).

Working within the general framework of the older interpretation, Bob Craddock mapped the geology onto a diazo print of the photomosaic. That is, on a copy of the photo he drew lines around and labeled what he *thought* he saw, using geologic terms to indicate the hypothetical origins of the features observed. For example, he might have thought that *this* set of lines represented lava flows. When he was done, he had a geologic map of Mangala Valles.

This is the stage reached by school boards when they release their map of proposed school attendance zones.

Bob Craddock sent his new map out to other geologists for review. On this map the comments of his coauthor, Ron Greeley, appeared in pencil. Those of other specialists in Martian geology—Mary Chapman and Jim Zimbelman—appeared in red and green inks. Some of these supported Bob Craddock's interpretations. Others implied alternative possibilities. Sometimes lines were moved, pulled in, pushed out. What one *saw* in the photo was very much a matter of interpretation.

This is the stage reached by school boards after the public hearings, the news stories, the editorials.

Taking into account his reviewers' comments, Bob Craddock redrew his map on a blueline print. He did not always agree with his reviewers' interpretations— though sometimes he accepted them unreservedly—but their views *had* been taken into account. This time he *colored* the geologic units to guide the mapmakers working for the Geological Survey who would produce the final printed version of the map—browns and grays for ancient crust, reds for lava, and blue where water had flowed or ponded. What had been simple lines turned into powerful colored shapes. Bob Craddock wiped his drawing with lighter fluid to smooth out the pencil marks and to enhance the brilliance of the colors. The result possessed a degree of finish that made it hard to question. Gradually, scientific hypotheses were hardening into scientific facts.

This is the stage reached by school boards when they decide what they're going to do. It is at this point that school board *proposals* begin to congeal into the *social geography* of cities.

Finally, the Survey cartographers converted Bob Craddock's image into a geologic map (Figure I.4). This is a lithographic print. It's the document you'll find in your local research library. It says nothing about having to distinguish marks on the photo *that the photo processing produced* from those left on Mars *by geologic processes*; it gives no hint of things hidden in shadows; it breathes nothing of hypotheses, contesting interpretations, reinterpretations, compromises. This map speaks for itself. It says, "United States Geological Survey/Geology of South Mangala Valles, Mars." That is, *this is the geology of Mars.*[3]

The published map of school attendance zones is similarly circumspect, similarly definitive.

There's no question that this isn't about knowledge. But there's no question that this isn't about power too. For one thing not everyone got to put his two cents in, and Bob Craddock had the final word just like the school board. And both produced *definitive* descriptions of the way things "are." Maps *are* engines that convert social energy into social space, social order, knowledge.
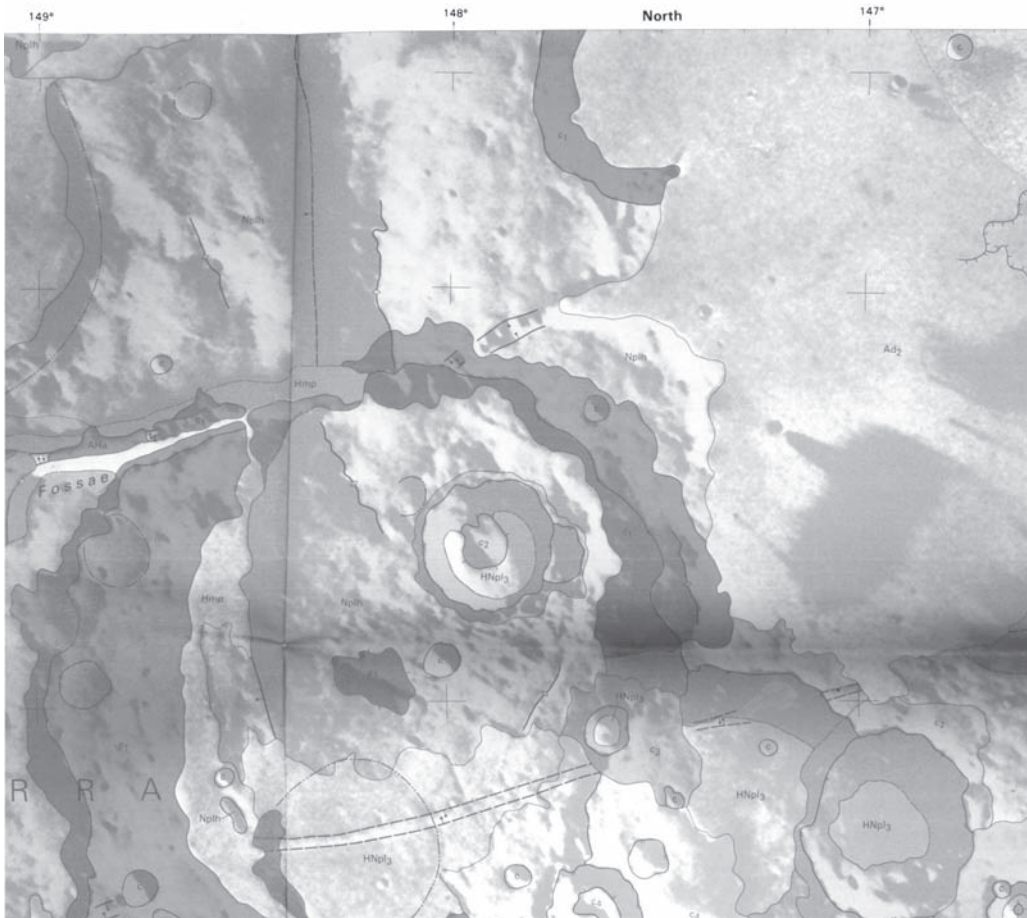
FIGURE I.4. Bob Craddock's map of Mars. Well, Robert A. Craddock and Ron Greeley's 1994 geologic map of a *part* of Southern Mangala Valles, and only a detail at that. Hard to see in this finished product: all the work involved in making it. (*Source:* U.S. Geological Survey)

* * *

This thesis is embodied in this book in two parts, each of four chapters. Taking it for granted that maps serve the interests of the state, the first part describes how maps do so. It's about *mapping*. The second part is about *counter-mapping*, about ways mapping is used to resist the power of the state.

Mapping

Chapter 1 argues that maps as we know them are not terribly old—500 or 600 years at the most—and describes the rise of the map in the rise of the modern state. It

argues that maps were not founded in some primal instinct "to communicate a sense of place, some sense of *here* in relation to *there*," but in the needs of nascent states to take on form and organize their many interests.

Chapter 2 contends that far from being pictures of the world maps are instruments for its creation; that is, they are not representations but systems of propositions, arguments about what the world might be. It was this propositional logic that made maps attractive to states in the first place, and makes them more and more valuable to the state every day.

Chapter 3 demonstrates how these propositions are embodied in map signs in a case study of how maps do what they do for at least one state. This is a revision of the first half of a chapter on the North Carolina state highway map from the original *Power of Maps*. While doubtless the most often cited chapter in the original book, some readers found its semiotics hard going.

Chapter 4 develops the argument of the third chapter into one about map sign systems generally. This is a revision of the second half of the chapter on the North Carolina state highway map from the first edition. Unquestionably the hardest going in the book, it's concerned with the nitty-gritty of the sign, with the ink on the paper, the pixels on the tube.

The argument of the first half of the book thus moves from generalities about the map and its relation to the state, through consideration of the logics mediating this relationship, to their material embodiment on the screen or the page. But you don't have to follow the argument in this order, or any order. Feel free to skip around, or skip things altogether.

Counter-Mapping

Chapter 5 tackles the problem of "cartography," how its attempt to professionalize mapmaking distorted the nature of mapmaking, and how "cartography" killed itself off toward the end of the last century. It examines the role of "critical cartography" in cartography's demise and uses the practices of Indigenous and parish mapping to illustrate the promises and limitations of counter-mapping.

Chapter 6 probes the promises and limitations of counter-mapping by looking at so-called participatory GIS. The examples of the Detroit Geographical Expedition, the mapmaking of the Situationists, and Jake Barton's practice are extolled as more viable forms of truly public participation geographic information systems.

Chapter 7 tackles map art as a form of counter-mapping, tracing its slow rise from Dada and Surrealism through Pop and Conceptual art to the ferment of the present. Map art calls into question the map's service to the state, the nature of its propositions, and its unique semiotics. Map art doubts the certainties of the map, and this creates a space for rethinking the map, for unmaking it.

The last chapter takes the mapping of Palestine; its counter-mapping by the Zionists and later by Israel; its counter-counter-mapping by Palestinians; and the map art made about Palestine as a case study, as a focused way to review the arguments of the book as a whole.

*   *   *

My use of the word "with" on the title page is an acknowledgment of an intellectual debt, not an ascription of authorship. Except for Chapter 4, which John Fels originally wrote, I wrote this book. But there's very little in it that wasn't jointly conceived, talked through, and worked out with either John Fels or John Krygier, with both of whom I've coauthored other books and papers. Fels and I have worked together for a quarter of a century. In the mid-1980s we coauthored the long paper, "Designs on Signs: Myth and Meaning in Maps," which I revised into the fifth chapter of the original *Power of Maps,* and revised here again into Chapters 3 and 4. Since then, meeting on Tuesdays at 2:00, John and I have worked out the map's propositional logic and coauthored *The Natures of Maps* where we explore this logic in a study of maps of "nature." Our work underlies everything I say in the second chapter here and pervades my thinking about maps.

I began working with John Krygier more recently, when he invited me to join him in what became *Making Maps: A Visual Guide to Map Design for GIS.* Since then John and I have explored the world of map art and written a number of articles. One of these articles, written at the request of Chris Perkins and Martin Dodge for their book, *Rethinking Maps,* turned into a "comic book" about the map's propositional logic. Its spirit, too, pervades the second chapter in which I even reproduce a couple of its pages. John and I also did some work on Jake Barton which John published in *Cartographic Perspectives.* I've adapted this as part of Chapter 6. We also wrote four articles for the *International Encyclopedia of Human Geography,* all of which I've revised for this book: the first chapter draws heavily on our long article "Maps," though I should point out that "Maps" was heavily dependent in turn on the article, "Maps and Mapmaking," I'd earlier written for the *Encyclopedia of the History of Science, Technology, and Medicine in Non-Western Cultures.* The fifth and sixth chapters draw equally heavily on our articles, "Protest Maps," "Map Types," and "Critical Cartography."

As indebted as I am to Fels and Krygier, neither would subscribe wholly to what I've written in Chapter 2 (or anywhere else); and despite their manifold contributions neither should be held responsible for anything I say.

My other debts may be too numerous for me to remember to repay them all. I cannot thank enough the historian of Japan, Mary Elizabeth Berry, whose *Japan in Print* I discovered at the most propitious possible moment, and who had the grace to review my argument in the crudest of draft form. Matthew Edney, Peter Bol, and Alexander Van Zandt Akinm also reviewed these pages, Akinm registering significant reservations. I also need to acknowledge John Andrews for his tireless work on the definition of the map.

As Fels and I developed our thinking about the propositional logic of the map, I was able to describe it to responsive audiences at annual meetings of the National Council on Geographic Education in 2002, to the North American Cartographic Information Society in 2003, and to visual studies students at Goldsmith College and the geography faculty at Queen Mary's College, both of the University of London, in 2004; and with John Krygier present its "comic book" form to the 13th Annual Critical Geography Mini-Conference in 2006, the North American Cartographic Information Society, also in 2006, and the American Association of Geographers' Monticello Symposium in 2007. Each iteration helped me clarify the argument, for even the most obtuse responses revealed deficiencies. Also useful was Bob

Abramms's editing of the chapter on the subject that I added to the second edition of our *Seeing through Maps.*

I've profited from the comments of many who reviewed the first edition of *The Power of Maps,* especially those of Barbara Belyea in *Cartographica,* though none has been as helpful as John Pickles's traversal of my work in his *A History of Spaces.* So positive is John about my work that I am embarrassed even to allude to it, but the fact is that he read *The Power of Maps* not as I think I *wrote* it, but as in hindsight I would *wish to have written* it, not as the swiftly cobbled together mélange that it was—as exciting as that made it to write—but as the sustained meditation on the relation of the map to the state that I think I have actually written here. John's project and mine are not identical—and we certainly don't speak the same language, read the same literature, or come at scholarship from the same position—but our arguments are unnervingly complementary, and their largely independent shaping supports my feeling that we are talking about something real, as intractable as that frequently may be to being put into words. John has supported my work in many other ways as well, material and otherwise. His introductions to Joe Bryan and Linda Quiquivix were particularly valuable, and his review of this manuscript has made it a better book.

John Andrews's *Organising Wonder: Map-Philosophical Issues in the Writings of Denis Wood* was both flattering and useful; its concluding chapter, "Wood's Next Book," was distinctly provocative. Min Jay Kang facilitated the book's translation into Chinese.

I want to thank the anonymous creator of the Wankers map for his generosity, and Scott Freundschuh who, by inviting me to write what became my notorious "Cartography Is Dead (Thank God!)" essay, obligated me to put down in black and white what I'd been saying out loud. Joe Bryan became my guide though the world of the Indigenous map and was also kind enough to review what I ended up writing. Nancy Peluso was also helpful, as were Margaret Pearce and Michael Hermann. Sue Clifford, of Common Ground, and Kim Leslie, of the West Sussex Parish Maps Project, both reviewed what I wrote about the Parish Map Project. Mark Salling, a friend whom we all called Mouse in junior high school, introduced me to the world of participatory GIS and invited me to keynote the 4th Annual URISA PPGIS Conference. There's no way I can thank him for everything he's been for me. Jeremy Anderson introduced me to Bill Bunge 40 years ago and on his death left me the rich collection of Bungiana without which I never could have written what I have about the Detroit Geographical Expedition. I still miss Jeremy. kanarinka's invitation to speak at Conflux 2006 in New York forced me to organize what I thought about psychogeography, as did conversations with David Pinder. By inviting me to speak at Clark University, Eli Crocker forced me to crystallize my thinking about map art. Later invitations to speak on the subject from Scott Boberg at the Contemporary Arts Center, Cincinnati; from John Pickles at the University of North Carolina at Chapel Hill; and from Ken Lambla at the College of Art and Architecture at the University of North Carolina at Charlotte, also provided opportunities to think the subject through. Katherine Harmon, Bill Outcault, Lilla LoCurto, UNC's 3Cs (especially Craig Dalton and Tim Stallmann), Simon Elvins, Lauren Rosenthal, kanarinka, Lize Mogel, elin O'Hara slavick, Steven R Holloway, and others whom I know I've forgotten were all essential collaborators in this work. The curators of

so many of the map exhibitions I write about generously provided help whenever I asked for it.

Mitch Hazouri is wholly responsible for my interest in Palestine as well as my acquaintance with it. Indeed, without his material support and the four field trips his support enabled, the eighth chapter would never have been written. Linda Quiquivix opened many doors in the West Bank and made it possible for me to meet Salman Abu-Sitta. Thanks, Linda. Salah Mansour, Mohammad Alsaafin, Aaron Amaral, Brian Phelps, and others reviewed this chapter and saved me from bottomless pitholes.

More fundamentally I have to thank Christine Baukus and Irv Coats. It is solely their support that made the writing of this, as most of my other books, possible. Their Raleigh bookstore, The Reader's Corner, has also been important, a continuing source of books and maps. Its staff—Brian Hooley, Wayne Mann, and Todd Morman—is irreplaceable. At North Carolina State University's D. H. Hill Library, Eric Anderson and Cindy Levine provided essential resources for this project, as for so many others. Brad, Daryl, Courtney, and Sander Houk gave me the perfect place to pull together the strands of this book, their porch in Vermont. Tom Koch and Arthur Krim each contributed, as always, in their very different ways to the book's final form. Without Ingrid, I can't imagine how I could have done anything at all.

George McCleary, however, had practically nothing to do with this book. I dedicate it to him because he was the best teacher I ever had, and the only one in what he doubtless still calls "cartography." Besides signing off on *I Don't Want To, But I Will* as the title of my dissertation (and who else would do *that*?), and shepherding it through the hills and valleys of production and printing—to say nothing of the Clark University geography faculty!—George ran a sweet little seminar in which the likes of Borden Dent and I were very much encouraged to try our wings. Were there more teachers like George McCleary universities might be almost tolerable.

Thanks, George, for everything.

PART I
Mapping

Maps Blossom in the Springtime of the State

A cornucopia of images, bewildering in their variety: this is the world of maps. Parchment and gold leaf, paper and ink, phosphors and electron beams . . . few are the substances that have failed to be used to make maps of the world we live in. We draw them in the air and we trace them in the snow, we eat over them on placemats and we stare at them on billboards. We have sewn them on silk and printed them on T-shirts, sawn them into jigsaw puzzles, and mosaicked them into murals. Most are gone now, lost in the making or evaporated with the words that brought them into being. The incoming tide has smoothed the sand they were drawn in, the wind has erased them from the snow. Pigments have faded, the paper has rotted or been consumed in the flames. Many simply cannot be found. They are crammed into the backs of kitchen drawers or glove compartments or mucked up beneath the seats with the KFC boxes and the Slurpee cups. Where have all the road maps gone, and the worlds they described and the kids we knew, Route 66, and the canyon beneath Lake Powell, and the old Colorado pouring real water into the Gulf of Mexico? And when we talk of the "old map of Europe"—which too has disappeared—we are speaking of certainties we grew up with, not a piece of paper. And yet, and yet . . . it is hard, in the end, to separate those certainties from the pieces of paper that not only figured that world, but brought it into being.

Maps Give Us a Reality beyond Our Reach

And this is what maps give us, *reality,* a reality that exceeds our reach, our vision, the span of our days, a reality we achieve in no other way. We are always mapping the invisible or the unattainable or the erasable, the future or the past, the whatever-is-not-here-present-to-our-senses-now and, through the gift of maps, transmuting it into everything it is not . . . into the real, into the everyday. A book leaps at me from the remainder table at Barnes and Noble. Bannered across the cover are the words,

"The Earth as we've never seen it before." On the fly-leaf, below the headlined "Our Precious Planet," striking new satellite images are promised to reveal *exactly* how fragile our home really is.

In the parking lot outside I am not struck by the preciousness of the planet, much less its fragility. Instead, I am overwhelmed by the solidity and apparent inde-structibility of everything I see around me. Only the satellite images—let us think about them as maps for the moment—convince me of the reality the captions evoke: "Behold the Earth." It's as if we'd never done so before and indeed . . . apparently we haven't. "New images"; "never seen before"; "new views"; "show us more": each phrase insists on the fact that I never *have* seen the planet in quite this way.

Let's face it: I haven't. Neither have you. Few have. At most, even the best-traveled have seen but a few square miles of its surface. The space around this con-vention center, that neighborhood, the thin traverse of the tour bus, the road from the airport home, it's not ample, this territory we individually occupy. It scarcely deserves the name "world," much less "planet." I think of what Arthur Miller wrote about his father:

> In his last years my father would sit on the porch of his Long Island nursing home look-ing out on the sea, and between long silences he would speak. "You know, sometimes I see a little dot way out there, and then it gets bigger and bigger and finally turns into a ship." I explained that the earth was a sphere and so forth. In his 80 years he had never had time to sit and watch the sea. He had employed hundreds of people and made tens of thousands of coats and shipped them to towns and cities all over the States, and now at the end he looked out over the sea and said with happy surprise, "Oh. So it's round!"[1]

Why should this be surprising? The sphericity of the globe is not something that comes to us as seeing–hearing–sniffing–tasting–feeling animals, is not something that comes to us . . . sensuously. It's a residuum of cultural work, of watching ships come up to us from the sea for eons, of thinking about what that might mean, of observing shadows at different locations, of sailing great distances.[2] It is hard-won knowledge. It is map knowledge. It is something little kids are taught, not some-thing they "naturally" know.

So how *do* we know the earth is round? We know the earth is round because (almost) everybody says it's round, because in geography class our teachers tell us that it's round, because it's round on map after map after map . . . or, if not pre-cisely round, then supposed to be round, topologically round, so that when you run your finger off one side of the map, you have the license to put it back down on the other.[3] I am not indulging in some form of solipsism here, but in an effort to under-stand why, in so many media, we make so many maps. Ultimately, the map presents us with the reality we *know* as differentiated from the reality we *see* and *hear* and *feel.* The map doesn't let us *see* anything.[4] But it does let us know what others have seen or figured out or dreamed up, others often living but as often dead, the things they learned piled up in layer on top of layer so that to study even the simplest-looking image is to peer back through ages of cultural acquisition (Figure 1.1).

You might not guess this from clicking on Google Earth. You seem to just zoom in and there's the world, but in fact the acquired skills, the accumulated knowledge are piled so deep in Google Earth you can barely scroll through them. To begin with, there's that interface with its spinning globe—the globe mastered with such

FIGURE 1.1. Augusta draws the earth. At age 3 Augusta already knows the earth is round. (*Source:* Augusta Dea Wood)

cumulative effort—and then, at least with the layers I have on, in the middle of the North Atlantic, if you zoom in enough, a little volcano which, when you click on it, spouts, "On July 9, 1865, the crew of a whaling ship observed a submarine eruption. Floating pumice reached the sea surface, where it formed a large 'floating mountain.' A strong odor of sulfur was noticed, and dull rumblings were heard at intervals of an hour." Here the piled layers are in your face: a 150-year-old observation tacked onto the site of an unnamed volcano (one of 1,500 such volcanoes from the Smithsonian Institution's Global Volcanism Program accessible in this Google Earth layer), out in the middle of an ocean laboriously stitched together from an enormous number of diverse images collected over hundreds of years, projected according to geometries cobbled together over thousands of years, exploiting algorithms created yesterday, uploaded to a system of, literally, hundreds of thousands of servers, moved though a stitchery of millions of miles of cables—

Using Google Earth may feel like magic but it's not, or it's the magic of a Fred Astaire dance, effortless only because so long rehearsed, or in this case so long and so widely accumulated with such immense human effort. And to what end? To many ends—it's important to acknowledge this—but certainly mapped images have become essential to our sense of the world, to our place within it, to much of our identity; to our national identity certainly, but even to our sense of coming from a particular place, from a state or a parish or a neighborhood; to our sense of who we are, of what we're doing, of where we're going. To get rid of something is to "wipe it off the map,"[5] as to establish something is to "put it on the map," and indeed the map metaphor has become so pervasive that we map not only our genes but our futures.[6] So integral has the map become that it's hard to imagine life without it. We can scarcely imagine how to get across the city without a map, and we can simply no longer fathom that millions of Americans crossed the continent without maps, that Genghis Khan and Charlemagne ruled without maps, that Rome administered its

empire without a map, that the pharaohs controlled Egypt without a map, that the Bible was written without once referring to a map.[7]

The Bible doesn't, you know, not once, because in biblical times maps didn't exist. People didn't need maps then. They got on fine without them. They found their way with their eyes and their tongues. They managed their affairs that way too, talking, gesticulating. So inured are we to the use of maps—to schedule leaf collections, to assign kids to schools, to study forests, to think about the geology of Mars—that we can't imagine that for almost all of human history, for 99% of it at the very least, people didn't use maps at all.

And a Map Is . . . ?

Like most humans artifacts—like cars, tables, belt buckles, spoons—maps are more readily exemplified than defined. You point to one. "This is a map," you say. What a map most is becomes apparent in use.

This has stopped no one from trying to define maps, however, at least since the 17th century when simultaneously in places as far-flung as England, Russia, New Spain, and Japan, maps and mapmaking first became common. A recent collection of hundreds of definitions of the English word "map," drawn from the years 1649 to 1996 (Figure 1.2), makes it plain that across this period "map" has been defined more or less continuously as "a representation of a part of the earth's surface."[8] Similar collections could be made in other languages, in Japanese, in Spanish, in Chinese, in Russian. This nearly unanimous definition cannot, however, be accepted as an "outsider's" impartial description of the nature and role of the map. Instead, it needs to be understood as a projection, as it were, of the map itself, *the map as it would like to be understood,* as people project their own cultural norms into definitions of "civilized" and those of the Other into definitions of "barbarian."

Defining the map as a representation of part of the earth's surface *naturalizes*

FIGURE 1.2. A map is a representation of parts of the earth's surface, or is it? A "word cloud" made using Jonathan Feinberg's wordle algorithm out of all the words in the 321 definitions of the word "map" that J. H. Andrews collected from the years 1649 to 1996. The size of each word is proportional to the frequency of its occurrence in the corpus. (*Source:* J. H. Andrews and wordle)

the map. Naturalizing the map has the effect of *universalizing* it, and this helps obscure the map's origins in the rise of the state. Naturalizing the map helps . . . *pass over* . . . the map's role in the establishment and maintenance of social relations in societies where maps are common. Naturalized this way, maps seem ordinary and unremarkable, indeed necessary. It's because they seem necessary that scholars like Brian Harley and David Woodward and Jim Blaut and David Stea—and others—insist on conflating maps and mapmaking with such universal human, even such animal abilities as orientation, wayfinding, and other aspects of spatial intelligence, even though these are *not* what maps and mapmaking are most often used for (again, they're used to schedule leaf collections, assign kids to schools, study forests, think about the geology of Mars).[9] Because they conflate maps with fundamental cognitive abilities, these scholars take it to be a slur on a population, as a denigration of its cognitive or cultural capacities, to deny that it makes or uses maps. Instead, they claim that *everyone* uses maps and always has.[10] But, in fact, just as people long lived and as many continue to live without writing—nonetheless carrying on a rich human life—so people have long lived and *many continue to live* without maps. People create maps only when their social relations call for them, and the social relations that most insistently call for maps are those of the modern state, wherever in the world.

The Development of the Map Discourse Function[11]

People make maps to discover their minds and to connect themselves. These are also the reasons people talk, so where talk serves maps are rare. But when talk becomes inadequate, either because the discourse gets too complicated, or there are too many people, or they are separated by too great distances or too much time—as invariably happens with the emergence of modern states—people develop alternative forms of communication.[12]

For the past 30,000 years people have been making artifacts that *anticipate* the sorts of things that today we call badges and genealogies and inventories and almanacs and histories and itineraries and maps—"anticipate" because the distinctions we now draw so automatically among these very different discourse functions took a long time to evolve, and in many cases have often only recently achieved their current forms. Paleolithic peoples bundled these discourse functions together on incised bones.[13] We've been pulling them apart ever since.

Elaborating on Paleolithic achievements, people have constructed an ever-widening repertoire of cultural forms—clothing, ritual, pottery, painting, sculpture, architecture, drawing, writing, books, prints, film—within which they've encoded ever more elaborate communications. Paralleling the proliferation of forms has been a comparable expansion in the powers of sign systems—gestural, sculptural, pictorial, pictographic, symbolic, numeric, syllabic, consonantal, alphabetic, and others—often overlapped and mixed up in rich syntheses of functions, forms, and meanings.

Among these syntheses the map is comparatively novel. Most English speakers use "map" in a straightforward way to describe an artifact, which is still most commonly printed on paper if increasingly taking electronic form. Maps selectively link places in the world (*there*s) to other kinds of things (to *this*es)—to taxes, for example,

and to voting rights, to species abundance, and to the incidence of rainfall—for the purpose of underwriting the reproduction (or the contestation) of the social relations of power.

That is, maps are more or less permanent, more or less graphic artifacts that support the descriptive function in human discourse that links territory to other things, advancing in this way the interests of those making (or controlling the making) of the maps. Such maps have comparatively shallow roots in human history, almost all of them having been made since 1500. In fact, almost all the maps ever made have been made during the past 100 years, the vast majority in the past few decades. So many maps are made today, and they are reproduced in such numbers, that no one any longer has any idea how many. The maps printed annually by no more than the world's newspapers easily number in the billions. In contrast, the maps surviving from everywhere in the world for all of human history prior to the rise of the modern state number, in a very inclusive definition of the map, in the very low thousands, as if all the humans on the planet had made a single map each year—one here, another there—across the preceding couple of millennia.[14]

Paralleling the explosion in map *numbers* has been a corresponding *penetration* of the map into ever deeper recesses of our lives. If there *is* some sense in which maps may be said to have existed in the ancient and medieval worlds, they were confined to sporadic large-scale property-control, and rare small-scale cosmological-speculation functions.[15] This is to say that starting around 2300 BCE, Babylonian scribes made large-scale drawings of temples, houses, and fields that might have been related to property transactions; that during the eighth century CE, Japanese scribes made large-scale drawings of paddy fields to document ownership during a period of intense landholding consolidation, as well as large-scale drawings of shrines and temples; that from the 12th through the 15th centuries CE, English scribes made large-scale drawings of monasteries, cathedrals, and fields, invariably for planning and legal purposes; and so on.[16]

That is, unquestionably, a very large-scale, graphic, property-control function can be documented prior to the emergence of the modern state, sporadically and discontinuously, in various places around the world; nor can there be any question that these drawings participated in *local* property-control traditions. But equally there is no suggestion that they participated in *anything* like a broader mapmaking tradition. For example, there were no connections at all to the rare, small-scale cosmograms that can also be documented from equally disparate times and places, for example to the well-known "Babylonian World Map" of c. 600 BCE (which even favorably inclined historians of cartography acknowledge was "really a diagram"); no connections to medieval European *mappaemundi* (though again, these were usually "no more than diagrams of the main regions of the world"); and no connections to the Buddhological world maps such as the Japanese Gotenjiku Zu of the 14th century.[17] Again, nobody doubts that these drawings participated in local traditions of cosmological speculation, but again the lack of any connection to the large-scale property-control tradition makes it hard to maintain that there was any sort of overarching *mapmaking* tradition to which these drawings could be tributary; much less a mapmaking tradition that penetrated to any degree at all the lives of ordinary men and woman.

Contrast this, now, with the radically different situation that dawns with the 16th century when vast swaths of territory were increasingly subjected to systematic

surveys by newly self-conscious states. In 1559, for example the Hapsburg emperor, Philip II of Spain, commissioned a detailed survey of his possessions in the Netherlands, in 1566 of those in Spain, in 1575 of those in southern Italy, and in 1577 of those in New Spain; in 1591, the Japanese hegemon, Toyotomi Hideyoshi, ordered all daimyo to submit summary cadastral records and maps for the construction of a countrywide cadaster, and the shogun Tokugawa Ieyasu ordered the submission of a second set of cadastral and cartographic documents in 1604; in 1663 Louis XIV's minister for home affairs, Jean-Baptiste Colbert, commissioned the collection of surveys and maps to cover all of France; while in 1666 the governor of Siberia commissioned the mapping of the territories under his control. Most early modern states initiated similar projects.[18] If not all these commissions were completed as initially hoped—for example, Philip's of New Spain wasn't, returns from Hideyoshi's request were spotty—such efforts very much laid the ground for increasingly comprehensive and intrusive surveys, including the 19th-century inauguration of national topographic mapping programs, which were widely completed during the 20th century, as well as the production, to give one example, of fire and insurance atlases that not only posted the ground plans of individual homes but included the construction details of heating systems.[19]

Today we map the weather in something approaching real time, the locations of sex offenders, the residences of donors to political parties and the size of their donations, school attendance zones, atmospheric ozone, the conversion of rainforest to farm land, the route to any cinema from your home address, regularly updated locations of roadblocks in the West Bank, reported instances of the West Nile Virus, yesterday's crimes sorted by type of crime, the locations of tomorrow's highway-construction delays, deaths in Iraq, cell phone towers, the tax value of homes, bus routes, bike paths, election returns by precincts, counties, and states, consumer preferences by ZIP code.

Is there something we *don't* map? So pervasive and so taken for granted are maps that it is hard to accept the *recency* (and the continued relative isolation) of their general use, or to appreciate the 17th-century *explosion* in their numbers that we continue to experience today.

Trying to Write the History of Mapmaking

Even more recent than maps has been an interest in their history, datable in its current form only to the 1980s. Earlier histories wed the interests of 20th-century, academic cartographers—a self-anointed mapmaking elite—to a preexisting European antiquarianism that was dominated by a nationalist passion for decorative printed maps of the 15th to 18th centuries. These histories spawned a hero saga (Demosthenes, Ptolemy, Mercator, the Casinis, Minard, Edes Harrison) that plotted cartographic progress from humble origins in Mesopotamia to the putative accomplishments of the Greeks and Romans, the rediscovery of which during the European Renaissance led directly to the development of the triumphant scientific cartography that swept the world in the wake of Western colonialism (Lewis and Clark, Livingstone, GIS).[20]

As we now acknowledge, this story is false in almost every particular. Although the oldest surviving uncontested map *is* Babylonian, this map is in no way the "ori-

gin" of mapmaking, which was originated as called for again and again around the world. Such maps as the Babylonians and Egyptians did make were not "built on" by Greek, Roman, or subsequent "European" mapmaking, most of which was independently invented and reinvented. Indeed, Greco-Roman contributions to the history of mapmaking have been unconscionably exaggerated: if ancient Greeks actually made any maps at all, none survive, nor do many even from the Romans.[21] In any case, most subsequent "European" mapmaking was in no way indebted to either of these, nor was "European" mapmaking ever the "scientific" enterprise it has been claimed to be. It was first and foremost a highly utilitarian managerial activity and second a profoundly ideological one, serving national identity-building, colonial, and other interests;[22] and it was preceded by similarly motivated mapmaking in China, and paralleled by it elsewhere in the world.[23]

Trying as most do to read the ancient and medieval record through the lens of contemporary mapmaking radically distorts the importance of maps for the administration of the great "historical" "civilizations" by assuming they must have done things the way we do them. This has not only led historians to assume that when people wrote about mapping they must have made maps, and that where one map survives a hundred must have been made, but to postulate *mapmaking* traditions where instead there were traditions of *cosmological speculation,* traditions of *property control,* traditions of *centralized management,* traditions of *military strategizing,* and perhaps others, including, for instance, the discourse function fulfilled by *geomantic site location*; but none precipitating *the idea of the map* that, for most readers of this book, is so "self-evidently" the common thread uniting them all. Other "maps" appearing in the historical record—almost all of which if they were made today we'd call drawings—likely played no part whatsoever in any of these traditions, but instead arose from isolated efforts by individuals to address unique problems: the laying of new drains, the defense of property at law. That is, such maps (or drawings) were based on no prior model and left no progeny, and so are akin to what geneticists call a *sport*; which explains why they are so hard to pigeonhole as, *precisely,* map, plan, drawing (a good example would be the plan and diagram of Canterbury Cathedral, c. 1153–1161[24]). As their existence and the rest of the record attest, mapmaking was a marginal activity for all these peoples, among whom the functions served by mapmaking today, *to the extent that they existed at all,* were served by other, typically scripted and/or numeric forms of inventory and control. This is to say that the historical record is spotty not because survival rates were low—which in any case is difficult to entertain given the higher survival rates for so many other, far less consequential artifacts—but because maps were infrequently made.

There Were No Maps before 1500

Okay, okay, this is obviously hyperbole, and it probably would have been better to have said there were no maps before 1400 anyway,[25] but I'm desperate to arrest the course of the insane idea bruited about—often by people who know nothing about it—that maps are this universal human construct; that they've been around since before recorded time (*since before writing*); that they stand outside history. Here, this

is typical: "The origin of the map is lost to history. No one knows when or where or for what purpose someone got the first idea to draw a sketch to communicate a sense of place, some sense of *here* in relation to *there*. It must have been many millennia ago, probably before written language,"[26] and sure, if "a sketch to communicate a sense of place" is what's at stake, *maybe* somebody did do that before people started writing. But what does "communicate a sense of place"—whatever that *means*—have to do with making a map? It's like, in this construal, there's no difference between a map and . . . *a landscape painting,* or a drawing of a landscape, or a sketch, say, one of those oil sketches by Willem de Kooning, *Rosy Fingered Dawn at Louse Point,* or one of Richard Diebenkorn's paintings of Ocean Park. And in histories that start off like this, all vaporous and prehistoric, why don't they follow that "sense of place" idea into landscape painting, into those murals the Romans made, into those landscapy fusions of poetry and painting of which the Chinese were masters, into the evocative backgrounds of Trecento Italian painting? Why instead do they all end up with the Casinis laying triangles across France, panting as Harrison invents the chronometer, and tracking the fathers of the U.S. Geological Survey across the West? Well, it's because they're writing about maps, *not* about "sketches that communicate a sense of place," and in the history of *mapmaking* the Casinis, Harrison, and the USGS all have a place, whereas landscape painting doesn't.

Look, I'm not saying maps had *no* role in human affairs prior to 1500, but that after 1500 maps began to play the role they continue to play today.[27] The decision to draw the line here is like Ian Hacking's drawing of the line for the birth of statistics at 1660. It's not that there hadn't been all kinds of precursors—the tossing of Sumerian knucklebones, dice throwing by Marcus Aurelius, 9th-century Indian theorizing about probability—but that, "We do not ask how *some* concept of probability became possible. Rather we need to understand a quite specific event that occurred around 1660: the emergence of *our* concept of probability." Why? Because "for me the search for preconditions is more than an attempt at historical explanation. I am inclined to think that the preconditions for the emergence of our concept of probability determined the very nature of this intellectual object,"[28] and therefore, he continues, the very nature of quantum mechanics, statistical inference, and inductive logic.

I think this is all just as true of maps. The point is not to know that some 12th-century monk was able to make a plan of his monastery—humans have had the *capacity* to do this since they were humans—but rather why no one felt it was worthwhile to follow up on his idea, to make a plan of the fields outside the monastery, a plan of monastic holdings, a plan of the route from Canterbury to Southwark, why the idea *died,* unlike the idea which, when developed in the 16th century, *didn't* die but rather flourished in the most astonishing fashion, took off, and *did* lead to the Casinis mapping France, Harrison operationalizing longitude, and Powell and King mapping the West; that is, not only didn't die but *took off with the state.*

What I'm saying is that for all intents and purposes, before 1500—okay maybe 1400, and maybe 1200 in the case of China—*people didn't make maps.* And that *that* is why uncontested maps more than 500 years old are rare at any scale from anywhere in the world.[29] Cosmographical diagrams *are* more common (they are nonetheless extremely rare), and large-scale plans more common still (though again the numbers are absolutely tiny), but prior to the 15th century small-scale geographic maps

are rare almost to the point of nonexistence in any cultural tradition except that of China, where they begin to appear in any numbers only in the 12th century.

But then *no* unquestioned map *of any kind* predates the second millennium BCE, vaporings to the contrary notwithstanding. Whether prehistoric humans made maps is uncertain because the interpretation of their artifacts is mired in controversy; though, if they didn't make maps, *it wasn't because they weren't able to,* but because the discourse function served by maps either was not called for, or was fused with other discourse functions in a synthesis not recognized as maplike today. Reputable scholars *used to* assert the *recently discredited* maplike qualities of the wall painting at Çatalhöyük (6200 BCE),[30] and a similar case has been made for the petroglyphs at Valcamonica (2500 BCE) and elsewhere, but if prehistoric humans *did* make maps—which is very doubtful—they were neither made often nor in very many places; they likely served broadly pictorial, religious, ritual, symbolic, and/ or magical functions; and their production was discontinuous with the practice of mapmaking encountered in historic populations.[31]

The oldest *extant* maps about which there is scholarly consensus are, as I've already said, Babylonian. Dozens of large-scale, Babylonian, cuneiform maps and plans survive from the second and third millennium BCE, but only a couple of small-scale maps survive, and these from the first millennium BCE.[32] The existence of the so-called Turin gold mining map from around 1150 BCE is the *sole* survival of a *putative* Egyptian mapmaking tradition of roughly similar age that otherwise is represented only by cosmographical diagrams and pictures of gardens, canals, and buildings.[33] Recent scholarship posits an Indic tradition of mapmaking stretching back to the first millennium, but the earliest extant artifacts are an allegorical wall sculpture from about 400 CE and a Jain cosmographical diagram of the 13th century CE. There is textual evidence of a Hindu tradition of cosmographical globe construction dating from the first millennium BCE, but again no actual globes predate the 15th century CE.[34] In China three maps survive from the second century BCE, but few others until the 12th century CE. Evidence also suggests a Tibetan mapmaking tradition rooted in the first millennium BCE, though again, with the exception of a mandala transmitted to Japan in the ninth century CE, no survivals predate the 18th century.[35] Textual evidence also supports a Hellenistic mapmaking tradition, but as I have said no maps survive of any character. Except for medieval European copies of Roman itineraries, no small-scale Roman maps survive, despite the elaborate instructions for producing them in Ptolemy's *Geography,* and even large-scale survey and property maps do not exist in abundance.

That is, with respect to the ancient world there are many more textual *suggestions* that something *like* mapmaking was carried out than there are surviving artifacts, the numbers of which, with the exception of Babylonian and Roman plats and surveys, *may be counted on toes and fingers.* That is, mapmaking was comparatively widespread but everywhere uncommon to the point of nonexistence.

The record is not much different for the medieval period. Islamic scholars elaborated sophisticated theoretical schemes for the construction of maps from the seventh century on, but if any were made, none survive from periods prior to the 10th century, and maps remain rare until the 15th and 16th centuries.[36] In medieval Europe handfuls of cosmographical diagrams and large-scale plans are extant from the seventh century, but with the exception of the late medieval portolan charts, maps were otherwise unknown.[37] There is textual evidence of relatively small-scale

mapmaking in Japan as long ago as the seventh century CE, but again, nothing survives; maps of state allocations of arable property are extant from the eighth century, but no maps are common until the 16th.[38] Textual evidence supports a mapmaking tradition in Vietnam as early as the 11th century, but again no artifactual maps predate the 15th century.[39] The oldest surviving Malay maps are from the 16th century.[40] No Mesoamerican maps predate the Conquest, though again there is ample reason to assume a preexistent tradition of cosmographical diagrams and some evidence of limited property (or "community") mapping among the Nahua, Mixtec, Otomi, Zapotec, Totonac, Huastec, Chinantec, Cuicatec, and Mazatec.[41] No indubitable maps made prior to the 15th century survive from sub-Saharan Africa, South America, Australia, Oceania, or North America, though in many places the record was systematically destroyed, and historical research may yet uncover evidence of mapmaking traditions unknown today.[42]

Despite these lacunae, the record suggests that large-scale plans of property and small-scale cosmographical diagrams were made rarely, but with increasing frequency, everywhere in the world since the third millennium BCE. Other mini-traditions seem to develop often, only to die out again, except in China, but the limited number of extant artifacts makes abundantly clear how tenuous a hold these discourse functions had in the notational repertoire of any of these societies.

The significance of these data is obvious. Human societies didn't need maps and got on handily without them for hundreds of thousands of years. But during the last two or three millennia BCE, larger, more complicated societies including Babylonia, Egypt, perhaps the Indic societies centered on Mohenjo-Daro and Harappa, and China began to articulate graphic notation systems, sporadically and apparently independently, but *among and continuous with other indigenous textual productions,* memorial inscriptions, memory aids, almanacs, genealogies, inventories, histories, and descriptions of routes and territory (in mixtures of sculptural, pictorial, pictographic, syllabic, consonantal, and/or alphabetic forms) that linked location with rights and obligations (as in the large-scale property maps) and with speculative attributes of the larger environment (as in the cosmographical diagrams). Similar graphic notation systems filling related social functions emerged fitfully in other ancient civilizations, again apparently independently, although extensive trade and other connections among these groups are acknowledged and cultural exchange undoubtedly took place.

The articulation of similar notation systems in so many of these societies strongly supports the notion that map discourse functions of this character inevitably emerge in societies whose increasing size and complication call for them (the specialization required for making maps demands a population of at least the size maps permit to function), of which, again, the best example is China. But the sporadic nature of this articulation no less strongly suggests that at the size and degree of complication reached by most ancient civilizations, the map discourse function as it has come to evolve *could be satisfied by other, better-established discourse functions* (generally scripted and/or numeric), so that the map discourse function failed to establish itself no matter how many times it was seeded. The map discourse function is nowhere well rooted until the rise of the early modern state (which in China may mean the Song), with which it coevolves as an instrument of polity, to assess taxes, to wage war, to facilitate communications, and to exploit strategic resources.

Calling Older Graphic Notation Systems "Maps"
Is Anachronistic

While it is not "wrong" to refer to these earlier graphic notation systems as maps, it is anachronistic. It is critical to accept, as already intimated, that these graphics were not emitted *as maps* by those who made them. To imagine this would be to see them through the conceptual filter created by modern mapmaking. For instance, early "map" artifacts were generally free of the *heightened* "spatiality" so characteristic of what most people think of as maps today, and there is *zero* evidence that they were discriminated from other graphic-textual productions on this ground. Until modern times, no society distinguished—*or made*—such maps as distinct from religious icons, mandalas, landscape paintings, construction drawings, itineraries, and so on.

For example, the Chinese word *tu,* frequently translated "map," can also be translated "picture," "diagram," or "chart," and *tu* of "geographical" subjects may have had poems painted on them as was common on "paintings" of other subjects. This not only reflects the conceptual continuity that in the past tied together the Chinese practices of what today even the Chinese think about as discrete genres ("painting," "mapping," "drawing"), but the unique synthesis of painting, calligraphy, and poetry that so effectively distinguished, say, Ming painting from that of the European Renaissance (that, say, of Wen Cheng-ming from that of Michelangelo[43]). This synthesis lent Chinese *tu* an explicitly expressive character inconceivable in 20th-century conceptualizations of mapmaking, even in China.[44]

Such inclusiveness characterizes other words frequently translated "map," including the Arabic *naqshah* (painting, any kind of visual representation), its Indian derivation *naksha* (picture, plan, general description, official report), the Sanskrit *chitra* or *alekhya* (painting, picture, delineation), the Latin *mappa* (cloth) and *carta* (formal document), the Mexican *lienzo* (linen, cloth, canvas), and the Aboriginal-Australian *dhulaŋ* (painting, map, diagram, graphic representation). Not only do these broadly inclusive terms not draw the distinctions among types of graphic production made by contemporary map-using populations, but they refer at the same time to graphic systems that mingled what most of us carefully keep apart.

For example, Mesoamerican *lienzos* did not privilege space as our maps do, but rather drew history and territory together into "community maps," though from their perspective the Mixtec might have said that they did not rip history and territory apart. Were such a discourse function to exist today we'd probably want to call it something like a *pictorial genealogy* or a *map-history* since where the Mixtec made do with one discourse function, we insist on using three or four: plat, deed, title search, genealogy.[45]

Another example: Jain cosmographical diagrams mingled the mundane places that most of us would look for on a highway map with places where "Release" is possible, places contemporary cartographers would not even locate in "space." In this way the Jain constructed, as Collette Caillat and Ravi Kumar put it, "a gigantic theater where transmigrations and reincarnations take place." Unlike the artifacts that most of us think about as maps—artifacts that discourse about the socio-spatial territory we mutually inhabit—Jain cosmographical diagrams discourse about . . . *destiny,* and are best read using a "purely *spiritual* cognition."[46]

A third example: in their cosmographical diagrams, medieval Christian Euro-

peans fused the historical commitment of the *lienzos* with the teleological orientation of the Jain cosmograms to create, in David Woodward's phrase, "a visual narrative of Christian history cast in a geographical framework."[47] Again, most of us would break this out into separate discourse functions, painting, say, and history, and maps.

None of these ways is better or worse, or more or less "advanced," but they *are* differentially capacitated to facilitate life in populations of different sizes, with different rates of social and geographic mobility, and different degrees of labor specialization and hierarchic integration. Breaking up discourse functions facilitates specialization, which in turn supports hierarchic integration. This in turn permits higher rates of growth and mobility without loss of social integrity. It's not a question of quality, or even utility; there is . . . no *contest.* The *lienzos* served the Mixtec, as their cosmographical diagrams did the Jains and the medieval Christians, every bit as effectively as topographical surveys and other maps serve the interests of the modern nation-state.

The discourse functions a society evolves, chooses, or has forced on it depend on what kind of society it is. Ultimately, what's at stake are the differences in organization and structure that in the cases of the Mixtec, Jain, and medieval Christian called for pictorial genealogies and cosmographical diagrams, but in the case of modern states call for topographical surveys and the construction of the *institution* of cartography that such surveys seemingly entail.

The Rise of Mapmaking in the Early Modern State

The deal is this: few *if any* of the graphic notations produced in ancient or medieval civilizations would be considered maps today, whether we spell that *map* (as in the United States), *mapa* (as in Mexico), *carte* (as in France), *kharitah* (as in Turkish or Arabic), *mana-chitra* (as in Eastern India), or *chizu* (as in Japan). The things we recognize as maps gained currency only in the last 400 years or so, and within this period only in relatively stable states with entrenched, centralized bureaucracies and well-established academies.

Though in 1400 few people used maps, by 1600 people around the world found them indispensable. There is a divide here that is impossible to evade. Recall the dates at which maps *really* begin to appear in the historical record: Islamic artifacts may date to the 10th century, but maps don't become common until the *15th* and *16th* centuries; the oldest surviving map of China may be from the second century BCE, but maps aren't common until the 12th and only become abundant in the *17th* century; large-scale Japanese maps may survive from the eighth century, but national and provincial maps only begin appearing in the late *16th* century and are not common until the *17th*; the oldest surviving Hindu globe is from the *15th* century; Vietnamese and European maps become plentiful only in the *15th* and *16th* centuries; Mesoamerican maps survive largely from the *16th* century; Malay maps from the *16th* century. Again and again we find large, centralized societies, everywhere in the world, inaugurating mapmaking traditions as part of their transition to the early modern state (again, a transition China may have begun in the Song).

For mapmaking, this transition has had the recent attention of scholars working in Japan, China, Thailand, Russia, Europe, the North American colonies, New

Spain, and elsewhere.[48] And there is reason to believe processes similar to those documented were at work in every society struggling with what was a more or less common socioeconomic transformation no matter how distinctive the trajectory. There's no question that the nascent European mapmaking tradition was transported around the globe; but its ability to *import* material from other traditions (well documented, for example, in the cases of Islamic, Chinese, and Japanese mapmaking) and the *ease of its apparent adoption,* actually argues for a *merging* of mapmaking traditions that today we're prepared to acknowledge as having been at equivalent levels of development, a merging into a kind of *transnational* or *worldwide* tradition that differentiated not Europe from the rest of the world, or West from East, but modern and increasingly map-immersed nation-states from the smaller map-free societies out of which they'd emerged and which in any case they would soon enough gobble up.

Intriguingly, the functions the new maps initially served were not those that might strike us as obvious. Roads, for example, were not an important subject. Nor were the state functions maps did initially serve newly created in the 15th century. Rather, they were functions that had been previously served by scripted forms or by talk. For example, writing in 1602 about the tactical situation in the mountain passes to Henry IV (of France), the duc de Lesdiguières noted that "Your majesty will understand much better than I can set it out in writing, if [you] will look at the map of Dauphiné with the Piedmont border";[49] while Michelangelo complained that if only the Hapsburg emperor, Charles V (r. 1519–1558), "had ordered a drawing to be made of the course of the river Rhône, he would not have met with losses so severe, nor retired with his army so disarrayed."[50] Charles in fact did use maps, extensively. About the very battle to which Michelangelo referred, another observer wrote of seeing Charles "studying the maps of the Alps and the lower region of Provence so enthusiastically that the emperor had convinced himself that he already possessed the land in the same way he owned the map."[51] More generally, Marshall Vieilleville observed in the 1560s, apropos the campaigns of Henry II of France, that "a military commander must no more move without a map than a pilot or galley captain, unless he wants to court disaster";[52] though the most general admonition seems to have been Castiglione's of the 1520s to the effect that there were "matters, the which though a manne were liable to keep in mynde (and that is a harde matter to doe) yet can he not shew them to others" without a map or painting.[53] While these anecdotes illustrate the growing currency of maps in the early modern period, they also underscore their novelty. The anecdotes seem to catch a more comprehensive discourse function—could we call it "describing"?—*in the very act of differentiating,* and they presage a very steep increase in the use of maps for military, administrative, and speculative humanistic purposes.

Why? What was it that happened after 1400 that called people to start making maps? The canonical answers, with their focus on so-called scientific mapmaking and their dependence on the presumption of a European exceptionalism, obviously can't account for the precedent developments in China or the parallel ones in Japan and elsewhere. But they're largely irrelevant even for Europe. These canonical accounts have always focused on the small-scale mapping of the world and the heroic growth of European knowledge, a story that accounts for *none* of the eruption of large-scale mapmaking that produced the vast bulk of the new maps in Europe.

Consider the northern Italian plains. Extant maps predating the 15th century

can be counted on the fingers of one hand, but in the 16th century mapmaking for border control, for water management, for treaty negotiations, and other such uses . . . *explodes.* There's no other word for it.[54] In the case of Venice, less than a single percent of the *10,000 maps* archived by the Venetian state predates 1565. In the case of Florence, only a dozen maps among the *10,000* archived by the Florentine state predates 1565, and the bulk of them, devoted to property control, date from the 17th century. The offices commissioning most of the vast Milanese archive of over *76,000 maps* were all founded in the 16th century: Acque (16th century–1801), Acque e strade (1574–1801), and Confini (1518–1802). Identical accounts can be given for the Papal States and for Naples: *minuscule* numbers of maps before 1500, but afterwards . . . a cornucopial abundance of mostly large-scale administrative maps.

Identical accounts can be given for the rest of Europe. In England where the history of medieval mapmaking is particularly well known, scholars have identified no more then 35 domestic maps produced before 1500. Yet in 1540, Henry VIII had available to him maps for a wide variety of purposes; in 1574 Christopher Saxton began publication of his atlas of English counties, and in 1593 John Norden began the publication of his series of county topographies. Indeed, such a mass of maps (and other papers) had been generated during the 16th century that a State Paper Office had to be established in 1610 to marshal them.[55] In France, where only 10 domestic maps have been found that predate 1500, maps began to be used for military purposes early in the 16th century, and their use expanded rapidly until, by the time Henry IV's reign ended (r. 1589–1610), the country had been more or less systematically mapped. Mapmaking took such strong root in France during the 16th century that by 1663 Louis XIV and his chief minister, Colbert, could envision using maps for military and naval purposes, for making political and judicial decisions (especially about jurisdictions, an obvious use today), for economic and financial planning (mines, canals, fiscal divisions), and for establishing the boundaries of ecclesiastical dioceses. By then there were also plenty of presses capable of printing and distributing maps of every size and character.[56]

Similar accounts—which in Europe can be repeated for the Spain and Austria of the Hapsburgs, the United Provinces of Maurice of Nassau, the Sweden of Gustav Adolph, and the Poland and Lithuania of Mikołaj Krzysztof Radziwiłł[57]—can also be given for emergent states elsewhere in the world. The case of Japan is exemplary. Extant maps from classical and medieval Japan are sufficiently numerous (well over 200, according to the latest scholarship) to suggest that Japan had one of the most robust "mapmaking" traditions in the premodern world.[58] Certainly no European polity has anything like its record to display. Though, as we've seen, most of these extant maps are large-scale plans of local property holdings (again, dating from the eighth century), there *is* a small-scale map of Japan attributed to the Buddhist priest Gyōki that is believed to have been made during the early classical period. Although Gyōki-type maps were occasionally reproduced in medieval times, there is no evidence after the ninth century of either resumed national surveying or of efforts to revise the classical prototype. The possibility does exist that a second national mapmaking effort took place in the late 12th century but, again, if any such maps were actually drafted, none survives. Then, as we know, all of a sudden in 1591 Toyotomi Hideyoshi orders all daimyo to submit summary cadastral records and maps for the construction of a countrywide cadaster; his successor, Tokugawa

Ieyasu, repeats that order only 13 years later; and other surveys rapidly follow. In the late 1630s a national map that had been assembled from provincial surveys was released to commercial printers and they issued it as a woodblock atlas. By the late 17th century, literally *thousands* of Japanese maps covering, as Mary Elizabeth Berry puts it, "virtually every domestic subject and in virtually every format," had issued from government offices and commercial printers.

A different story, but to a similar end, can be told about Russia beginning with Ivan IV (r. 1533–1584), with respect both to the large-scale mapmaking involved in Muscovite property litigation and to the small-scale mapping of Siberia; about the mapping of New Spain; and about the late 17th- and early 18th-century mapping of British colonies in North America.[59] Indeed, variants of the story can be told about every corner of the globe. As Valerie Kivelson has put it, "Medieval societies rarely produced maps. This generalization holds historically throughout Eurasia, from England to Japan. Mapping was not a routine part of any official transactions or procedures in medieval times," and this can be expanded to the rest of the world.[60] Yet only a few years later, maps were not only routinely used in any number of government operations, but they were being made in mind-boggling numbers.

The explanations for this explosion in mapmaking vary, of course, from place to place. In the case of Italy, for example, a quantitative analysis argues that "three discontinuities—times of increased mapping production—stand out: the late fifteenth century, the mid-sixteenth century, and the late seventeenth century," each of them marked by both increased rationalization of bureaucracies and pronounced upturns in the economy, most notably the "Italian Indian summer" of the 15th century and the late 17th century's recovery from its long economic crisis.[61] In the Japanese case, Berry draws attention to the simultaneous disorientation and reorientation that characterized 16th-century Japan: "On the one hand, warfare wiped out not only the geography of the medieval polity but many of the petty lordships formed in its wake. Sweeping campaigns and mass transfers made governors into strangers in their own lands. On the other hand, administrative change advanced a model of integration," and Berry also draws attention to the importance of a spike in urbanization.[62] Russian mapmaking, Kivelson argues, "allows us to invert the way we have come to imagine the relationship between central state mapping projects and local interests," pointing out that "in an immense, unmanageable land where centralization could never have set roots without the participation and support of local communities, maps brought local knowledge to the service of the central state."[63] The general implication that mapmaking emerges as a rationalizing tool of control during periods of relative or increasing prosperity in early state economies is broadly supported as well by the evidence from the Hapsburg, Bourbon, and Tudor realms, from Southeast Asia, and from the North American English colonies.

Maps Figure the State

What's interesting is that all the bureaucratic functions fulfilled by the maps during this period *could* have been carried out in other ways, as they largely had been during the later Middle Ages. As the historians of cadastral mapping, Roger Kain and Elizabeth Baigent, remind us, maps are not indispensable even for cadasters, noting that even today there is no comprehensive map-based cadaster for states

like Norway or the United Kingdom where there is every reason to expect one.[64] Attempting to explain what prompted the adoption of cadastral mapping by so many states during the early modern period, Kain and Baigent point out that "conviction of the merits of mapping was a precondition for mapping itself."[65] This is actually a theme—variously put—in much contemporary scholarship, where a particularly significant merit was the ability of the map to figure the new state itself, *to perform the shape of statehood.*[66]

It's important to remember that if the map was a novel function during the 15th, 16th, and 17th centuries, so was the state. Although today we take the state for granted—exactly as we do the map—nothing like the modern state existed in earlier periods. Doubtless there were earlier polities that resemble the modern state in many ways—the Greek *polis* does, the Roman Empire does, China does under the Tang—but they differ from the modern state in essential ways too, and in any case the modern state did not derive directly from any of them. Although—again like the map—the state is more readily exemplified than defined, experts on the state can point to a number of characteristics that states invariably possess, among which the development of more or less permanent, more or less impersonal political institutions is paramount.[67] Evolving from a period in which loyalty had been offered to one's lord, to one's immediate community, and to one's family; and in which loyalty was typified by a powerful sense of mutual obligations among face-to-face acquaintances, this new political structure with its impersonal institutions and ultimately abstract character required new forms for its embodiment.[68]

Contemporary scholarship is unanimous that the map possessed an all but unique power to give the elusive idea of the state concrete form, to those outside looking in, certainly, but also to those living within. Martin Brückner has recently urged that "ever since Abraham Ortelius and Gerard Mercator published their world maps and atlases in the sixteenth century, single-sheet maps had presented the sovereign states as visually and territorially unified constructs."[69] More particularly, Kivelson argues about Russia that, "from the point of view of the state, and as experienced by its subjects, mapping the heartlands and the frontier constituted two pieces of a single project: the creation and imaginative consolidation of a territorial tsarist empire."[70] Berry argues about Japan that the "nascent state struggling for survival used two general programs of registration—the cadastral survey and the cartographic survey—to put on paper, and in the minds of participants, the tropes of union."[71] Tom Conley points to the importance of the map in negotiating an emergent self's relation to the emerging idea of national space in early modern France.[72] And Brückner argues about the young United States that "the image of the national map was one of the few visual artifacts demonstrating what many perceived to be either an abstract or even untenable fiction, namely that there could be a national union between disjointed regions and politically disparate people."[73]

The maps also spoke to outsiders, as in the case of Qing China where Laura Hostetler has argued that "using scaled maps . . . was an effective way to stake out claims of empire to an encroaching Europe; the Kangxi atlas defined what China was territorially to the rest of the early modern world";[74] as also in the case of Britain, whose imperial maps sought, Brückner insists, "to persuade the maps' readers on either side of the Atlantic of British ownership rights regarding the North American continent."[75] Similar conclusions have been reached with regard to early

modern—and even much later—mapping programs in France, Thailand, and else-
where.

The most striking feature of all these assertions is their persuasion that the
map was an artifact that *constructed* the state, that literally *helped* to bring the state
into being. It's almost as though it were the map that in a graphic performance of
statehood conjured the state *as such* into existence: out of the disjointed rabble of
the American colonies, out of the far-flung possessions of Chinese emperors, out of
the territories of the recently warring daimyo of Japan, out of the disparate peoples
of tsarist Russia, out of the . . . *jungles of British Guyana.*[76]

Thongchai Winichakul has termed this map-made construct the *geo-body* and
has characterized the emergence of Thailand's geo-body as "a victory of mapping."[77]
The geo-body is produced by mapping in three distinct but interdependent ways:

> 1. In the first place, the very act of mapping requires that the state be some-
> thing mappable, that is, a *thing,* with edges, which is to say, a geo-body, with
> borders, which Thailand, as was common everywhere until the 17th-century
> spread of mapmaking, really didn't have.[78] State borders are brought into being
> through mapping, both by the imperative *to be mapped* and *through* the medium
> of mapping.
>
> 2. Second, these borders establish a shape, the shape of the nation, the
> nation's visual form; and this mapped shape rapidly becomes iconic, totemic,
> "the map-as-logo" as Benedict Anderson has put it.[79] For example, in the young
> United States where the national map permeated American material culture,
> maps of the new nation were prominently featured in portraits (where the maps
> stressed the sitters' identities as Americans), decorated the walls of American
> homes and schools, were integrated into textbooks and didactic puzzles, and
> were displayed in public offices, coffee houses, and taverns.[80]
>
> 3. Third, the map through its presentation of the state *as an existent thing*
> obscures the origins of the state *in history,* in effect assuming, and so project-
> ing, the prior existence of the geo-body. This was especially useful for colo-
> nial regimes that claimed to "inherit" ancient geo-bodies, which the colonial
> regimes then *constructed* by drawing, as Anderson puts it, "historical maps
> designed to demonstrate, in the new cartographic discourse, the antiquity
> of specific, tightly bounded territorial units" that had in fact *not* previously
> existed.[81] This in turn promotes rhetoric about the inviolability, and so the
> necessity of defending borders, which returns us to the first way maps produce
> the geo-body.[82]

It was these interlocking benefits—creating the geo-body, giving form to the state—
that convinced leaders of early modern states of the general merits of mapping, and
that constituted the necessary precondition called for by Kain and Baigent.

Large-scale property mapping may seem far removed from these sorts of
national considerations, but the fact is that large-scale property mapping, state-
scale mapping, and small-scale regional and world mapping were reciprocally sup-
portive. In Japan, for instance, Hideyoshi conceived of mapmaking as a localized
and incremental program which, while an undoubted expression of state control,
was more importantly, *an instrument of conversion* through the collaborative, ongo-
ing labor itself: "Precisely because union was fractious and unfamiliar, cartography

served the conquerors by instilling a fugitive idea of cohesion, not by reflecting any palpable reality. . . . In this way Hideyoshi and his successors not only normalized a nascent polity but invented, and instructed countless participants in the very imagining of 'our country.'"[83] In Russia, too, the unabashedly local maps made during litigation over property "represent the authority of the central state in the provinces. They exhibit the skill of the central state apparatus at extending its influence and bringing its routinized practices and language to the local arena. The interests of center and periphery intersect in the use of the maps."[84]

Whereas large-scale, local mapping invokes the state's authority, small-scale mapping allows the state to emerge with sharper focus when it can be posed against the images of other states in a world context. In Japan's case, Jesuit maps brought about a heightened consciousness of "our country" by depicting alien worlds, or, as Berry has it, "A 'Japan' assumed its strong cartographic profile as attention to the globe and lands that were 'not Japan' reoriented the geographical imagination."[85] And in the cases of Russia and China, Kivelson and Hostetler have both stressed the mutual awareness that maps helped provoke. Russian envoys to the Qing court began making maps of China as early as 1682; and later the Kangxi emperor made a gift of the atlas he'd commissioned of China to Peter the Great, both to impress the tsar with the state-of-the-art science the Qing emperor patronized and to display Qing claims to territory. Examples of this sort of cross-scale reinforcement of the "reality" of the state can be multiplied almost endlessly as states proliferated in the 19th and 20th centuries. In India, for example, and Israel, states scarcely 60 years old, identical patterns of map use can be found.[86]

As the Map Affirms the State, the State Affirms the Map

What cannot be overlooked is what gave maps their ability to embody this novel entity in the first place. Since scholars are unanimous that maps helped to bring the state *into being*—that maps helped *construct* the state—it certainly can't be the map's putative ability to "represent a part of the earth's surface." After all, it was the maps that *conjured up* borders where none had existed (especially well documented for the United States, Russia, Thailand, and colonial British Guyana); the maps that *summoned* unity from chaos (as we have seen for Japan, Russia, and the United States); the maps that *enrobed* the shapeless (as in the case of China); that is, the *maps* that endowed with form what from the beginning had been no more than a dream (the dream of every early modern state).

But then, thinking about the map as a representation had always been a mask, a cloak, a way of making the *creative* aspects of mapmaking . . . disappear. From their inception it had been essential that states appear as facts of nature, as real enduring things, things like mountains; and at all costs to obscure their recent origins in violence and their tenuous holds on tomorrow. And maps were able to grant this precisely because maps too had been constructed as facts of nature: "We no more than show what exists," said the maps (even today they say this about the borders between Pakistan and India, Israel and Palestine, India and China). What maps thereby *avoided* saying was, "Exists, yes, but only on these maps which, in fact, create and affirm their existence," even as the maps created and affirmed *their own existence,* most effectively by hiding their own recent origins . . . in the state itself.

But then, this is what maps do, affirm the existence of the things on them. "This is here," maps say, "and that is there," as they do so simultaneously affirming the precedent existence of whatever is in question (the *this,* the *state) and* its location (the *there,* its *borders*). Such affirmations constitute powerful existence claims. When asserted about the Front Range of the Rockies or the range of the pin oak tree, such claims may *seem* unproblematic, but their overtly political and therefore problematic character can hardly be overlooked when they establish nation-states, electoral districts, and school attendance zones, in which cases maps in no way *report* but baldly *propose* states of affairs (which we'll later see is also true for the Front Range of the Rockies and the range of the pin oak).

In effect, maps are systems of propositions, where a proposition is nothing more than a statement that affirms (or denies) the existence of something. As such, maps are arguments about existence.[87] And if they began by arguing for the existence of paddy fields, long fields, and manor lands; the nation-states the fields came to compose; and the world composed by the nation-states, maps have gone on to a long career rich in the affirmation of the existence of a bewildering variety of things, the island-continent of California, for instance, the Great American Desert, and the open polar sea.

What these have in common with geologic strata, frontal weather systems, and the hole in the ozone is that they're all *very hard to imagine* without the creative intercession of the map. It's salutary to remember that this too is what nation-states once were, *very hard to imagine without the creative intercession of the map.* How did Brückner put it? "The national map was one of the few visual artifacts demonstrating what many perceived to be either an abstract or even untenable fiction, namely that there could be a national union between disjointed regions and politically disparate people." By arguing for the nation's existence with all the facticity at its command, the map turned the fiction . . . into a fact.

When, several pages ago, I said that most speakers of English use "map" in a straightforward way to describe an artifact that selectively links places in the world (*there*s) to other kinds of things (*this*es), I deliberately failed to draw attention to the propositional character of the *this*es and the *there*s, since it's the map's refusal to acknowledge its propositional character—its propensity to cloak its propositions in facticity—that made maps useful to the early modern state in the first place and that, for precisely this reason, heavily promoted their use. Propositions supported by evidence and argument, even propositions simply sufficiently often *repeated,* soon enough solidify into facts, and facts are what states were most eager to solidify into.

In saying "fact," what I'm referring to is a class of propositions that seems to lack the *provisional* quality we expect of our propositions. Though the world's sphericity is eminently a proposition, it doesn't feel like one. It feels like something that can get along quite well without our affirmation. It feels like a fact. Continents have a similarly "factual" feel to them, though the size thing is frankly arbitrary, and exactly why Europe and Asia are separate continents has always been a mystery.[88] Coastlines feel like facts too, especially on small-scale maps, though it's much harder to say what coastlines actually are when you get closer to them. Yet despite some hesitation and blurred edges, all these things seem to transcend any "propositional" character, seem to possess an unalterable existential quality, seem to be things you can point to today confident of being able to point to them tomorrow.

Which is what states aspire to be, things you can point to tomorrow; and though they aren't, maps give them this reassurance. Remember learning the countries in school? The blank outline maps? The crayons? Filling the names in on the tests? Well, things have changed since then. Remember Yugoslavia (not the Kingdom of Yugoslavia, 1918–1941, but the Socialist Federal Republic of Yugoslavia, 1943–1991)? Czechoslovakia (1918–1992)? The Soviet Union (1922–1991)? Remember when Pakistan and Bangladesh were one country (1947–1971)? And Egypt and Syria (the United Arab Republic, 1958–1961)? Even our own vaunted claims to stability are hard to sustain. In historical terms the country's still young, its borders have never stopped changing, and . . . wasn't our bloodiest war, more than *700,000* dead, fought against a breakaway faction, the Confederate States of America (1861–1865)?

Though maps don't describe states as propositions advanced against the tide of time, they are, like everything else on maps (see the next chapter).

When a few pages back I said, "maps selectively link places in the world (*there*s) to other kinds of things (*this*es)," I added, "for the purpose of underwriting the reproduction (or contestation) of the social relations of power," since the capacity of maps for ignoring construals of reality alternative to those they propose—along with the facticity they thereby project—substantively underwrites the reproduction of the social relations of power. One way they do this is by absorbing change. This was really critical for the continuously evolving early modern state, but it remains important for states today. Maps absorb new data into apparently timeless frames, and thereby damp down the threat of disturbing novelty. Berry has observed how the issue

> is succinctly conveyed in the phrase "newly revised," which became a commonplace in the titles of the information library [of 17th-century Japan]. The words insisted that something new in a text was new enough to merit special attention, though not quite new enough to merit a fresh beginning. Something fundamental survived—something susceptible to revision rather than reimagination.

"Expectation," Berry goes on,

> remains the most powerful preservative of models. Mapmakers and map users learn to expect the kind of maps they are accustomed to seeing. In the end, then, the strength of models is the facility to frustrate, as either unthinkable or perverse, the revision of their underlying conceptions. An alternative representation of Edo [Tokyo] would have required not so much new evidence as a new vision. Had commercial mapmakers accorded privilege to commercial wards rather than martial mansions, they would have projected a rival plot: this is a financial and mercantile capital (say), administered through the neighborhood associations of townspeople, where entertainment is a major enterprise. For that leap, they needed no fresh data. They needed a radical philosophy.[89]

Maps Unleashed

But radical philosophies have never been the hallmarks of any of the big mapmakers: governments, commercial map houses, or academies. On the other hand, *big* mapmakers were never the *only* mapmakers. As systems of propositions, maps

are necessarily composed of signs (the propositions are embedded in signs), where signs are unions of signi*fieds* (the subject of the proposition, say the *state*) and signi*fiers* (the marks put down on the paper, say the *lines* supposed to be the borders). The signifieds and the signifiers are united by a code. In school we're taught to look for this code in the legend—a star means a capital—but the legend only displays the top part of the code, the part of the iceberg above the water. All the submerged part, *that* part of the code is taken for granted: the way locations on the map refer to locations in the world, the way the words work (words and letters themselves are signs), the way the lines work (and that they work in different ways, the lines *around* the map in one way, the lines *on* the map in others). These relationships, between the signifieds and the signifiers, are wholly conventional—essentially arbitrary—so that the connections between signifieds and signifiers are, for all their taken-for-granted quality, never secure. And from the beginning the signifiers have been slipping their moorings.

What this meant was that from the beginning they could have a life of their own independent of the needs of the state or the interests of property—or even of a commitment to represent the world—and they began to live it immediately. For example, as early as 1516 a map of an imaginary island was published as the frontispiece to Thomas More's *Utopia* (Figure 1.3). It was probably too early to expect this to be called a map, and besides the book was in Latin so it's called, "Utopiae Insulae Figura," but it's quite map*like.* The extremely high oblique perspective is underscored by the ships in the foreground and in the background by the mainland which is seen almost head-on. With the buildings in profile the island has an almost axonometric feel.[90] Over the next 450 years the use of maps to lend credence to imaginary places would explode, and with the publication in the middle of the 17th century of Madeleine de Scudéry's *Carte de Tendre* in *Clélie* (10 volumes, 1654–1661), the door was opened onto the instantly popular world of allegorical maps (the "Map of Tenderness," the "Map of the Realm of Love," the "Map of Marriage," the "Map of the Realm of Coquetry").[91] Jeffrey Peters has drawn attention to the way these maps drove wedges between signifieds and signifiers: "Scudéry, I have been arguing, reformulates the notion that maps convey an objective form of absolute and complete knowledge by creating her own map that multiplies rather than reduces the field of meaning. The explicitly allegorical language of *Clélie*'s map is designed to open up a gap in meaning between the signs that cover its surface and the signified knowledge that is produced in its name."[92]

Both imaginary and allegorical maps proliferated. In the later 17th century Johann Andreas Schnebelin wrote about, and Johann Baptist Homann made maps of, the utopian Schlaraffenland.[93] A couple of decades later still Matthaus Seutter was mapping an "Attack of Love."[94] In 1726 Jonathan Swift famously published *Gulliver's Travels* with its maps of Lilliput and Houyhnhnms Land.[95] Almost as famously Robert Louis Stevenson published his map of Treasure Island in 1883.[96] In the 20th century the allegorical map stream dwindled, though it very much trickles into the present. Katharine Harmon not only illustrates a nice variety of these maps in her *You Are Here: Personal Geographies and Other Maps of the Imagination,* but constructs her book's acknowledgments—"The River of Gratitude"—as an allegorical map of a kind devised by Louise van Swaaij and Jean Klare for their *The Atlas of Experience.*[97] On the other hand, the mapping of imaginary places swelled into an Amazon at flood. The potent examples of E. H. Shepard's maps of the "100 aker wood" and

FIGURE 1.3. Utopia, as visualized in 1516. Thomas More's Utopia from the original Louvain edition. It's not quite a map, but it's not quite not a map either. It's early, but clearly moving toward the map. (*Source:* Newberry Library)

Toad Hall,[98] and especially J. R. R. Tolkien's maps of Middle-earth in *The Hobbit*, and his son Christopher Tolkien's maps in *The Lord of the Rings*[99] inspired everyone with a pen—or a mouse—to start making maps of imaginary worlds, maps which turned into game boards (see *Dungeons and Dragons*), which in turn evolved into map-based video games, like *Grand Theft Auto*, and so into massively multiplayer online role-playing games like *World of Warcraft,* that is to say . . . into an enormous industry.[100] And while I was writing this, Marvel Comics (Spider-Man, the X-Men, Wolverine, the Fantastic Four) published a *Marvel Atlas* of its Marvel Universe, yes, with old Afghanistan, Australia, Austria, and so on in it, but with Carnelia, too, and Carpasia, Latveria, Lemuria, Madripoor, Rumekistan, Sin-Cong, and Vorozheika together with large-scale maps of cities like Doomstadt and Polaria.[101]

Even as these heterodox uses of maps were expanding, others were evolving that on occasion refused to exploit even the propositional character of the map—uses that were capable of consuming maps whole, almost as *free signifiers.* This was the world of map art, initially unleashed by the spirit and practice of collage in the years following World War I as Dadaists and Surrealists began to use maps in their work.[102] Since then Letterists, Situationists, Pop artists, Earth artists, Conceptual artists, Fluxus artists, and others in ever growing numbers have found in the map a congenial object, a fruitful subject, and/or a productive method. Today it's hard

to keep track even of map art exhibitions, so numerous have they become, and art about maps, of maps, and resulting in maps, fetches insane sums at auction.[103]

Whatever all this is about—and it's about many things—it's clear not only that it makes a mockery of the traditional claim that maps are in any sense "a representation of a part of the earth's surface," even as it illustrates, indeed illuminates, the map's propositional character; but also that it makes a mockery of any idea that the state and its interests so monopolize the map that it cannot, and has not been released to other functions.[104]

Just as the characteristic alibi of the map to be an aid to navigation obscures its use in framing the state, bounding jurisdictions, and controlling property, so the idea that it does *nothing else* obscures the map's use as . . . something to tuck under a dresser to keep it from wobbling. It's bootless to pretend that the map grew to its contemporary prominence for some purpose other than underwriting the reproduction, if increasingly the contestation of the social relations of power; and it would be silly to overlook the prominence of the state in many of the map's alternative roles. It's hard, for instance, to miss the state in More's *Utopia,* in Swift's *Gulliver,* in Marvel's Universe, or for that matter in much of the map art that was created during the 20th century; nor is it hard to argue that playing with mapped states only *strengthens* the authority of states on the normative map.

But it would be equally silly to pretend that the state's stranglehold on the map isn't weakening. Cartography, the state's apparatus for training and constraining mapmakers, is certainly dead,[105] and it doesn't look as though the professionals and academics are going to be able to repeat the "cartography" ploy with GIS, computer, and Internet mapmaking try as they might.[106] That genie seems to be very much out of the bottle, even when it has also to be confessed that much of this amounts to little more than sticking map pins onto Google Maps, a faithful servant of the state if ever there was one. Even so, it's astonishing how many people are taking to mapmaking and the things they are mapping. And many of the maps they're making are extraordinary and powerful.

The map was *not* founded in some primal instinct "to communicate a sense of place, some sense of *here* in relation to *there,*" but in the needs of the nascent state to take on form and organize its many interests; but the relationship between signified and signifier is ever precarious, and what meant one thing in the beginning can mean its opposite today, or nothing, or everything. People are at play in the field of map signs, and the latent power of the map is waiting to be unleashed.

Unleashing the Power of the Map

The easiest way to unleash the power of the map would be to get real about the fact that maps are propositions.[1] As long as we conceive of maps as representations, our imagination will be fettered by the received picture of the world that it is claimed maps no more than mirror. Invariably this received picture is inadequate, inaccurate, often false; and always it is in thrall to dominant interests. Of course this is *why* it's the received picture.

All that making maps of this picture does is confirm its authority.

Maps Advance Propositions

To see how this works and what sorts of things might be done by thinking about maps differently, let's take a look at the widespread maps of the returns of the 2000 and 2004 U.S. presidential elections. The most common version displayed the returns by states (Figure 2.1). Voting Democratic, and so colored blue, were the New England and Mid-Atlantic states, a handful of northern midwestern states (Wisconsin, Minnesota, Michigan, and Illinois), and a tier of western states (California, Oregon, and Washington). All the rest of the country was red. This map, and the apparently more subtle version posting the returns by counties, proposed a country sharply divided into two regions: the liberal coasts with their concentrations of media, ethnic minorities, and gays; and the American heartland, with its solid, stolid conservatives.[2] The interests these maps underwrote—and that they underwrote *graphically*—were plainly those of the party in power, which, using them, laid claim not only to the vast interior of the country, but to its putative values: family, flag, God. The map not only assured George Bush that there were two Americas: it also assured him that the one of which he was the victorious leader—for the two Americas were locked in moral combat—was enormous in comparison to the other. The map assured Bush he could do what he wanted.

FIGURE 2.1. Red and blue states. Or, in this black-and-white reproduction, the gray (Bush) and black (Kerry) states. Could there be any question about the magnitude of Bush's victory? (*Source:* M. T. Gastner, C. R. Shalizi, and M. E. J. Newman)

These dominant interests had *no* investment in thinking about the map as a proposition. The map served them solely to the extent that it could be held to represent the facts on the ground, the actual state of things. The map had to feel like a mirror of the national will as refracted through the polls, and the story about how the map came into being would be one about verifiable data, turning it into a map, and . . . "Well, we were as surprised as anyone by the polarization the map revealed." Note that the map is held to reveal, not to propose—certainly not to invent—the polarization. The map just showed things the way they were. The map was a mirror, a reducing mirror. It was a lens. It took the vast United States and shrunk it down so that it could be taken in at a glance; and it abstracted away the troublesome details so that the political situation could be seen in its simplicity.

The map was hardly the only reason talk about the polarization of a Red and Blue America proliferated. The *idea* that the country was polarized played into ancient sectional narratives, it played up the fight, it suggested that nothing less was at stake than a kind of moral Civil War. It got people riled up. But the map provided a *simple graphic visualization* of the idea, and so a confirmation of what otherwise too easily evaporated into anecdotage. The map was a visual metaphor of the polarization, in a scientific register, and with its apparent simplicity and straightforwardness it was powerfully persuasive. Everything Brückner said about the map of the young United States being "one of the few visual artifacts demonstrating what many perceived to be either an abstract or untenable fiction," everything Thongchai argued about the geo-body, applies here in spades, though mobilized to reveal an underlying discord on the cusp of a resolution: to the faithful, the maps demonstrated a growing national consensus and the inevitable victory of conservative forces poised—perhaps in the next election—to push the adherents of liberalism into the oceans.

Were maps mirrors of reality this would have been an uncontestable conclusion, but maps are propositions—that is, they are statements that affirm or deny the existence of something—and alternative propositions were advanced immediately. One of these affirmed the idea that the country had a red and blue cast, *but it denied that it was mostly red.* The creators of this alternative map, speaking here of the original, made the following argument:

> The map gives the superficial impression that the "red states" dominate the country, since they cover far more area than the blue ones. However, as pointed out by many others, this is misleading because it fails to take into account the fact that most of the red states have small populations, whereas most of the blue states have large ones. The blue may be small in area, but they are large in terms of numbers of people, which is what matters in an election.
>
> We can correct for this by making use of a *cartogram,* a map in which the sizes of states have been rescaled according to their population. That is, states are drawn with a size proportional not to their sheer topographic acreage—which has little to do with politics—but to the number of their inhabitants, states with more people appearing larger than states with fewer, regardless of their actual area on the ground. Thus, on such a map, the state of Rhode Island, with its 1.1 million inhabitants, would appear about twice the size of Wyoming, which has half a million, even though Wyoming has 60 times the acreage of Rhode Island.[3]

The resulting cartogram (Figure 2.2) "reveals what we know already from the news: that the country was actually very evenly divided by the vote, rather than being dominated by one side or the other." This is an affirmation more or less diametrically opposed to that made by the original map.
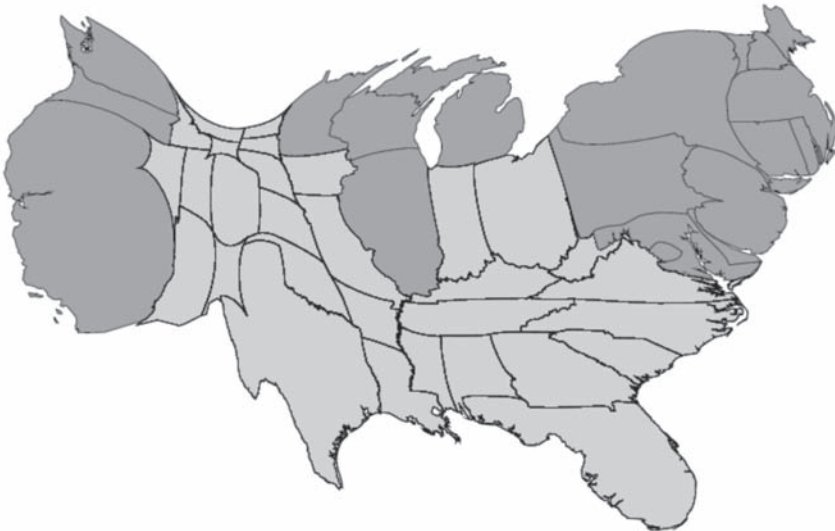

FIGURE 2.2. Red and blue cartogram. Wait! What happened to Bush's overwhelming victory? Here, in this cartogram, where the size of the states have been made proportional to their number of voters rather than their acreage, it looks more like an even split, which we knew from the news that it was. (*Source:* M. T. Gastner, C. R. Shalizi, and M. E. J. Newman)

A second alterative proposition *denied that there was much of a polarization,* affirming a Purple America by assigning a mix of red and blue based on the percentage of the vote for one side or the other (Figure 2.3). Here a county that went 51% Republican and 49% Democratic, instead of being red, showed up in a purple that was 49% blue and only 51% red. Instead of denoting who *won,* the color indicated the *degree* of support. This map, according to Philip Klinkner, implied that "political diversity and integration are alive and well, and [that] the average American lives in an area with a great degree of exposure to members of the opposing political party." This, too, is a proposition diametrically opposed to that advanced by the original map.[4]

A third alternative combined the first two by casting Purple America into a population cartogram (Figure 2.4). Here, where areas reflect the size of their populations *and* their color is proportional to the vote, only a minute fraction of the country was occupied by red counties, the rest being shades of purple with a few patches of blue in the urban areas.

Maps Make Arguments

In a representational framework, where there is a pregiven reality that maps are supposed to more or less accurately reflect, the four propositions we've just traversed—the Red and Blue America, the Red and Blue population-proportional America, the vote-proportional Purple America, and the population- *and* vote-proportional Purple America—would have to be assessed in terms of their accuracy: how closely each approached reality. The question, instantly apparent, is to what do we compare them? I mean, if maps are mirrors, we have to be able to hold the maps up to
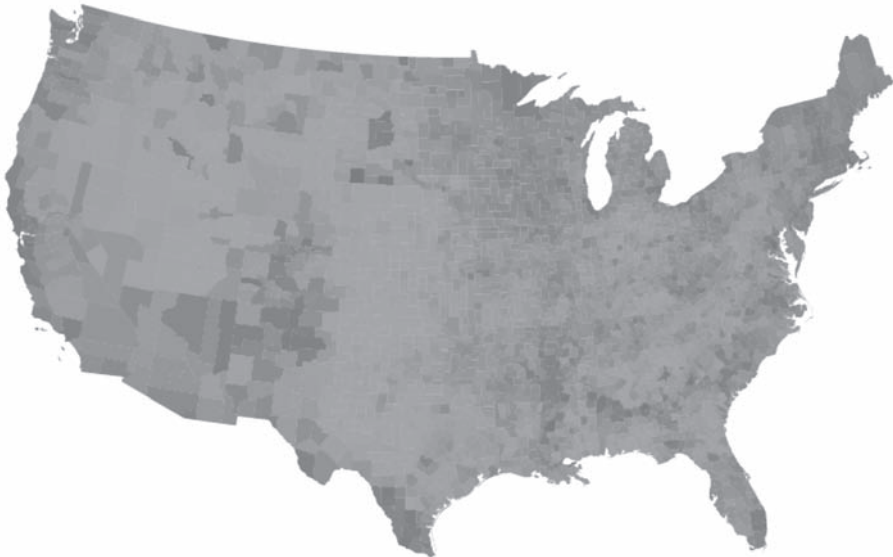

FIGURE 2.3. Purple America. Here, where we've posted county instead of state returns *and* adjusted the color—grays here—to reflect what *proportion* of each county voted for Bush or Kerry rather than reflecting who has the *most* votes, the country seems less polarized. (*Source:* M. T. Gastner, C. R. Shalizi, and M. E. J. Newman)

FIGURE 2.4. Purple cartogram. Here where we've posted county instead of state returns; adjusted the color—grays here—to reflect the *proportion* of each county voted for Bush or Kerry rather than reflecting who has the most votes; *and* adjusted their sizes to reflect the number of voters rather than acreage, the country doesn't seem polarized at all. (*Source:* M. T. Gastner, C. R. Shalizi, and M. E. J. Newman)

something to be able to see how well they reflect it. But to what? Clearly it can't be the United States—how would you even do that?—but evidently it's not the election returns either, since all four propositions were advanced using exactly the same data. Intuitively, we connect "representation" to the existence of *something* that is represented, but what, in this case, *is* that something?

In a representational framework, that something *has* to be the *size* of U.S. political jurisdictions, the *distribution* of the U.S. population, and/or the election *returns,* but we know that, though very different, our maps all "mirror" a common reality. The differences among these maps, then, blatant though they are, do not arise from the data, and so they *reveal* nothing about it. In fact, the maps really aren't about the elections but about American political polarization, and the election results—and the rest of the data—are arranged to support a position on polarization. The maps are arguments, and the mapmaking is a rhetorical exercise.

Let me say immediately that there's nothing "wrong" with this: every map ever made—or to be made—is an argument in exactly the same way. My only cavil would be that, instead of being upfront about their interest in polarization, all masquerade as maps of the election returns. For example, the first publication of the original map was titled "*USA Today* Election Map/The vote Tuesday, county by county"; that of the cartogram, "Maps and cartograms of the 2004 U.S. presidential election results"; and that of Purple America, "Election 2000 Results." These masquerades allowed the conclusions about polarization—from total to nonexistent—to slip into our consciousness as no more than an uncontestable aspect of the election, an aside almost, something that arose naturally from the results, something that the results

. . . *revealed*; whereas in fact the results were marshaled to make the point about polarization. It's the data that were almost . . . by the way.

Here, for example, are the opening paragraphs of the text that accompanied the original *USA Today* map:

> The map tells the story. Vast stretches of red across the rural heartland, all Republican George W. Bush country. A coastal perimeter and urban patches of blue, where Democrat Al Gore prevailed.
>
> Geography is perhaps the most striking yardstick by which to measure the gulf between those who voted for Bush and those who voted for Gore. The election results might be inconclusive as to who won the presidency, but they are clear when it comes to who was won over by the presidential candidates.
>
> The two major parties continue to live up to their stereotypical, polarized images: Democrats as a home for women, minorities, gays, immigrants and city dwellers; Republicans as the favorite for men, religious and rural Americans, gun owners and moralists.[5]

The map tells the story: that is, if you map the data, the story will arise from it as plainly as this one does. And this *is* the story the map proposed—the heartland was all red, Bush did prevail there—if not, as we are assured by the other maps, in quite this way, if not, in fact, this way *at all.* Yet this breathless prose was given credence because you could keep glancing up at the map that authorized it. In fact, the map invented this account, but in exactly the same way that the alternative maps would go on to invent their countervailing accounts.

Maps Propose the Existence of Things

Vast stretches? Yes, but vast *empty* stretches. *Purple America*? No doubt, yet George Bush for *two* terms. Yet there is no question of lies, of distortion, of inaccuracy. There simply is no other way to do this, no way to escape the claims of rhetoric. To map the election results demands that you make choices. Do you show who won and who lost? By states or by counties? Do you account for differences in density? Do you indicate the percentage of support? There is no "right" answer to these questions, but these and the potentially infinite others—do you account for differences in income? in age? in ethnicity? in religion?—shape the map and so the story that it "tells." And to make a map you *have* to make these choices: there are no *naked,* no *absolute* election results; there is no *innocent* way to see them.

Some 30 years ago, Nelson Goodman made this point about pictures generally: "The myths of the innocent eye," he wrote

> and of the absolute given are unholy accomplices. Both derive from the idea of knowing as a processing of raw material received from the senses, and of this raw material as being discoverable either through purification rites or by methodical disinterpretation. But reception and interpretation are not separable operations; they are thoroughly interdependent. The Kantian dictum echoes here: the innocent eye is blind and the virgin mind empty. Moreover, what has been received and what has been done to it cannot be distinguished within the finished product. Content cannot be extracted by peeling off layers of comment.[6]

This is to say that our maps' positions on American political polarization are not "comment" layered on top of the "content"—the "raw material," the "absolute givens"—of the election results. Though it need not be that of polarization, *there simply is no way of presenting the election results outside of some interpretive frame.* To choose to map them by counties establishes one frame, to choose to map them by states another. The very word "results" gives this away. That is, outside the "space of representation" of the elections, not even the ballots' "✓"s or "✗"s have assignable meaning.[7]

Representationalism is a faith in the raw material, in absolute givens, in *some-thing* that signifies outside a frame, outside a space of representation, something against which the quality of representations can be assessed. Intuitively, this is the face against which you hold up the portrait. Again, Goodman:

> "To make a faithful picture, come as close as possible to copying the object just as it is." This simple-minded injunction baffles me; for the object before me is a man, a swarm of atoms, a complex of cells, a fiddler, a friend, a fool, and much more. If none of these constitute the object as it is, what else might? If all are ways the object is, then none is *the* way the object is.[8]

The copy theory of representation, Goodman concludes, "is stopped at the start by inability to specify what is to be copied,"[9] and if the problem is acute with respect to a face, what must it be with respect to election returns, or the United States? Like the subject of Goodman's portrait, the subjects of maps also fail to have *a* way that they are: the United States, other nations, mountains, seas, amber waves of grain, outside a reference frame, none is pregiven, none exists, not *as such* anyway.

Assertions like these stop many readers dead. What could that mean, *none exists*? The intended-to-be-reassuring "not *as such,* anyway" doesn't help much either. What could that mean, not *as such*? So it's best to be plain: *there is no doubt about existence. The universe is.* What *is* in question is how to think about it, how to divide it into parts, and what the relations of the parts might be.

This isn't a cause for much pause when what's being divided up is something like Kashmir, where China has one idea how it should be done, India another, and Pakistan a third.[10] Here, where Kashmir is plainly a different thing depending on the frame of reference, it's obvious that Kashmir doesn't exist, not *as such* anyway, not as plain, pregiven Kashmir. On the other hand, people are given much greater pause when our assertion is made about more solid things, things like, say, the Kashmiri mountains through which any borders would have to be drawn. Surely their existence cannot be doubted? Again, the question is how to think about them, to take a trivial example, how to divide them into ranges and peaks. But, again, here too there turns out not to be a single way, for even the experts admit it's not particularly easy to say where the Pamirs leave off or the Karakoram begin, or even how to distinguish the Karakoram from the Hindu Kush. It's even harder when it comes to the subranges, telling the Rakaposhi-Haramosh apart from the Hispar Muztagh, or within the Rakaposhi-Haramosh, an individual mountain, Rakaposhi itself, say, from Malubiting or Khunyang Chhish. None of these is a *pregiven* thing.

Part of this has to do with mountains, for mountains are no more pregiven than ranges.[11] There's even little enough consensus about what a mountain's *sup-posed* to be. The Wikipedia definition is characteristic: "A mountain is a landform that extends above the surrounding terrain in a limited area. A mountain is gener-

ally steeper than a hill, but there is no universally accepted standard definition for the height of a mountain or a hill, although a mountain usually has an identifiable summit."[12] Monkhouse's *Dictionary of Geography* says, "A general term, for a markedly elevated landform, bounded by steep slopes and rising to prominent ridges or individual summit-peaks. There is no specific altitude, but it is usually taken to be over 2000 feet in Britain, except where eminences arise abruptly from lowlands," when it can be much lower.[13] Bill McKibben insists that a mountain is "not simply higher than a hill; the very word mountain implies a brand of majesty,"[14] but the *Glossary of Geology* just says, "A mountain is a tract of land considerably elevated above the adjacent country. Mountains are usually found connected together in long chains or ranges; sometimes they are single, isolated eminences."[15] *The Encyclopedia of Geomorphology* says, "Whatever its lower altitudinal limit may be, it is now agreed that a mountain, compared with a hill, is defined by both its greater height and its greater area, i.e., by its volume; thus an inselberg is a not a mountain, but a hill,"[16] although the *Glossary of Geology* says that inselbergs are "prominent steep-sided residual hills *and mountains* rising abruptly from the plains."[17]

A mountain, then, is an elevated landform, steeper or less steep than a hill, rising to peaks or to ridges, higher or lower than 2,000 feet, forming chains or groups except when isolated, and including or excluding inselbergs. The point is: there are *no* mountains, *no* hills, *no* inselbergs, not *as such.* There's just land rising and falling, and where and how we cut depends on our space of representation. Richard Bissell says:

> It's such a big wide place. These guys sit in the barber shop at Millinocket, Maine, and they look at the pictures in the magazines but it still doesn't register. So here's a feature story about Jackson Hole or Mount Shasta or something. After they read it they still think that old Mount Katahdin is the only actual *mountain* there is. In reality Katahdin is about the size of a good Commonwealth Edison coal pile beside the Calumet River,[18]

though there are plenty of people who would call that pile of coal a *mountain.* It depends on your frame of reference.

Trenton Merricks has a useful way of thinking about all this. He's an adherent of a philosophical position known as *mereological nihilism.* Mereology is the branch of philosophy—an ancient branch—concerned with parthood relations, that is, with the relations of parts to wholes and the relations of parts to parts within wholes.[19] Merricks believes that nothing that can be broken down into parts exists (*as such,* I hasten to add), which amounts to saying that, since everything I've mentioned has parts, there are no election returns, no nations, no mountains, no seas, no amber waves of grain. What Merricks thinks *do* exist are "building blocks without parts," that is, indivisible microscopic entities like electrons or quarks which—for convenience—he calls *atoms.*[20] It's arrangements of these atoms that naïve folk think about as election returns, nations, mountains, seas, amber waves of grain, naïve folk like you and me who Merricks calls "folk ontologists." Since from Merricks's perspective the only things that exist are atoms, he thinks our folk ontological things might be best thought about as *atoms,* but as *atoms arranged election returns-wise, atoms arranged nations-wise, atoms arranged mountains-wise, atoms arranged oceans-wise,* and *atoms arranged amber waves of grain-wise.* Merricks assures us that though our false folk ontological beliefs that there *are* election returns, nations, mountains, and so

on, are "nearly as good as true" and certainly good enough to be getting on with, they really are just . . . arbitrary conventions.

This would be little more than a marginal philosophical fancy if something like Merricks's *atoms* and folk ontological *things* didn't so often mix it up on maps. Because they do, Merricks's formulation turns out to be a useful way to think through the ontological status of things on maps. Take this one by Gail Thelin and Richard Pike, the USGS's *Landforms of the Coterminous United States: A Digital Shaded-Relief Portrayal* (Figure 2.5). It is, as it were, *all* atoms. Not a single folk ontological thing mars its surface. It is utterly free of rivers, mountains, plateaus, cities, of everything conventionally associated with the United States except its geo-body. I mean, *look at it!*

Landforms of the Coterminous United States started life as a sampling of elevations, 12 million of them. These comprised the digital elevation model—the DEM—that was used to generate the theoretical "brightness values" that drove the printing. The image was illuminated from the west-northwest by a simulated sun 25º above the horizon. The elevation was exaggerated two times to enhance portrayal of the surface, so hills appear twice as high as they actually are and valleys twice as deep. Note again the *complete* lack of folk ontology. "The hills are twice as high," I just said, but there are no hills here. There are no mountains either. Nor valleys or plains. There are no rivers. There is only a varying gray. If you "see" something—the Appalachians, say, or the Mississippi Floodplain or the Rockies—this is only because *you* brought it with you, because *you* were able to carve a signifier from the map's continuous surface, to delimit it, to decide where it began and where it ended, to
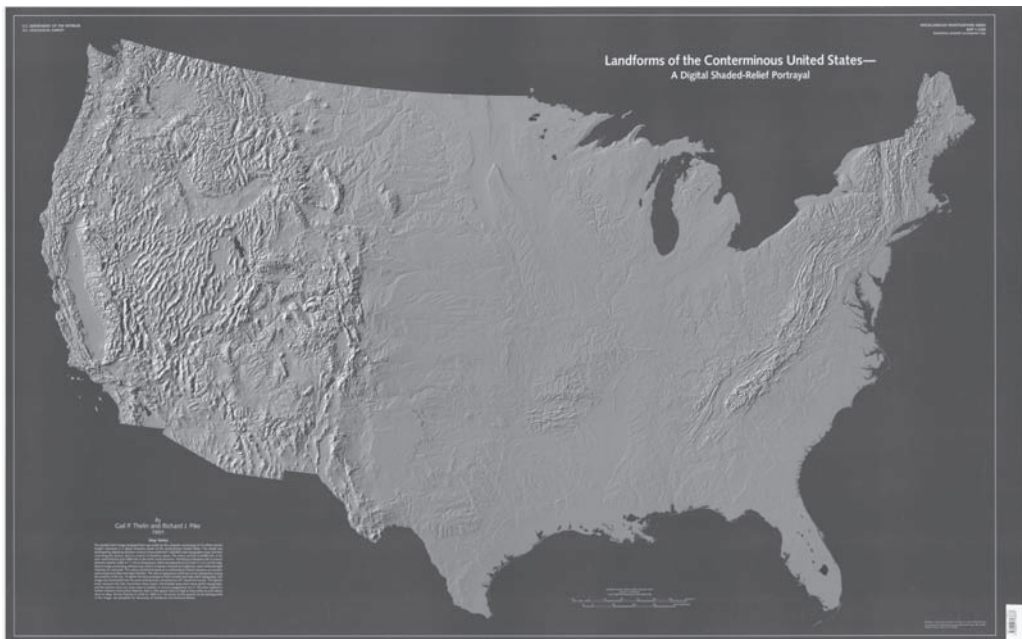

FIGURE 2.5. Gail Thelin and Richard Pike's 1991 *Landforms of the Coterminous United States: A Digital Shaded-Relief Portrayal.* This map is, as it were, *all* atoms: no folk ontological things mar its surface. (*Source:* USGS)

extract an icon (say, the gentle folds of the Appalachians), to label it, to give it a name.[21] (See Figure 2.6.) "These are the Appalachians," you say, smearing your folk ontology across the Merricksian atoms of elevation that in no way *told* you how to chunk them up. The map's mereological nihilism must have alarmed someone, for an accompanying booklet contains plenty of folk ontology, technical folk ontology but from a mereological perspective folk ontology all the same. When Raven Maps published *its* version, however, it printed the folk ontology right onto the map, rivers especially, river names, and the names of selected land features. A little box under a close-up of a part of the map on the Raven website even draws attention to the names, as though Raven were afraid that without them they'd have had a hard time selling the map. Tellingly they've retitled it, *Landforms & Drainage of the 48 States.*

Thelin and Pike's map is a kind of visualization of Merricks's "building blocks without parts," and it makes it plain that extraordinary maps can be made entirely without the things with which they're ordinarily enrapt. It also makes it plain that these things—rivers and mountains and all the rest of the folk ontology—are not *constituent* parts of the land, but proposals we've advanced for *talking* and *thinking* about it. Mountains and rivers are aspects of the land important to *us.* The folk ontological things of bees, if they made maps, would be different.

Let's take another example. This is *Cove Creek Gap Quadrangle,* a USGS topographic quadrangle, or topo quad. It's a map of a small piece of the terrain in the west of our detail from Thelin and Pike. In common with Thelin and Pike, *Cove Creek Gap Quadrangle* proposes to think about the land as, yes, rising and falling but as distinct from Thelin and Pike—and this makes all the difference—*Cove Creek Gap* also proposes to think about the land as known and named, as corralled and tamed, as parkland and forestland and gameland (Figure 2.7). While the topography here is less atomistic than on Thelin and Pike, *Cove Creek Gap*'s 40-foot contour interval still suggests a continuous surface and, while named, the mountains are actually no more delineated than on Thelin and Pike. That is, their names more
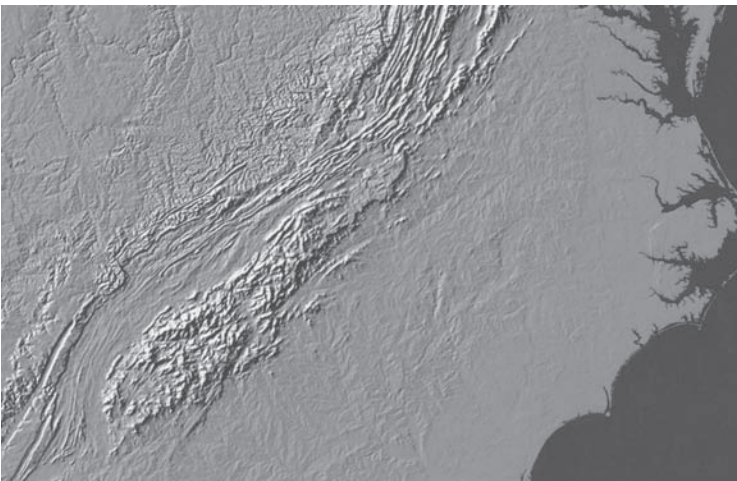
FIGURE 2.6. Detail from Thelin and Pike's *Landforms.* If you "see" something, say the gentle folds of the Appalachians, this is only because *you* brought it to the map, because *you* were able to carve that signifier from this map's continuous surface. (*Source:* USGS)

FIGURE 2.7. *Cove Greek Gap Quadrangle.* This map, a small piece of the detail from Thelin and Pike, proposes to think about the land as known and named, as corralled and tamed, as parkland and forestland and gameland. (*Source:* USGS)

or less *float* over the surface, indicating heights rather than volumes. They have no edges. They're unbounded.

And of course they're unbounded. The land isn't divided except in our heads and on our maps. It's we who break it up and bring the folk-ontological world of things into being. You ask what something is and in place of Thelin and Pike's mereological-nihilistic silence, *Cove Creek Gap* returns a folk-ontological answer: it's a gauging station, it's a river, it's a dam; it's a tunnel, it's an abandoned mine, it's transmission line; it's a branch, it's a trail, it's a creek; it's a ridge, it's a top, it's a knob. "A knob," Conger Beasley, Jr., tells us, "is a rounded hill, a prominent, iso-lated, rounded mound or knoll," which knoll, Michael Collier helpfully adds, is "a small, low hill distinctive for its round shape."[22] On *Cove Creek Gap Quadrangle,* Grassy Knob looks up toward Billy Top, High Knob looks down on Dogwood Flats, and Bent Knee Knob overlooks Cove Creek Gap (see Figure 2.8).

FIGURE 2.8. Detail from *Cove Creek Gap Quadrangle.* Here Bent Knee Knob overlooks Cove Creek Gap, just two of hundreds of instances of folk ontology. (*Source:* USGS)

Who's responsible for these . . . *things*?[23] It would be silly to lay them all off on the mapmakers, but the mapmakers aren't idle bystanders either. *Cove Creek Gap Quadrangle,* for example, is anything but a disinterested spectator passively reflecting the landscape. It's a descendant of a series of maps that quite literally brought the land as it is today into being. Beginning in 1885 with its *Cowee* topographic survey, the young USGS (established only in 1879) inaugurated a mapping project that would culminate in 1926 with its *Proposed Great Smoky Mountains National Park, North Carolina-Tennessee* (Figure 2.9). This map, whose propositional character was

FIGURE 2.9. The 1926 *Proposed Great Smoky Mountain National Park.* The propositional character of this map is evident in its very title: it proposes a national park where none existed at the time. (*Source:* USGS and the Library of Congress, Geography and Map Division)

evident in its very title, created a geo-body for the proposed park. This was essential in the case of Great Smoky Mountains where Congress had approved the park without appropriating any money for the purchase of the more than 6,600 tracts from their thousands of owners. Having a geo-body gave fund-raisers something concrete to point to: "This," they could say, "this is what we need the money for." Between 1926 and 1931 the USGS published further maps of the proposed park at the then unusually large scale of 1:24,000 to support the planning and negotiations involved in the complex land purchases.[24] One of these was the original *Cove Creek Gap Quadrangle,* across which today runs the border of the park that the map itself helped bring into being.

None of the maps in this series was merely a mirror, a record, a transcription, or a reflection of the decisions taken. Rather, each was a resource that stood behind the decisions, a vehicle in which the decisions were made, part of the necessary form in which they were embodied. These maps *made* the park, as they made Pisgah National Forest and the Pisgah Gameland, as they participated in the construction of the dam you can see across the Pigeon River, and of I-40 running along its banks. These maps didn't watch. They acted. They made things. They brought worlds into being. They . . . performed.[25]

To one degree or another, every map does this.

The Map's Propositional Logic

All this is to say that mapmakers are not cognitive agents parachuted into a pre-given world with a chain and a theodolite, to measure and record what they find there.[26] Rather, they're extraordinarily selective creators of a world—not *the* world, but *a* world—whose features they bring into being with a map.[27] Mapmakers propose this, not that, observe these things, not those, and not in blind obedience to sets of established professional rules either, but in flexible responsiveness to the living in which their mapmaking is embedded. The maps they make—the worlds they bring into being—change. These changes constitute a history—a history epitomized in the last chapter—as the ways in which mapmakers propose to construe the world change. These changes respond to changes in the environments to which mapmakers are coupled, but they also stand in evidence of the mapmakers' individual and collective autonomy. Maps emerge from mapmakers' hands as responses to both outer *and* inner voices.[28]

One can overstate this. Mapmakers who work by themselves, responsive only to their inner voices, are rare—though their numbers are growing[29]—but even the ones laboring in government agencies have an autonomy that is very real, if one most readily observed in what we usually think about as innovations. Perhaps the snag is in thinking about mapmakers as individuals when even those alone in their garrets are drawing on 500 years of accumulated mapmaking, and when what is ordinarily involved are elaborate processes involving constant negotiations among clients, client agencies, researchers, editors, technicians, the public—think of Bob Craddock working on his map of Mars—and this is especially characteristic of the great numbers of maps that most directly affect us, the maps that tell us where the leaves are going to be picked up, that assign kids to schools, that illustrate news accounts, that establish legislative districts, that plot wars. Most mapmaking, *most mapmaking,* is a

convoluted social process in which dozens of hands participate in the construction of a map—so that authorship is typically impossible to assign—and these maps are the most authoritative and at the same time the center around which *all* other maps circulate at greater or lesser remove.

These maps bring into being the territory *as we know it* to an extraordinary degree, for maps happen to be unrivaled as vehicles for the creation and conveyance of authority about and over territory. Some of this authority arises simply from their acts of assertion—assertions carry an inherent authority—but some arises from the collective social energy that maps channel. As affirmations emitted by authoritative bodies—school boards, local governments, scientific organizations—maps wield the force not only of affirmations but of *unauthored official affirmations,* and these solidify rapidly into facts. Examples of such facts are the imaginary lines separating districts, cities, counties, states, and nations. Some of these lines *are* physically marked and policed, and these become a kind of physical fact. But most are not. School district boundaries rarely are. Their factuality arises almost entirely from the social assent given to the propositions embodied in the maps, and this is generally the case. The factuality of a map is a function of the *social assent* granted to the map's propositions (to their performative utterances). One important reason for this assent is the utility of most map propositions: generally they take the form of linkages among conditions, states, processes, and behaviors conjoined in the territory that the map brings into being. For example, a school district map not only establishes school districts, but it does so by mapping them across residential addresses, thereby linking residences and schools: if you live here your child goes to school there. Or the map establishes the distribution of a species of tree and maps it across topography, and in so doing links the distribution of *Ocotea skutchii* to slopes: *Ocotea skutchii* becomes a slope specialist. Maps realize these linkages through fundamental, spatial/meaning propositions expressed in the sign plane of the map. John Fels and I call these fundamental, spatial/meaning propositions *postings.*[30]

This argument may profit from being laid out more schematically. Fels and I have referred to this schema as a "conceptual scaffold," trying to capture both the way it structures our understanding of how maps work and the way it disappears after the map has been constructed to render its role invisible.[31] While some of its parts are used in the construction of scaffolds for other forms of communication, the posting is unique to the map and is the map's foundation:

1. The map is a vehicle for creating and conveying *authority* about and over territory.

2. The map's *authority* is the social manifestation of its *factuality.*

3. The *factuality* of the map is established by the social assent given to the *propositions* it embodies.

4. These *propositions* assume the form of *linkages* among conditions, states, processes, and behaviors conjoined in the territory.

5. These *linkages* are realized through *postings,* fundamental, spatial/meaning propositions expressed in the sign plane of the map. This is to say that the power of the map is, quite literally, a function of the power of the posting which, by embedding a fundamental, ontological proposition inside a locative one, leverages the power of both into a . . . performance of the real.

The Posting

In the end, all that maps do is assert that *this* is *there,* whether *this* be an abstract climatic phenomenon like El Niño and *there* a swath of the Pacific Ocean (Figure 2.10); or *this* a school attendance zone and *there* a few blocks in Wake County (Figure 2.11); or *this* something as concrete as the bronze disk of a survey monument and *there* a spot beside a road (Figure 2.12). Abstract or concrete, complicated or simple, each of these is realized through a greater or lesser number of *postings,* fundamental spatial/meaning propositions expressed in the sign plane of the map.

Every posting asserts an equivalence between an instantiation of some conceptual type (a *this*) and a specific location in the world (a *there*). The *this* could be a temperature reading (25°C, for example, an instantiation of the conceptual type "temperature"), a street intersection (Hillsborough and St. Marys, an instantiation of the conceptual type "street intersection"), or a survey monument (for example, a brass control station tablet stamped "LEE 4 AZI 1989," an instantiation of the conceptual type "survey monument"). The *there* could be 0° 54' S, 89° 36' W (the latitude and longitude of the weather station in the Galápagos Islands that reported the 25°C), or it could be the Attendance Area for Wiley Elementary (which is where on the relevant map sheet produced by the Wake County School Board's Office of Growth Management you'll find the intersection of Hillsborough and St. Marys), or it could be "approximately 3.0 miles northeast of Zionsville, about 1,800 feet south of the intersection of West 141st Street and Shelborne Road, on the west side of Shelborne, in the SE ¼ of the intersection of Shelborne and a private drive to the west" (which is where, in Clay Township in Hamilton County, Indiana, you'll find LEE 4 AZI 1989).

As verbalized in the preceding paragraph, these are nothing but propositions that, again, are no more than statements that can be affirmed or denied.[32] What transforms a proposition into a posting is its expression *in the sign plane of the map.* This is another of those assertions that stop many readers dead. What could that mean, *its expression in the sign plane of the map?* Especially since, strictly speaking, there are no sign planes. *Strictly speaking,* signs are *correlations* between some sort
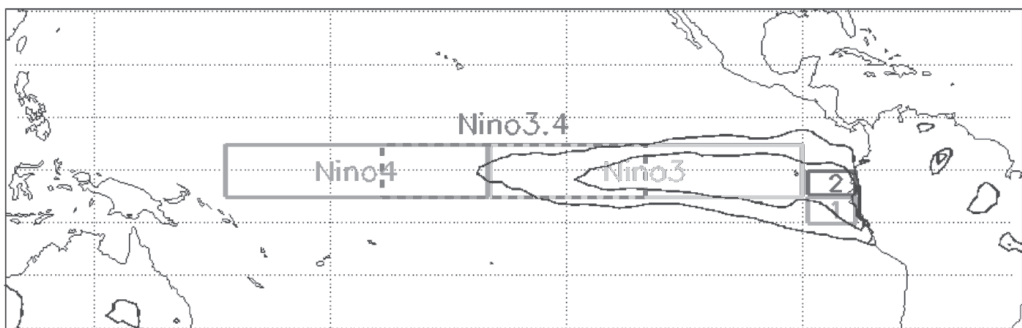
FIGURE 2.10. An El Niño event. This map posts five different index regions used to measure the strength of an El Niño–Southern Oscillation (or ENSO) over a background of the +2° and +3° C surface temperature contours of the 1997–1998 December–January–February surface temperature anomaly. This was the most recent *major* ENSO event. (*Source:* William M. Connolley)
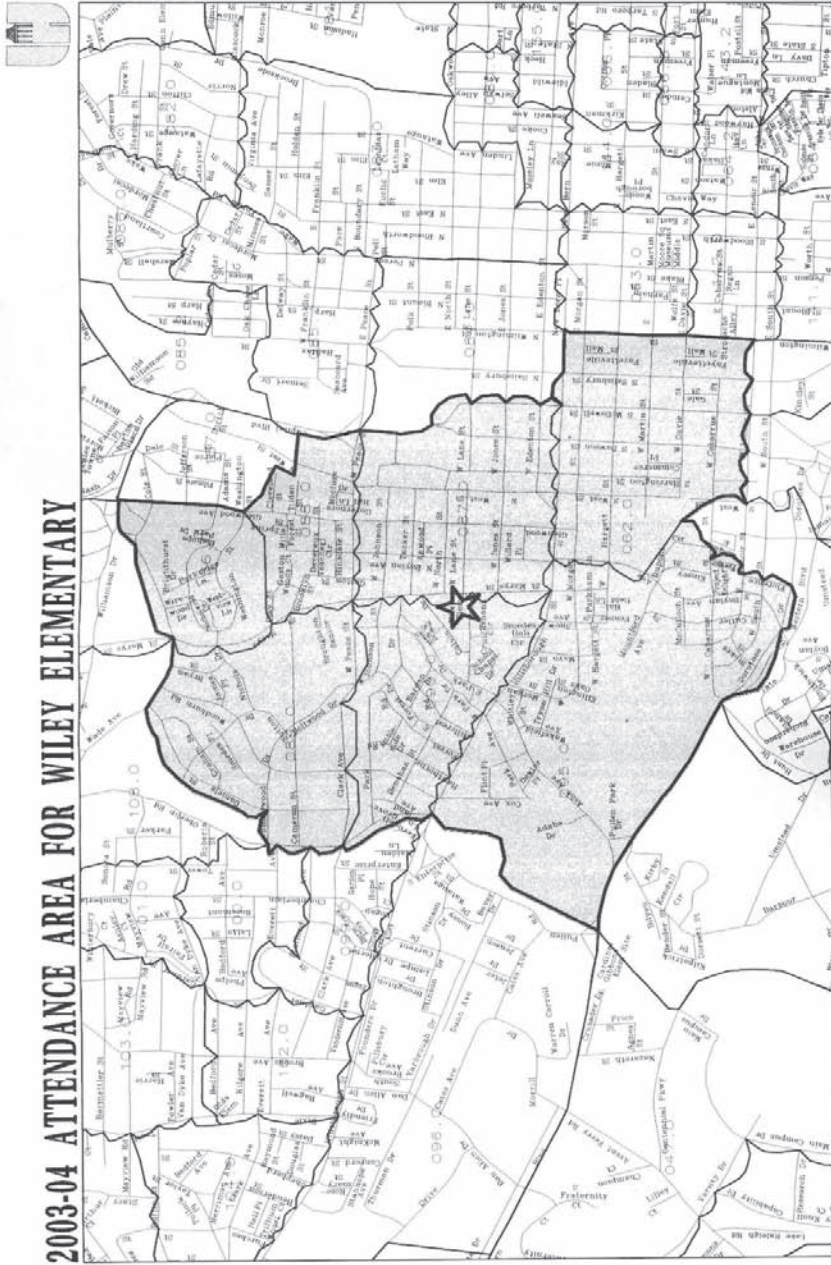
FIGURE 2.11. 2003–2004 attendance area for Wiley Elementary. We've already seen this map in the introduction. The intersection of St. Marys and Hillsborough streets is two blocks below the star in the middle of the attendance area. (*Source:* Wake County Public School System)
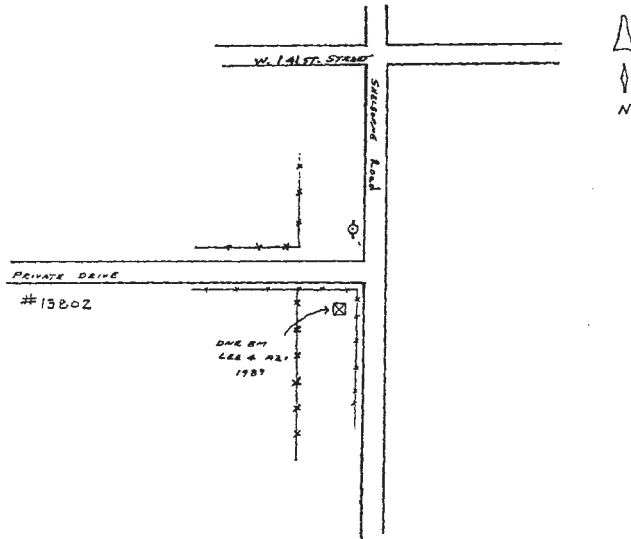
FIGURE 2.12. Location of a survey monument. This map posts the location of a survey monument in Clay Township, Hamilton County, Indiana. Set in the top of a concrete post just below the ground, it doesn't get much more concrete than this brass tablet stamped "LEE 4 AZI 1989." (*Source:* Indiana Department of Natural Resources, Division of Water)

of conceptual content (like temperature, intersection, or survey monument), which we imagine existing on a *content plane,* and some expressive element (a dot, crossing lines, an X), which we imagine existing on a *plane of expression.* As implied in the last chapter, the content aspect of a sign is what has been called the *signified* (because it's what the sign signifies) and its correlated expression as the *signifier* (because it "carries" the sign). As the *correlation* of a conceptual thing and a mark, the sign itself is without material form (the sign is the *relationship*). Only *signifiers* have physical existence. These days, however, it's common to talk about the signifier as though it were the sign in material form; and so by sign plane to refer to the plane of expression, where signifiers include the marks themselves together with whatever style, technique, or syntactic structure they may exhibit.[33] Since postings are expressed as signs, signs are the *what* out of which maps are finally made, and as such are the subject of the next two chapters. But because the *work* postings do is carried out in the sign plane of the map, some understanding of it is necessary now.

Sign planes—again, planes of expression—take a variety of forms. This text page is a sign plane. So is a photograph. The surface of a painting is a sign plane. So is a piece of graph paper. The significance of *where* something is on a sign plane depends on the sign plane in question. On most landscape photographs, for example, higher means farther back in space. On most pages of English text, it means expositionally prior, in narratives often chronologically prior. But sign planes can be explicitly indexical. On the Cartesian plane, for instance, location points to the plane of real numbers, as on the complex plane it points to the plane of complex or imaginary numbers. The sign plane of the map is unique in the nature and degree of its indexicality. Locations on it point to locations on the earth's surface (or some analogue of the earth's surface), but at the same time they establish an equivalence

between them and any instantiations of conceptual types at those locations. That is, thanks to the special logic of the posting—in which space and meaning are indivisible—*this is* not only *there,* but *there is this.*[34]

Most maps consist of hundreds, of thousands, even hundreds of thousands of postings. Similar *this*es can be located at more than one *there* (e.g., 25°Cs could be posted at many different locations), and different *this*es can be posted at a single *there* (e.g., temperature, wind speed, and other things can be posted at a common site). The postings and the linkages among them create and comprise the territory of the map, the territory that becomes the subject of the map's social and political action.

Postings form linkages through the circulation of meaning in the sign plane. The logic is graphic and quasi-set theoretic. Coincidence of *there*s, for instance (as the intersection of St. Marys and Hillsborough is coincidentally in the attendance area for Wiley Elementary, the City of Raleigh, Wake County, North Carolina, and the United States), affords and affirms educational, political, cultural, religious, scientific, and other authority over the territory and its constituent *this*es. A collection of *this*es, on the other hand, can lead to the articulation of new *this*es and so new *there*s (as Raleigh, Durham, and Chapel Hill, say, morph into the Triangle). Elsewhere Fels and I have described the logic of these operations in a mix of diagrams and algebra, while John Krygier and I have laid them out in what is essentially a comic book.[35] Here I essay it again in a more discursive register.

"This Is . . .": The Precedent Existential Proposition

Every proposition expressed in the sign plane of the map embeds a fundamental, ontological proposition inside a locative one. The locative proposition, *this is there,* nestles within it the ontological proposition, *this is.* Mapmakers have often disclaimed any prerogative with respect to this precedent existential proposition, but in fact it is precisely here where the map's ability—and propensity—to bring a world into being resides. The mapmaker's autonomy here is unlimited. This is obvious in maps like those of More's Utopia, de Scudéry's *Carte de Tendre,* and Stevenson's *Treasure Island,* and little less so in maps of the "continent" of California, the Great American Desert, and the open polar sea. But in fact it is no less so in realizations of the geo-body of Thailand, U.S. political polarization, Pakistani mountain ranges, U.S. rivers and national parks, temperatures in the Galápagos, street intersections in Raleigh, and survey monuments in Hamilton County, Indiana, *all of which,* as we know, are no more than instantiations of conceptual types.

But then what else could the things be on maps if not conceptual types? There will be streets on the map, and a river, a park, some houses, and a church. "Street," "river," "park," "house," and "church" are all categorical types that reside in some sort of "conceptual space," "conceptual universe," "content space," "content plane," "plane of content," "semantic field, or "semantic cloud." "Cloud" captures a sense of the jumble infesting these domains of meaning where "church," for instance, has at once the sense of a *building* (in fact, of a building *type,* a public building, especially for Christian worship), the *clergy* of a religious body, a *congregation,* a *denomination,* and even all of these taken together—buildings, congregants, clergy, doctrine, ritual—and all of it infected with direct experience, with mediated imagery.

In our comic book Krygier and I attempted to capture this in an image (Figure 2.13). The clouds have rolled back for a moment, permitting us a glimpse of the jumble within. In the center, at least in this view, is the white spire of a New England church, but St. Peter's looms above it, a Greek temple stands below. There are priests and choir boys, cathedrals, a sacrifice, Hagia Sophia, a mosque . . .

"House," "park," "river," "street," each is a type exactly like "church," and to the extent that it's differentiated from other types—house from church, street from river—it can be given existential claim and expression in the map. *This is,* the map says, and *this is,* and *this is,* the existence of each entity affirmed by its presence on the map. It's precisely this characteristic that Berry, Kivelson, Brückner, and others in the last chapter were getting at, the way a map by *insisting* on the existence of something can help make it real, *especially* if it's repeated often enough, as the map of the nation was in 16th-century Japan, in 17th-century Russia, or in the young United States where, it's worth remembering, maps of the new nation decorated the walls of American homes and schools, were integrated into textbooks and didactic puzzles, and displayed in public offices, coffee houses, and taverns.[36] In a slightly
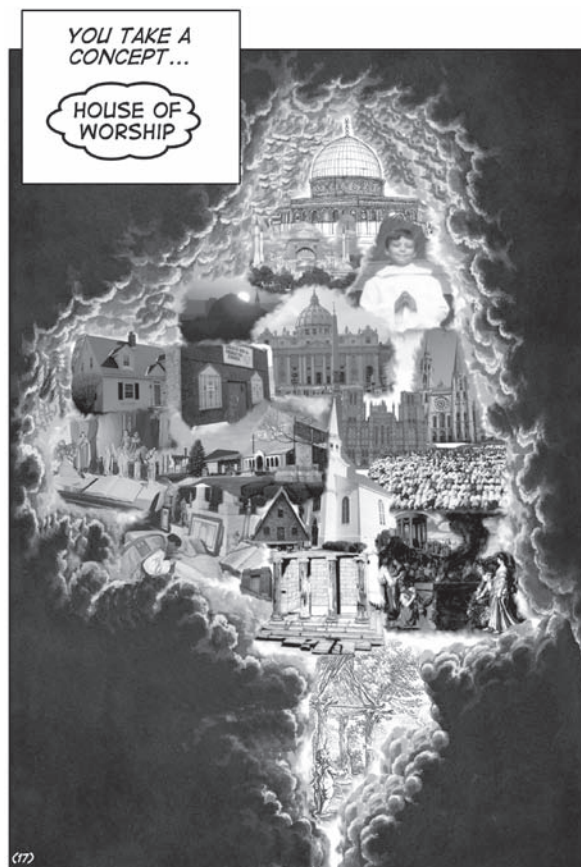

FIGURE 2.13. The semantic cloud. A conceit, an attempt at visualizing, part of the jumble of concepts clustering around "church," buildings, congregants, doctrine, ritual, mediated imagery, direct experience.

different key the same might be said of continental drift, the hole in the ozone, the thermohaline circulation . . .

"This Is There . . .": The Posting
or Fundamental Cartographic Proposition

And what makes the map so capable of evoking this existential presence is the implicit challenge: *you don't believe it? Go check it out!* Who would pose such a challenge unless they knew they were right? And this is such a reasonable assumption that instead of checking, you just accept the map, for to express a content element in the cartographic sign plane *it has to be given a location* in that sign plane.[37] It's this that turns the precedent *existential* proposition into the fundamental *cartographic* proposition, this that makes it a *posting*. The *this* is now no longer *a* street or *a* river or *a* church but *that* street, *that* river, *that* church. *This* is no longer a *type* but the concrete and specific *instance* of a type, that is, not simply *this,* but $this_1$. For an instance of a type to enter into the cartographic sign plane, its existence must be proposed *simultaneously* as a valid conceptual *type* and as an actual and undeniable *instance* of that type.[38]

However, in order for $this_1$ to be materialized on the sign plane of the map, it must be manifested as a sign. That is to say that the *type* in its content cloud must be wed to a signifier, to a mark, existing on the plane of expression. One way of thinking about the plane of expression is as a manifestable version of our semantic cloud, and Krygier and I attempted to capture this in an image too (Figure 2.14). Again the clouds have rolled back to permit us a glimpse of the jumble within. In the center, at least in this view, is a cross, but related marks surround it. Above there's a crescent, below a Star of David. Toward the top there's a single stroke that could be wed to the concept, "the one-ness of God."

The mark we went with—it's the one in the center—embodies the *sign* "church," but on the map the cross on its plinth incarnates *an actual church,* Immaculate Conception, 414 East North Broadway, in Columbus, Ohio, right beside Immaculate Conception School, 366 E. North Broadway, the school marked here—*signed* as we say casually—by an L-shaped block surmounted by a flag, the sign—again as we say casually—for schools on USGS topo sheets (Figure 2.15). The streets are here too—the double lines—and there's a park not far away, Brevoort, and in the other direction another, Clinton, along the Olentangy River. Together the marks bring a place into being, Clintonville, to which each mark contributes more than at first may be apparent. The small black cross on its plinth asserts that $this_1$, Immaculate Conception, exists; that it is located $there_1$, at 414 E. North Broadway; that $this_1$, Immaculate Conception, is a legitimate instance of Conceptual Type A, a church; and that churches, Conceptual Type A, have a viable claim to existence in the first place (this is the precedent existential proposition). Moreover, and the point is easily overlooked, the posting equivalently asserts that $there_1$ exists, that it is the unique locale of $this_1$, that $there_1$ is a legitimate instance of another conceptual type, *location,* and that this conceptual type too has a claim to exist.

That is, in proposing that *this is there,* the "*is*" functions as a statement of equivalence, as an = sign. The posting establishes an equivalence between the *this* and the *there* by expressing them in the sign plane indissolubly.[39] Through the posting
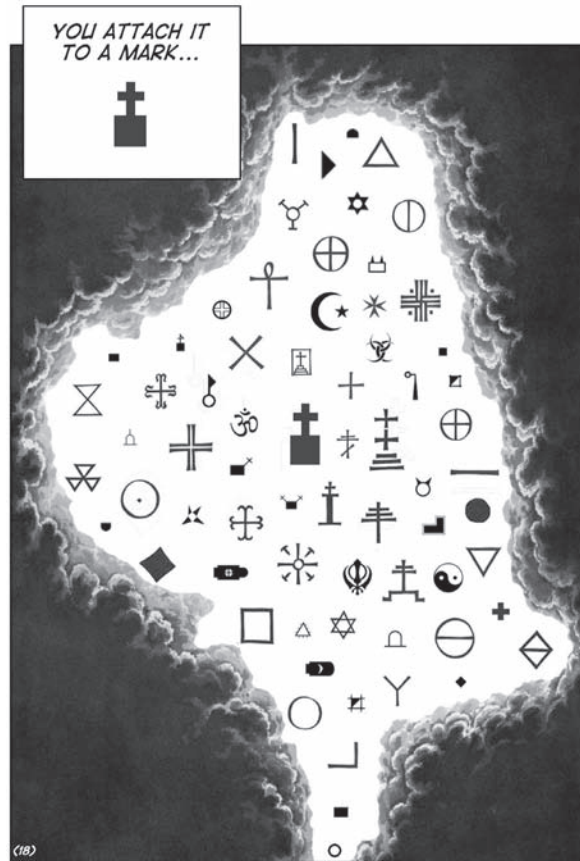
FIGURE 2.14. The cloud of expression. Again a conceit, an attempt at visualizing, part of the jumble of *marks* conventionally associated with the concepts clustering around "church," various crosses, stars, crescents, mystical signs, some perhaps wholly idiosyncratic.

the *this* acquires *thereness,* a quality or condition of being somewhere, as the *there* acquires *thisness,* a quality or condition of being something. Here *thisness* and *thereness* are inseparable: *this$_1$ is there$_1$* and *there$_1$ is this$_1$*.[40]

Adding Postings Up to Make Territories: "This$_1$ is there$_1$" and "this$_2$ is there$_2$" and "this$_3$ is there$_3$" make "this$_4$ is there$_4$"

Since each posting embodies a *there* as well as a *this,* each invests its own space in the map, and collectively these comprise the map's territory, which is yet another *this.* To the extent that the river, the parks, the street, and the church are material, all are extended. If the spatiality of the river, the parks, and the streets is obvious, the spatiality of the church is no less real (the church is *not* a point): there is the church building proper; its lawn; the ample parking (it's where they hold the annual festival); the adjacent Marian Center—it has the same address—with its meeting rooms
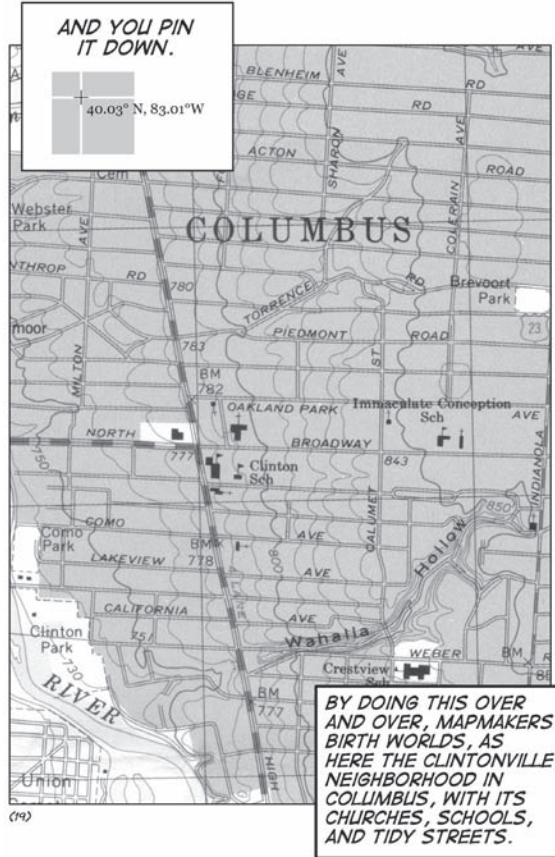
FIGURE 2.15. Incarnated in the mark, the church on the map. Here, right center, the mark incarnates the concept "church," pointing in the act to *an actual church,* Immaculate Conception. (*Source:* USGS map)

and banquet facilities; the landscaping with its picturesque sites for photographs; and the church's gym. There's a school too (with 500 students), and if it's a thing unto itself—another conceptual type, its own sign, its own mark, its own *there*—in fact it's attached to the church, they share parking, they comprise a campus.

Just so river, parks, streets, church . . . and school . . . and the other schools, Clinton, Crestview, and the other churches, and the houses comprise a neighborhood, Clintonville, which with other neighborhoods comprises a city, Columbus, which with other cities . . . and so forth. Although the territory of the map appears as a given, actually it was built *through* maps, lots of them. In fact, like so much of the modern world Clintonville was born on a map, when, following the Land Ordinance of 1785 and the Northwest Ordinance of 1787, the United States carved out of former Wyandotte and Shawnee Indian territory a number of large chunks, the Seven Ranges, the Donation Tract, the United States Military District, the Refugee Tract, Congress Lands, and others. These were all laid out—that is, mapped—according to the new rectangular federal survey. This divided land into tracts known as townships, squares that were 6 miles on a side. Clinton was a township laid out in

the United States Military District where Clintonville became its center in 1847 when the U.S. Post Office employed a postmaster to open a post office there. Clintonville's subsequent history was also one of maps, first of subdivision—into Crestview, Walhalla, Dominion Park, Northmoor, Webster Park, Northridge, Overbrook, Rosemary Park, Indian Springs, and 70-some others—and then annexation—into Columbus—which in 1974 created the Clintonville Area Commission. This Commission represents the Clintonville community in discussions of community concerns and is itself subdivided into nine districts.

At one level the postings are obvious. In the case of the Clintonville Area Commission each district is posted, appearing on the map of districts as a little island bounded by streets, the river, or the railroad tracks. Territories like these do not materialize out of or consist of thin air. For a territory to materialize as a posting in its own right, it has to be built up from constituent postings. Many postings participate in the construction of a territory. In the case of the original Clinton, it was all the federal surveyors' field notes that were posted to the original map, that is, that were plotted to the original plat. These notes consisted of propositions—that is, of assertions—that a line originating at a given station and having a given bearing had a certain length which, in the Ohio country of the late 18th century, would have been given in chains, Gunter chains as they're still called, of which there were 480 to the side of a township. Surveyor's notes were recorded in columns, three at least, the first of which recorded the station number, the second the bearing, and the third the number of chains (Figure 2.16). At the conclusion of work, the surveyor plotted these notes to create a plat—that is, posted his propositions to make a map—which once filed with a district land office permitted the land to be patented, which is to say, to be sold.[41]

The township of Clinton materialized out of these postings, which is merely to point yet again to the active role mapping has played in constructing, not reflecting, the landscape. The surveyor proposes the existence of Clinton Township. The land is patented and sold, and a life unfurls entirely unlike that of the Wyandotte and Shawnee who'd previously inhabited the land. The countless postings of the surveyor *precede,* they do not follow, the birth of Clinton. The postings add up, they construct, they perform the territory. Every territory is built this way.

The Transmission of Authority: "This$_1$ is there$_1$," and "this$_2$ is there$_2$," but "there$_1$ < there$_2$," so therefore "this$_1$ < this$_2$"

The transmission of authority is what maps are *about.* You live at the intersection of Hillsborough and St. Marys ("*This$_1$ is there$_1$*"), and the Attendance Area for Wiley Elementary is bounded by Western Boulevard and Wade Avenue and Pullen Drive and Capital Boulevard ("*this$_2$ is there$_2$*"), but the intersection of Hillsborough and St. Marys lies within the Attendance Area for Wiley Elementary ("*there$_1$ < there$_2$*"), so therefore your kid will go to Wiley ("*this$_1$ < this$_2$*").

This operation accounts for much of the power of the map. Dalton and Esker Preddy used to live in Wake County where they sold tomatoes, peaches, and okra out of their garage. Then they were annexed by the City of Raleigh. Shortly thereafter, acting on a complaint, zoning inspectors informed the Preddys that unless they closed their stand they'd face a fine of $100 a day. "Retail sales are not allowed in

from the Traverse Table, which is merely the tabulated results of the foregoing method for given courses.

Field Notes. The field notes are kept in a book provided for the purpose. The page is commonly ruled in three columns, in the first of which is written the number of the station; in the second, the bearing of the side; and in the third, the length of the side.
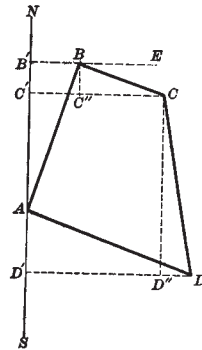
FIELD NOTES

1	N. 20° E.	8.66
2	S. 70° E.	5.00
3	S. 10° E.	10.00
4	N. 70° W.	10.00

FIG. 39

To obtain the field notes, say of field *ABCD* (Fig. 39), place the compass at *A*, the first station, and take the bearing of *AB* (p. 12); suppose it to be N. 20° E. Write the result in the second column of the field notes opposite the number of the station. Measure *AB* = 8.66 chains, and write the result in the third column of the field notes. Place the compass at *B*, and, after testing the bearing of *AB* (p. 13), take the bearing of *BC*, measure *BC*, and write the results in the field notes; and so continue until the bearing and length of each side have been recorded.

Computation of the Area. The survey may begin at any corner of the field; but, for computing the area, the field notes should be arranged so that the most eastern or the most western station shall stand first. For the sake of uniformity, we shall always begin with the most *western* station and keep the field on the *right* in passing around it.

FIGURE 2.16. Surveyor's atomic propositions. This is a page from a 19th-century surveyor's manual, G. A. Wentworth's 1882 *Surveying and Tables.* In the little table, "Field Notes," are examples of the most *atomic* sort of posting: given a bearing, from a point (the "station"), a distance. Actual field notes were hand-written, usually in pencil.

residential zoning districts," said Hardy Watkins, the zoning inspectors' supervisor. "It's really that simple."[42] Here Hillsborough and St. Marys is replaced by the Preddys' address on Millbrook Road, and the Attendance Area for Wiley by the residential zoning overlay. It's not a school board drawing the maps here but a planning department operating under the authority of a city council, and if it weren't that it would be something else.

On this or another map *every* posting is coincident with a *host* of other postings, with a planning district to begin with and with elementary and middle and high school districts, usually with a subdivision and here in Raleigh with a CAC—a Community Action Council—and a fire district, a precinct to vote in, and then all the *this is there*s for which you can cast ballots, city council districts, and school board districts, and state legislative districts, judicial districts, congressional districts, and state and federal senatorial districts; probably a bunch of parishes for the denominations that still bother with them, soil conservation districts, all the political units,

city, county, state, nation; and all the service districts and routes: mail, UPS, newspaper, electrical, phone, cable, water, gas, sewerage.

Coincidence can entail constituency. Raleigh, Wake County, North Carolina, and the United States are all coincident, but North Carolina is *constituent* to the United States, Wake County to North Carolina, and Raleigh to all three. Coincidences of location embed constituencies in hierarchical layers of authority.[43] Hierarchies can, of course, be constructed without maps, but nothing like modern hierarchical *territories* existed before political authorities began their mapmaking. Modern hierarchical territories are hard to imagine without maps. Maps are the indispensable instruments of their construction.

The authority doesn't have to be political; it can be taxonomic. Constituent territorial hierarchies are the inescapable hallmark of all systematic spatializations of the *natural* world. Take Robert Bailey's *Ecoregions of North America* (Figure 2.17). At a superordinate, or "continental" level, sprawl four great ecoregion *domains*: polar,
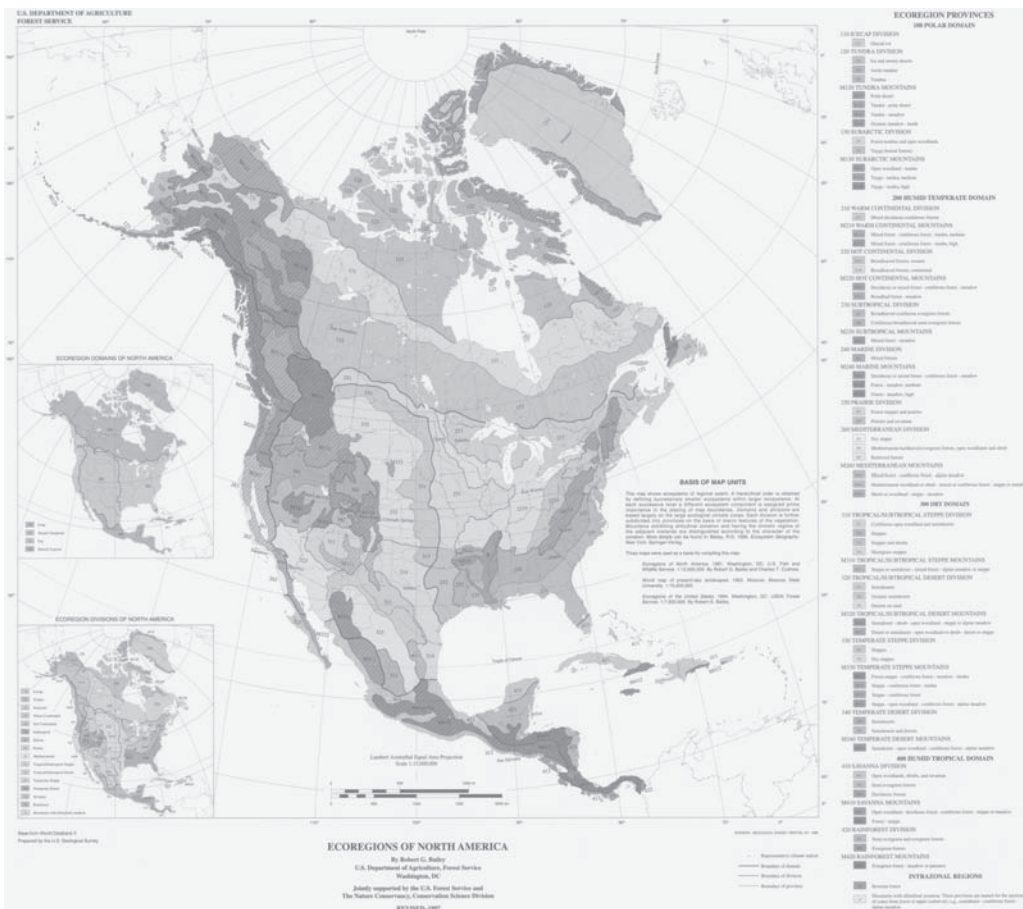

FIGURE 2.17. Bailey's *Ecoregions of North America.* The small inset, upper left, posts the four ecoregion domains, the inset below it the 15 ecoregion divisions, and the main map the 62 ecoregion provinces, each smaller ecosystem defined within a larger: coincidence. (*Source:* USDA National Forest Service)

humid temperate, dry, and humid tropical. At an intermediate, or what we might think about in a political framework as the "national" level, the domains are broken down into 15 *divisions* that run from ice cap to rainforest. At a "state" level these divisions are divided into 62 *provinces*: glacial ice, taiga, mixed deciduous, meadow, coniferous open woodland, evergreen forest, and so on. Though the scale of *Ecoregions of North America* is too small for them to be shown, Bailey's provinces are divided at a "county" level into *landscape mosaics* based on landform differentiation; and at what we might think about as a "town" level into *sites* based on edaphic-topo-climatic differentiation. Bailey is explicit about the system's hierarchical structure:

> This map shows ecosystems of regional extent. A hierarchical order is obtained by defining successively smaller ecosystems within larger ecosystems. At each successive level a different ecosystem component is assigned prime importance in the placing of map boundaries. Divisions and domains are based largely on the large ecological climate zones. Each division is further subdivided into provinces on the basis of macro features of the vegetation.[44]

Defining "successively smaller ecosystems within larger ecosystems" is essential, since it's the only way to ensure spatial registration from a lower level to one above; and though imperfect registration might seem more "ecological," it would produce an unseemly taxonomy.[45] Besides, this way climate can exert a puissant authority on the lower levels, as though climate itself hadn't been constructed—from the very beginning—out of individual postings of temperature and rainfall, which is to say, from the bottom up. It's from the uncountable postings of weather stations that the climatic regions were constructed in the first place. The individual postings preceded, they did not follow the construction of regions (Figure 2.18).

Despite Bailey's dependence on landforms, vegetation, and climate, his hierarchical classification is not to be confused with Fenneman's physiographic regions, Merriam's life zones, Küchler's classification of potential natural vegetation, or Köppen's classification of climate, though all are similarly structured as hierarchical territories.[46] But then few of the life and none of the earth sciences is without its spatialization, and every one of them is similarly structured, from soils (orders, suborders, great groups, groups, families, and series, in one scheme) to languages (phylum, branch, family, groups, complexes, ditto). Scientific hierarchical territories are impossible to imagine without maps. In fact, maps are the *indispensable* instruments of their construction.

Annexation, Division, and Entrained Operations

Other operations too can stir the circulation of meaning in the sign plane of the map. Because *this*es are instantiations of conceptual types, disjunct *there*s embracing *this*es of a common type can be fused into a greater *there* consuming both. Fels and I have pointed to the example of Alfred Wegener's recognition of identical fossils (that is, of common conceptual types, and so of related *this*es) in South America and Africa (disjunct *there*s) and the construction of the embracing *there* that Wegener called Gondwana; as well as to the way this syntactic procedure has been used to justify territorial appropriation, as when Germany, recognizing Germans (that is, a common conceptual type, and so related *this*es) in both Germany
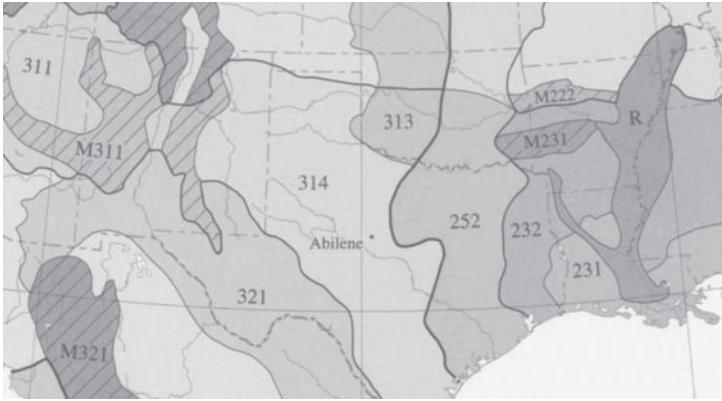
FIGURE 2.18. Detail from Bailey's *Ecoregions of North America.* Here in this detail of the Texas–Louisiana region you can see the effect of the scheme's perfect registration: borders are firm, and each province coincides perfectly with the borders of the divisions and the domains above it. (*Source:* USDA National Forest Service)

and Czechoslovakia (disjunct *there*s), annexed the Sudetenland in 1938 (to create a greater *there*).[47] The process can also operate in reverse, as when in 1918 Czechoslovakia was originally *carved* from the Austro-Hungarian Empire or, later, in 1992 when it was cracked into the Czech Republic and Slovakia. Couldn't all this cutting and pasting have taken place without maps? Perhaps, but as it happened they required the full apparatus of the modern state, and, as we've seen elsewhere, the maps themselves were anything but disinterested spectators. Indeed they were critical resources, the crucibles in which the decisions were annealed, and the forms in which they were finally embodied. Procedures like these are hard to imagine without maps.

Operations can also be entrained. In fact they usually are. The case of the Preddys is exemplary, where (1) their subjugation to Raleigh zoning ordinances (2) followed their annexation by a city in a county, (3) both of which had been built up out of postings over numbers of years. Indeed, Wake County and the City of Raleigh materialized from postings in a process that began hundreds of years ago but that very much continues into the present. Even as I write, for example, Wake County is reposting its border with Franklin County. One reason for this is that in 1915 when the border was last posted, the surveyor's propositions included terms—trees, stones, fence posts—that no longer exist, which means that the propositions can no longer be tested, that is, neither denied nor affirmed. A more immediate cause, however, was the decision a couple of years ago to jog the border around a handful of lots misposted by the errors of contemporary surveyors, that is, around lots that had been posted to Wake County in accordance with propositions the counties subsequently came to deny. Rather than repost the lots to Franklin, the counties agreed to jog the border—that is, to repost it—*around* the lots. But while jogging the border, assessors and surveyors uncovered further irregularities and decided it was time to resurvey the entire line and *undo* the jog. Elsewhere in North Carolina the borders of Guilford, Orange, and Alamance counties are being reposted, and nationally the situation is common.[48]

Of course, each of the lots moved from one county to another will find itself embedded in a different territorial hierarchy; that is, their school districts, electoral districts, and so on, will have changed, just as the Preddys found themselves in a different zoning district when Raleigh reposted its border switching them into the city, a reposting the city carried out having recognized that the part of the county the Preddys lived shared a conceptual type with other *this*es inside the city, namely, similar demands for services. This reposting of lines is itself caught up in the hierarchical structure in which the counties are embedded: the new border will have to be approved not merely by the commisioners of Franklin and Wake but by the North Carolina General Assembly, for like Bailey's ecoregions, successively smaller units of government are defined within larger units of government (to ensure a more perfect union, *I mean,* registration).[49]

It is this ceaseless circulation of meaning within the sign plane of the map that makes the map the potent instrument for management that it is. Its ability to present ontological propositions (such as the existence of counties, zoning districts, ecological domains) as locative ones (that are located *here*) gives the map an unrivaled ability to transform desires, guesses, suppositions—you name it—into facts, facts the map then composes into territories that it hierarchically layers to permit the transmission of authority along with all the rest of the combinatorial legerdemain this opens the door to.

But this constitutive, this, as it were, almost juridical function of the *posting,* is complemented by the often even more potent connotative power of the *signs* through the medium of which the postings themselves are realized, and it is to this *signifying* power of the map that I turn to now.

Signs in the Service
of the State[1]

Spread out on the table is the *North Carolina State Transportation Map and Guide to Points of Interest* (Figure 3.1). It happens to be the 1978–1979 edition. Not for any reason: it just came to hand when casting about for an example. If you don't know this map, you can well enough imagine it, a sheet of paper—nearly 2 feet by 4 feet—capable of being folded into a handy pocket- or glove compartment-sized 4-by-7 inches. One side is taken up by a message of welcome from the governor, a motorist's prayer ("Our heavenly Father, we ask this day a particular blessing as we take the wheel of our car . . ."), a ferry schedule, and an inventory of "points of interest" illustrated with photos of, among other things, a scimitar horned oryx (resident in the state zoo), a Cherokee woman making beaded jewelry, a ski lift, and a sand dune (but no cities).[2] On the other side North Carolina—hemmed in by margins of pale yellow South Carolina, Virginia, Georgia, and Tennessee, and washed by a pale blue Atlantic—appears as a meshwork on white of red, black, blue, green, and yellow lines, thickened at the intersections by roundels of black or blotches of pink. There is something about it of veins and arteries seen through translucent skin, and if you stare at it long enough, you can even convince yourself that blood is pulsing though them. Constellated about this image, in what Fels and I have called the perimap, are larger scale maps of the Blue Ridge Parkway and ten urban places, an index of cities and towns, a highly selective mileage chart, a few safety tips and . . . yes, a legend (Figure 3.2).[3]

The Legends of the Map

It doesn't *say* it's a legend, but it is one all the same. What it says is: "North Carolina Official Highway Map 1978–1979." To the left is a sketch of the state flag aflutter; to the right a sketch of a cardinal (state bird) on a branch of flowering dogwood (state flower) above a honeybee arrested in midflight (state insect). Below these, four
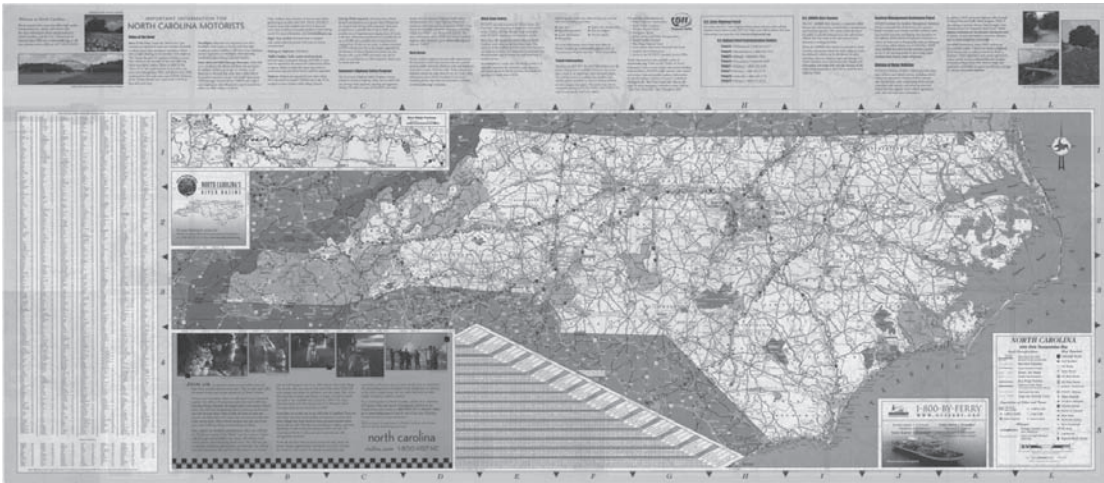
FIGURE 3.1. *North Carolina 2006 State Transportation Map.* I'm showing you North Caro-
lina's 2006 version of its highway map to demonstrate how little things have changed (the
rest of the illustrations come from the original 1978–79 version). True, they *have* added an
inset of the state's river basins; and they've left the state flag, tree, bird, and insect off the
legend. And everything's been updated. But in the end . . . it's the same old map. (*Source:*
North Carolina Department of Transportation)

headings in red—"Road Classifications," "Map Symbols," "Populations of Cities and
Towns," and "Mileages"—organize collections of marks and their verbal equivalents
(thus, a red dot is followed by the words "Welcome Center"). I will return to these
in a moment, but, for the sake of completeness, it should be noted that below these
one finds graphic and verbal scales (in miles *and* kilometers), as well as the pendent
sentence, "North Carolina's highway system is the Nation's largest State-maintained
Network. Hard surfaced roads lead to virtually every scenic and vacation spot."

Clearly this legend—to say nothing of the rest of the map—carries a heavy bur-
den, one that reflects aggressively the use*s* to which this map was put. The plural
is stressed because it's a fact less overlooked than ignored, denied, suppressed, for
certainly the first and primary "user" in this case was the State of North Carolina—
no surprise given the history of mapmaking—which *used* the map as a promotional
device, as an advertisement more likely than many to be closely looked at, even
carefully preserved (because of its other uses); and so one given away at Welcome
Centers just inside the state's borders, at Visitor Centers elsewhere, from booths at
the State Fair, and in response to requests from potential tourists, immigrants, and
industrial location specialists.[4] This is all perfectly obvious in the "Guide to Points
of Interest" and the selection of photographs that decorate it (unless that's back-
wards, and the "Guide" is first of all a way of *justifying* the photographs, like text in
a *National Geographic*), but it's no less evident in the legend itself.

Nor is it just a matter of the inescapable presence of the state flag, flower, bird,
and insect—though here they are in children's encyclopedia colors[5]—but primarily
of what *else* the mapmakers have chosen for the legend and the ways they have cho-
sen to organize it, for more than one principle of order operates under even seem-
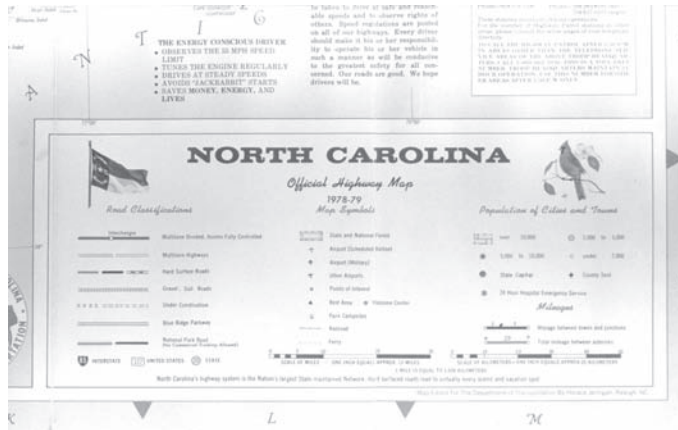
FIGURE 3.2. Transportation map detail. The legend block from the *1978–79 North Carolina State Transportation Map and Guide to Points of Interest.* Again, it's too bad you can't appreciate the color. (*Source:* North Carolina Department of Transportation)

ingly straightforward subheadings such as "Populations of Cities and Towns."[6] It's conventional to pretend, as Arthur Robinson does, that "legends or keys are naturally indispensable to most maps, since they provide the explanations of the various symbols used,"[7] but that this is largely untrue hardly needs belaboring. Never the case historically, even today legends are more often dispensed with than not, and they never provide explanations of more than a fraction of the "symbols" found on the maps to which they refer. The fact that legends accompany neither topographic survey sheets (and the fact that the separately available one is incomplete) nor the plates of most atlases makes this perfectly plain. That legends do exist for these maps, *some*place in the book, or by special order, only serves to underscore through their entirely separate, off-somewhere-else character exactly how dispensable they are.

Nor is this dispensability due to the "self-explanatory" character of the map symbols, for though Robinson might insist that "no symbol that is not self-explanatory should be used on a map unless it is explained in a legend,"[8] the fact is that NO symbol explains itself, stands up and says, "Hi, I'm a lock," or "We're marsh," anymore than the words of an essay bother to explain themselves to the reader. Most readers make it through most essays and maps because as they grew up into their common culture they learned the significance of most of the words and map symbols. Those they don't recognize they puzzle out through context, simply skip, or ask somebody to explain. A few texts come with glossaries, though like map legends these are rarely consulted and readily dispensed with. But this familiarity with signs on the part of the reader never becomes a property *of the mark*; even the most transparent sign is opaque to those unfamiliar with the code.

It is not, then, that maps don't need to be *de*coded; but that they are by and large *en*coded in signs as readily interpreted by most map readers as the simple prose into which the marks are translated on the legends themselves. For at best legends less "explain" the marks than "put them into words" so that should the *words* mean nothing the legend is rendered less helpful than the map image itself, where

at least the signs have a context and the chance to spread themselves a little (as anyone who has "read" a map in a foreign language can attest). One way to appreciate this while approaching an understanding of the role legends *actually* play is to take a look at those signs on maps that don't make it onto the legend, of, for instance, this *North Carolina Official Highway Map.* Concentrating for the moment on the map image of the state proper, ignoring, that is, the little maps of the state's larger cities, the inset of the Blue Ridge Parkway, the mileage chart (the instructions for which do happen to be pasted over the map image proper, though over South Carolina, just below Kershaw); the guide to other transportation information sources; the borders and rules; and the letters, numbers, and other marks that facilitate the operations of the index of cities and towns—though to pretend that any of this is half as self-explanatory as the signs of the map image is to miss how laboriously we have learned to interpret the architecture of this sign plane, how much we have come to take for granted—still, ignoring all this, and all the words, and somehow managing to overlook that logo of the North Carolina Department of Transportation floating on the Atlantic some 20 miles due east of Cape Fear, it is nevertheless the case that at least 18 signs deployed on the map image *do not appear on the legend.*[9] That's half as many as do.

Why don't they? It's not, certainly, because they're self-explanatory. No matter how many readers are convinced that blue naturally and unambiguously asserts the presence of water, or that little pictograms of lighthouses and mountains explain themselves, signs are *not* signs for, dissolve into marks for, those who don't know the code. *Look* at these: where, in the eyes and eyebrows of Mt. Sterling, can anyone see the mountain (Figure 3.3); or in the pair of upended nail pullers the lighthouse at Cape Fear (Figure 3.4)? Nor is there anything more "self-evident" about the use of blue for water. Not only historically has water been rendered in red, black, white, brown, pink, and green,[10] but it disports in other colors on the obverse of this very map: in silver and white on the "cover" photo of Atlantic surf; in tawny-pewter in the photograph of fishing boats at anchor; in warm silver-gray in a shot of the moonlit ocean off Wrightsville Beach; and in yellow-green in the photograph of the stream below Looking Glass Falls. Only in the falls, where it indicates shadow, is there blue in any of these waters. This lack of any sort of "necessary" or "natural" coupling between blue and water proves fortuitous, for the color used to represent water on the map *image* does double-duty as background for the sheet as a *whole,* and surely we were never intended to read the circumjacent margin for a circumfluent ocean.[11]
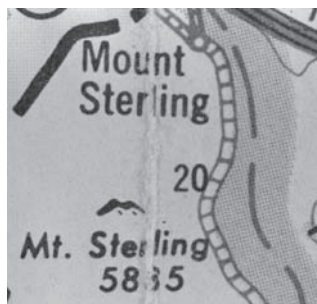

FIGURE 3.3. The eyes and eyebrows of Mt. Sterling. Note the wear along the fold. The map has been folded and unfolded many times. (*Source:* North Carolina Department of Transportation)
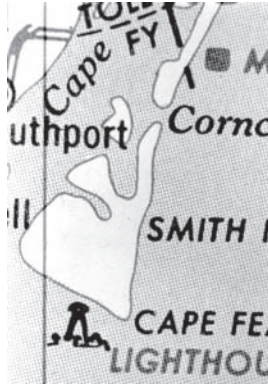
FIGURE 3.4. A pair of upended nail-pullers trying to pass themselves off as the Cape Fear Lighthouse. (*Source:* North Carolina Department of Transportation)

There's no way around it: each of these signs is a perfectly conventional way of saying what is said ("lighthouse," "mountain," "water"), which is why the map *seems* so transparent, so easy to read. But *were* the function of the legend to explain such conventions (or at least translate them into words), then these too would belong on it, as surely as those that are there.

And if these belong there so does the yellow tint used for "other states," the white used for "North Carolina," the thick continuous green-with-dashed-red line that asserts "National Park" and the thick continuous yellow-with-long-short-dashed-black line that stutters "county" (so long as the border isn't along or over water). These all may be equally conventional, but they are less vernacular than the blue for water and so are more likely to be misconstrued, especially on a map on which a long-short-short-dashed-black line mutters "state," a continuous blue line murmurs "coast" or "bank," a fine dashed-red line coughs at "military reservation," a slightly thicker dashed-red line says "Indian reservation," and a still thicker one proclaims "Appalachian Trail." A fine dashed line in black whispers "national wildlife refuge." A continuous line in red hints, in degrees, at the graticule.

Yet whereas all these uncommon signs are absent, *on* the legend we find interpretative distinctions made among the shapes and colors of the road signs of the interstate, federal, and state highway systems. Does the person really exist for whom the graticule is self-evident and yet the highway signs obscure? I doubt it, though I don't doubt that there are many immured in the subtleties of the highway signage system for whom the graticule and its associated cabalism of degrees and minutes constitutes a very deep mystery. What becomes gradually clear is that if the purpose of the legend ever were "explanation," everything is backwards: the things least likely to be most widely known are the very things about which the legend is reticent, whereas with respect to precisely those aspects with which both natives and travelers are most sure to be familiar the legend is positively garrulous.

Garrulous, but not necessarily . . . informative: the signs under the category "Road Classifications" comprise less a system than a yard sale of marks, many of which remain, despite their inclusion on the legend, "unexplained." What is one to make, for instance, of the three marks given for "Hard Surface Road"? Are we to distinguish among solid red, solid black, and cased, dashed blue? Or are these just

three arbitrary ways of designating the same reality? Suggestions of system inevitably evaporate under the heat of attention: about the time you've concluded that red is the color of federal highways, you run down U.S. 74b in black; and by the time you've decided that unnumbered state roads are in cased, dashed blue, you realize you don't have the foggiest idea what these are. There are another three equally vague signs for highways under construction, and another two for multilane highways. There would seem to be an interest in portraying access (controlled or not), jurisdiction (federal, state, county), condition (constructed, under construction), composition (hard surface, gravel, dirt), and carrying capacity (multilane or not) but not *enough* interest to force anybody to confront the graphic complexity implied by a five-dimensional code. Nor is this mess limited to the "Road Classifications" portion of the legend. Of the seven signs under "Populations of Cities and Towns" only four relate to population, and these do so without consistency. The state capital, county seats, and "24-Hour Hospital Emergency Service" have individual designations confusingly related to the signs of population. Thus, the sign for "State Capital" is circular, like the signs for towns with less than 10,000 people; but the "County Seat" sign is a kind of lozenge shape. The sign for "Emergency Service" is a bright blue asterisk.

I can imagine your lips moving as you read this. They're saying, "What a poor excuse for a map! My 5-year-old could do better." But that's not true. Even graduate design students collapse when confronted with a task of this complexity. The design problems alone test them (to say nothing of the map problems), but the political realities wipe them out, especially the (surely anticipated) demands of interagency collaboration (for whereas one side of our map was handled by the Department of Transportation, the other was produced by the Department of Commerce[12]); but also the rigors of pleasing state senators *and* representatives, and the imperatives of manifesting those minuscule but vital tokens of partisanship that distinguish the map of a Republican administration from that of the Democrats. Nor is it such a poor excuse for a map. It's a fair example of the genre. It's indistinguishable, for instance, from the *Michigan Great Lake State Official Transportation Map for 1974,* which makes up for the omission of the state insect by illustrating, *inter alia,* the state gem (greenstone), state fish (trout), and state stone (petoskey); it's a lot less weird than the *Texas–1976 Official Highway Travel Map,* which in an attempt at shaded relief manages only to look . . . badly singed; and it's almost impossible to tell from the (bizarrely enough undated) *Official Vermont Road Map & Guide to Vermont Attractions* of 2008.[13] Nor are any of the North Carolina state transportation maps produced in the years since much of an improvement in this regard, though they may be in others. *All* the maps of the genre, and most other genres as well, are characterized by legends (like this map's) that in a more or less muddled fashion put into words map signs that are so customary as to be widely understood without the words, while leaving the map images themselves *littered* with conventions it taxes professional mapmakers to put into English.

But Then Maps Are Myths

Invariably, the knee-jerk reaction is either to pooh-pooh the examples as bad (as in, "Those are just *bad* maps!") no matter how many times multiplied, or to call for

a revolution in the design of their legends ("Rethinking Legends for State Highway Maps: Visual Perception Considerations"). Both responses completely miss the point. *There is nothing wrong with the design of these legends: they are supposed to be the way they are.* This will be difficult for many to accept, but once it is understood that the role of the legend is less to elucidate the "meaning" of this or that posting than to function as a sign *in its own right,* this conclusion is even more difficult to *evade.* Just as the bright blue asterisk signifies "24-Hour Hospital Emergency Service," so the legend as a whole is a signifier. As such, the legend refers not to the map (or at least not directly to the map), but back, through a judicious selection of map elements, to that to which the map image itself refers . . . *to the state. It is North Carolina that is signified in the legend, not the things posted,* though it *is* the selection of conceptual types and their disposition within the legend box that encourages the transformation of the legend into a sign. It is a sign *only* a mapmaker could fail to understand. Others receive in a glance, naïvely or otherwise, this sign of North Carolina's subtly mingled . . . *automotive sophistication, urbanity,* and *leisure opportunity.* Apprehended this way, the legend makes sense. The headings in red—heretofore so bizarre—appear now as *headlines* to a jingoist text. Under the fluttering flag appear the words "Road Classification*s.*" *Plural.* North Carolina's road system is *so* rich one classification can't handle it. And across the legend, under the bucolic branch *cum* bird (read "rural," read "traditional values") and the bee if you can see it (read "hard working," read "no unions"), the words, "Populations of Cities and Towns." Cities and towns *and* birds and bees.[14] It's almost too much, though as it says on the 1986–1987 edition of this map, "North Carolina has it all."[15]

It certainly has a lot of whatever it is. Look at those road signs! Their proliferation can no longer be seen as a manifestation of graphic and taxonomic chaos, though, but as a sign insisting that roads really *are* what North Carolina's all about. The sign's abundant density supports the presumption of the headline and justifies the proximity of the flag. That there are more signifiers than signifieds is no longer a mystery to be explained, but part of the answer to the question, "Does North Carolina *really* have a lot of roads?" It's the graphic analogue to the assertion in black at the bottom of the legend box that reads: "North Carolina's highway system is the Nation's largest State-maintained Network."[16] What the roads connect, of course, are all those cities. It's wonderful the way it takes seven signs and four lines to unfold the complexities of what one can't help observing is but a four-tier urban hierarchy. Again, it's the graphic equivalent of a remark from the governor's letter on the other side of the map about "booming" cities. Hey: this is a *hip* state (though bucolic), urban, urbane, sophisticated (but built on traditional values). The whiff of sophistication is heightened by the kilometer scale, so *European,* almost risqué (though it's carefully isolated in the lower right-hand corner of the legend under the heading "Mileages"). Roads and cities: roads *to* and *from* cities, that is, exactly the desideratum for someone looking to locate, say, a plant somewhere in the South. Modern, in other words, up-to-date. But as the bird and branch and honeybee remind us . . . *not off the wall.*

And yet it's not all work either. In between, in between moments, in between the roads and the cities and towns, in between the *signs* for the roads and the cities and towns, under the innocuous heading "Map Symbols" (which from its central position also casts its net over all the map signs on the legend), may be found the signs for fun, *clean* fun, *good* clean fun, but still fun: "Park Campsites," "State and

National Forest," "Welcome Center," "Rest Area" and "Points of Interest," to say nothing of the signs for still other ways of getting around, ferries, railroads, and *three* kinds of airports. Led by that bright green forest sign that visually lies at the center of the legend (read "parks"), this heterogeneity speaks of caring for people ("*Welcome* Center," "*Rest* Area") and is the graphic equivalent of the remainder of that black sentence that sums up the legend (and is counterpoised at the bottom against "North Carolina" at the top): "Hard surfaced roads [for which there are three signs] lead to virtually every scenic and vacation spot."

Wow! It's almost overdone. Had it been done up slick by some heavy-duty design firm, it would have been overdone. But here, it's just hokey enough to seem sincere. *It is sincere.* We don't believe for a minute anyone sat down and cynically worked this out, carefully offsetting the presumptuousness of the overheated highway symbolism with the self-effacing quality of the children's encyclopedia colors. But this is not to say that with this legend we are not in the presence of what Roland Barthes has called "myth."

Myth for Barthes is a kind of "speech" better defined by its intention than its literal sense.[17] Barthean myth is invariably constructed out of signs, like ours for the church in Clintonville, like the legend here, signs already compounded out of signifieds and signifiers. An example from a wholly different domain, an especially innocuous one, is given in Barthes's reading of a Latin sentence, *"quia ego nominor leo,"* in a Latin grammar:

> There is something ambiguous about this statement: On the one hand, the words in it do have a simple meaning: *because my name is lion.* And on the other, the sentence is evidently there in order to signify something else to me. Inasmuch as it is addressed to me, a pupil in the second form, it tells me clearly: I am a grammatical example meant to illustrate the rule about the agreement of the predicate. I am even forced to realize that the sentence in no way *signifies* its meaning to me, that it tries very little to tell me something about the lion and what sort of name he has; its true and fundamental signification is to impose itself on me as the presence of a certain agreement of the predicate. I conclude that I am faced with a particular, greater, semiological system, since it is co-extensive with the language; there is, indeed, a signifier, but this signifier is itself formed by a sum of signs, it is in itself a first semiological system (*my name is lion*). Thereafter, the formal pattern is correctly unfolded: there is a signified (*I am a grammatical example*) and there is a global signification, which is none other than the correlation of the signifier and the signified; for neither the naming of the lion nor the grammatical example is given separately.[18]

The parallels with our legend are pronounced. On the one hand, it too is loaded with simple meanings: *where on the map you find a red square, on the ground you will find a point of interest.* But as we have seen, the legend little commits itself to the unfurling of these meanings, even compared to the map image *on which each is actually named,* "Singletary Lake Group Camp" or "World Golf Hall of Fame." The appearance of the red square on the legend thus adds nothing to our ability to understand the map. Instead it imposes itself on us as an assertion that North Carolina *has* points of interest; in fact, it speaks *through* the map *about* the state. Yet, as in Barthes's example, this assertion about North Carolina is constructed out of, stacked on top of, the simpler significance of the red square on the legend, namely, to be identified with the words, "Points of Interest."

We thus have a two-tiered semiological system in which the simpler is appropriated by the more complex. Barthes has represented this relationship diagrammatically (Figure 3.5).[19] In our case, at the level of language we have as signifier the various marks that appear on the legend: the red square, the black-dashed line, the bright blue asterisk. As signified we have the respective phrases: "Points of Interest," "Ferry," and "24-Hour Hospital Emergency Service." Taken together, the marks and phrases are *signs,* things that *in their sign function* are no longer usefully taken for themselves (there is no red square 350 yards on a side at Singletary Lake), but as indicative of or as pointing toward something else (a point of interest called Singletary Lake Group Camp). Collectively, these signs comprise the legend, *but this in turn is a signifier in another semiological system cantilevered out from the first.* At this level of myth we have as signified some version of what it might mean to be in North Carolina, some idea of its attractiveness (at least to a specifiable consumer), a concept signed also in the photos decorating the other side of the map, in the governor's message, in the "Motorist's Prayer," a concept we could call . . . *North Carolinity.* The signifier is of course the legend appropriated from the level of language by this myth to be its sign. Insidiously, this myth is not required to declare itself in language. This is its power. At the moment of reception, it evaporates. The legend is after all only a legend. One sees only its neutrality, its innocence. *What else could it be? It is after all a highway map!*

Indeed. *And so it is.* It is precisely this ambiguity that enables myth to work without being seen, that enables maps of nations, election returns, and this highway map to mask the interests that brought them into being. Perched on top of a primary semiological system, myth resists transformation into symbols, which makes it hard to put into words, hence . . . *hard to talk about.* As a legend or a map or a photograph, it retains always the fullness, the presence, of the primary semiological system to which it is endlessly capable of retreating. What viewed obliquely appears as an advertising slogan, confronted directly is the blandest of legends, so that the slogan, still ringing in one's ears, is apprehended as no more than the *natural* echo of the facts of the map.

It is in this way that *North Carolinity* comes to be accepted as *an attribute of the*
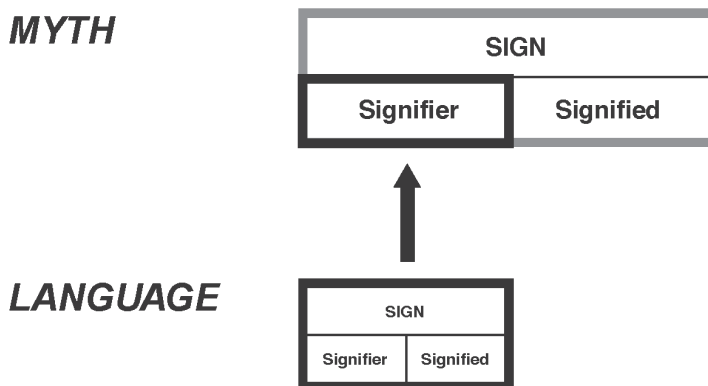

FIGURE 3.5. Barthean tier. Signified and signifier are conjoined in the sign, the whole of which is seized by myth to be the signifier in its second-order semiological system. Barthes cautions that the spatialization of the pattern of myth here is only a metaphor.

terrain instead of being seen as the promotional posture of state government it actually is. This constitutes, in Barthes's phrase, "the naturalization of the cultural":

> This is why myth is experienced as innocent speech: not because its intentions are hidden—if they were hidden they could not be efficacious—but because they are naturalized. In fact, what allows the reader to consume myth innocently is that he does not see it as a semiological system but as an inductive one. Where there is only an equivalence, he sees a kind of causal process: the signifier and the signified have, in his eyes, a natural relationship. This confusion can be expressed otherwise: any semiological system is a system of values; now the myth consumer takes the signification for a system of facts: myth is read as a factual system, whereas it is but a semiological system.[20]

Not seen as a semiological system: this is the heart of the matter. Of all the systems so not seen, is there one more invisible than the map? As we have seen, the most fundamental claim of the map *is to be a system of facts,* and the history of maps has most often been written as the story of their ability to present those facts with ever increasing accuracy. That this system can be corrupted everyone acknowledges: none are more vehement in their exposure of the "propaganda map" than mapmakers who, having denounced the usage, feel but the freer in passing off their own products as anything other than the semiological systems they have no choice but to be.[21] It may no longer appear that an official state highway map is quite such a system of facts as it might have seemed; but this is essentially a consequence of my analysis. Outside of this context, a highway map is accepted as inevitable, as about as natural a thing as can be imagined. Its presence in glove compartments, gas station racks (even if today they must be paid for), and the backs of kitchen drawers is . . . *taken for granted.* Yet as we have shown, even so innocent a part of the map . . . *as the legend* . . . carries an exhausting burden of myth, to say nothing of the *prayer,* the *governor's message,* the *photographs,* and the rest of the perimap.

Nor does the map image proper escape the grasp of myth. On the contrary, it's the more mythic precisely to the degree that it succeeds in persuading us that it's a natural consequence of perceiving the world. A state highway map, for instance, is unavoidably . . . *a map of the state,* that is, an instrument of state polity, an assertion of sovereignty. There was, for example, no need from the perspective of a *driver* to have colored yellow the states contiguous to North Carolina. There was no *real* need to have shown the borders. It's not, after all, as though the laws regulating traffic changed much at the borders, though to the extent that they do, the map is silent.[22] At the level of language the map, like the legend, *seems* to proffer vital information; but it's an impression hard to sustain—*there is too little information to make what's provided useful.* Like the legend, the map in this regard makes no sense. From the perspective of myth, however, this delineation of the state's borders is of the essence. Though many will see in this only the most dispassionate neutrality (what could be more natural than the inclusion of the state's borders on its highway map?), there is nothing innocent about the map's affirmation of North Carolina's dominion over the land in white, for as we know, it is among other things the repetitive impact of the state's geo-body that lends credence to the claims of control—*even 230-plus years after its establishment*—which explains the extensive logogrammatic application of the state's outline to seals, badges, emblems, and maps. The 1.75 *million* copies of the 2007 edition constituted 1.75 million assertions of the state's sovereignty, assertions that at the moment of being noticed had the ability to fade back into the

map where their appearance was taken entirely for granted, overlooked because expected . . . *naturally* . . . part of the surface.

Which is myth's way: the map is always there to deny that the significations piled on top of it are there at all. I mean, it's only a map, and the pretense is that it's innocent, a servant of that eye that sees things as they really are. But as we have seen, outside of the world of maps states carry on a precarious existence. Little of nature, states are much of maps, and only when it is acknowledged how fragile is the existence of an unmapped state, is it possible to comprehend the importance of this repetition of North Carolina's geo-body, or to appreciate—for example—the anger of Tibetans when, as in the *National Geographic* that arrived as I was writing this, their nation is mapped as no more than a part of China.[23] It's not that the map's right or wrong (it's not a question of accuracy), *but that the map takes a stand while pretending to be neutral on an issue over which people are divided.*[24] Nor is it that those angered have confused the map with the terrain, but that they recognize what mapmakers are at such pains to deny, that, like it or not, willingly or unwillingly, because *au fond* maps constitute a semiological system (that is, a system of values), they are ever vulnerable to seizure or invasion by myth. They are consequently in all ways *less like the windows through which we view the world and more like those windows of appearance from which pontiffs and other potentates demonstrate their suzerainty,* not because mapmakers particularly want it this way but because given the nature of signs, they have no choice.

Paradoxically, this is an absence of choice founded in choice alone, for a map is a consequence of choices among choices, and as we know to choose is to reveal a value. That the choice to map Tibet as Chinese reveals a political attitude is something many will readily concede,[25] but *all* choices are political and it is no less revealing to choose to map *highways,* for this too is a value. That it would be difficult to produce a state highway map without highways I admit, but there is no injunction on the state to map its roads anymore than there is for it to map the locations of deaths attributable to motor vehicles, or the density of cancer-linked emissions from internal combustion engines, or the extent of noise pollution associated with automotive traffic.[26] It would be gratifying to live in a state that produced 1.75 million copies of such maps and distributed them free of cost to travelers, tourists, immigrants, and industrial location specialists, but states find it more expedient to publish maps of highways.

In 1988 North Carolina *did* publish the *North Carolina Public Transportation Guide*—a highway map-like document posting intercity bus, train, and ferry routes— but it printed only 15,000 copies, less than a hundredth as many as it printed of its highways.[27] Not an advertisement, the public transportation map was produced without the assistance of the Department of Commerce. Could this be why, unlike the highway map, among whose blond hikers, swimmers, golfers, and white-water enthusiasts no blacks appeared, blacks figured so prominently on the public transportation map? Here blacks buy intercity bus tickets, get on city buses, and in wheelchairs get assisted into specially equipped vans.[28] The reek of special assistance is like sweat: "Many of you have requested information on how to make your trip without using a private automobile. Because of these requests . . . " and so on. But there is nothing of this tone on the highway map. There was never any *need* to have requested a highway map: it, after all, is . . . *a natural function of the state.* Everything conspires to this end of naturalizing the highway map (even the map of public

transportation), of making the decision to produce such a map seem less a decision and more a gesture of instinct, of making the map's cultural, its historical, its political imperatives transparent: you see through them, and there is only the map, innocent, of nature, of the world as she really is.

Everything's in Code

It is, of course, an illusion: *there is nothing natural about a map.* It's a cultural artifact, an accumulation of choices made among choices every one of which reveals a value: not the world, but a slice of a piece of the world; not nature but a slant on it; not innocent, but loaded with intentions and purposes; not directly, but through a glass; not straight, but mediated by words and other signs; not, in a word, as it is, but . . . in *code.* And of course it's in code: *all* meaning, *all* significance derives from codes, *all* intelligibility depends on them. For those who first encountered their codes in the breakfast cereal box—little cardboard wheels arbitrarily linking letters and numbers—this generalization of the idea may occasion some disquiet. It shouldn't. When you wear a tie to work, you're dressing in code. When you frown, you're expressing in code. When you type or scribble, you're writing in code. Human languages are probably the most elaborate and complex codes we're familiar with—and the dictionary just a big clumsy breakfast cereal toy—but there are sublinguistic codes of incredible sophistication (those danced by Ginger Rogers and Fred Astaire) and supralinguistic codes of deep subtlety (such as the conventions underwriting the structure of James Joyce's *Ulysses*). Usually a number of different codes are used simultaneously (this is a text). Fred and Ginger were placed in settings, dressed, wore their hair a certain way, gestured, spoke and sang as well as danced, and all this was coded.[29] There is even a code of codes: mime, for example, is forbidden the code of words, and in general the arts are distinguished by a code whose elements are other codes.

More technically, a code can be said to be the assignment scheme (or rule) that couples items or elements from a conveyed system (the signified) to a conveying system (the signifier). We already know how this works, but the highway code is paradigmatic (Figure 3.6). On the one side are intentions (she intends to turn), promises (Holly Springs will be encountered 3 miles down this road) and commands (not to pass, to stop, to go). On the other side are gestures (a hand stuck straight out the driver's window), words and numbers ("Holly Springs/3 miles"), and lights and lines (a red traffic light, a solid yellow line down the middle of the road). The intentions, promises, and commands are elements of the system conveyed: *signifieds* (content). The gestures, words, numbers, lines, and lights are elements of the system conveying: *signifiers* (expression). The code (the rule, in this case, traffic law) *assigns* the latter to the former, couples them and in so doing, creates . . . a *sign.*

I know I just said this in the last chapter, but it bears repeating: the sign is *not* in the gestures or the lights, the words or the numbers; it is *not* the signifier. Nor is the sign in the intentions, promises, or commands: it is *not* the signified. The sign exists solely, utterly, and exclusively in its correlation (established by the code, the rule, by custom, by the law). There is nothing, for instance, inevitable (necessary) in the relationship between a driver sticking his arm straight out the left window and his intention to turn left (and in fact it has been largely supplanted by the flashing of
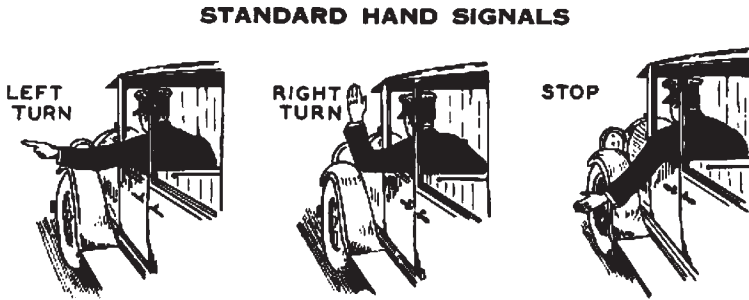
STANDARD HAND SIGNALS

FIGURE 3.6. Part of the highway code. In 1930 the North Carolina state highway map began showing motorists the proper use of hand signals for left turns, right turns, and stopping, encoding a piece of the paradigmatic highway code onto the map itself. (*Source:* North Carolina Department of Transportation)

lights on the left side of the car), any more than there is between a driver pointing to heaven and his intention to turn right (though doubtless there was some historical contingency that helped make it customary).

Signs, in other words, *are the creatures of codes* with the loss of which they are rendered—like fat—into their constituent components, disembodied signifieds separated from insignificant signifiers. It is the codification in which the sign adheres, nothing else. Or, as Umberto Eco puts it:

> A sign is always an element of an *expression plane* conventionally correlated to one (or several) elements of a *content plane.* Every time there is a correlation of this kind, recognized by a human society, there is a sign. Only in this sense is it possible to accept Saussure's definition according to which a sign is the correspondence between a signifier and a signified. This assumption entails some consequences: *a* a sign is not a physical entity, the physical entity being at most the concrete occurrence of the expressive pertinent element; *b* a sign is not a fixed semiotic entity but rather the meeting ground for independent elements (coming from two different systems of two different planes and meeting on the basis of a coding correlation).[30]

Because signs have neither physical existence (unlike the signifier) nor permanence, they are frequently referred to as *sign-functions,* or in Eco's words:

> Properly speaking there are not signs, but only *sign-functions* . . . A sign function is realized when two *functives* (expression and content) enter into a mutual correlation; the same functive can also enter into another correlation, thus becoming a different functive and therefore giving rise to a new sign-function. Thus signs are the provisional result of coding rules which establish *transitory* correlations of elements, each of these elements being entitled to enter—under given coded circumstances—into another correlation and thus form a new sign.[31]

This is not a game of words. Nor is the vocabulary important. What *is* important is the notion that signs, or sign-functions, or symbols—what they are called *does not matter*—are realized *only* when coding rules bring into correlation two elements or items (or functives) from two domains or systems (the one signifying, of expression;

the other signified, of content) and that *whenever* there is such a correlation, there is a sign. You may call this resulting sign an icon. You may call it a pictogram. You may call it a word. You may call it an index. You may call it a symbol. You may call it a piece of sculpture. You may call it a sentence. You may call it a map. You may call it New York City.[32] In every case, whatever else it is, it is, *in its sign function,* also a sign, that is, a creature of a code: *no signs without codes.* This must be insisted upon: that is, there are no self-explanatory signs; no signs that so resemble their referents as to self-evidently refer to them. They are inevitably arbitrary, inevitably reveal . . . *a value.*

Once the superordinate role of the code (the rule, the convention) is accepted, it becomes easy to explain how what "self-evidently" resembles a river on a map equally "self-evidently" resembles veins on a diagram of the circulatory system, without invoking complicated principles of metaphor (not that these might not have been operant in the genesis of the sign). It is not that the reader thinks, "Oh, yes, the deoxygenated blood is relatively bluer than that in the arteries, *and* under a clear blue sky the surface of rivers often seems blue; *and* both veins and arteries carry (whatever "carry" means) liquids in a branching (see "tree") network (see "net," see "weaving"), sooo, let's see, that means . . . " This is not how it happens at all. What happens is that the reader finds himself or herself in an entirely distinct coded circumstance *all at once.* At the level of language, the diagram of the circulatory system is decoded without reference to the codes of the map, and *vice versa.*

There is certainly no question of *resemblance* with respect to which Barthes notes that it would be in any case a resemblance *to an identity* (the *identity* of the river, the *identity* of the vein), an identity "imprecise, even imaginary, to the point where I can continue to speak of 'likeness' without ever having seen the model,"[33] as those do who justify this sign for veins because "they look like veins" without ever having seen a vein, without having seen a hepatic vein, without having seen an inferior vena cava; or the sign for a river, the Colorado, because "it looks like a river" (the Thames? the Cuyahoga?) without having seen it, without having seen where the Colorado trickles all but dry into the Gulf of California. It is not a matter of resemblance: the blue line is a blue line. It is the code that does the work, not the signifier. If there is involved an iconicism, it is always at the level of the structure of the system (it is analogic, not metaphoric). It is less the *blueness* of deoxygenation that says "veins" than the *simultaneous* redness of the arteries, their *characteristic* jointure at the extremities, and their *perfect parallelism;* it is less the blue-between-black lines that says "river" than its *characteristic* form, its *characteristic relationship* to other forms (other rivers, mountains, roads, towns and oceans); so that "veins" can as easily be read in black or gray, and "rivers" in diagrams of drainage basins and flood insurance maps. To say that it is the code that does the work, not the signifier, is just another way of saying that it is the code that makes the sign, not the mark.

At Least 10 Cartographic Codes

So it is the *codes* on which one must fasten if the map is to be *de*coded (or if a map is to be *en*coded). It's possible to distinguish at least 10 of these codes (doubtless there are others), which the map either exploits, or by virtue of which the map is exploited. Neither class is independent of the other, and no map fails to be inscribed

in (at least) these 10 codes. Those that the map exploits are termed *codes of intrasignification.* They operate, so to speak, within the map: at the level of language (they are caught up in the circulation of meaning among the postings). Those by virtue of which the map is exploited we term *codes of extrasignification.* These operate, so to speak, outside the map . . . *at the level of myth* (they are involved in supporting the map's authoritativeness).
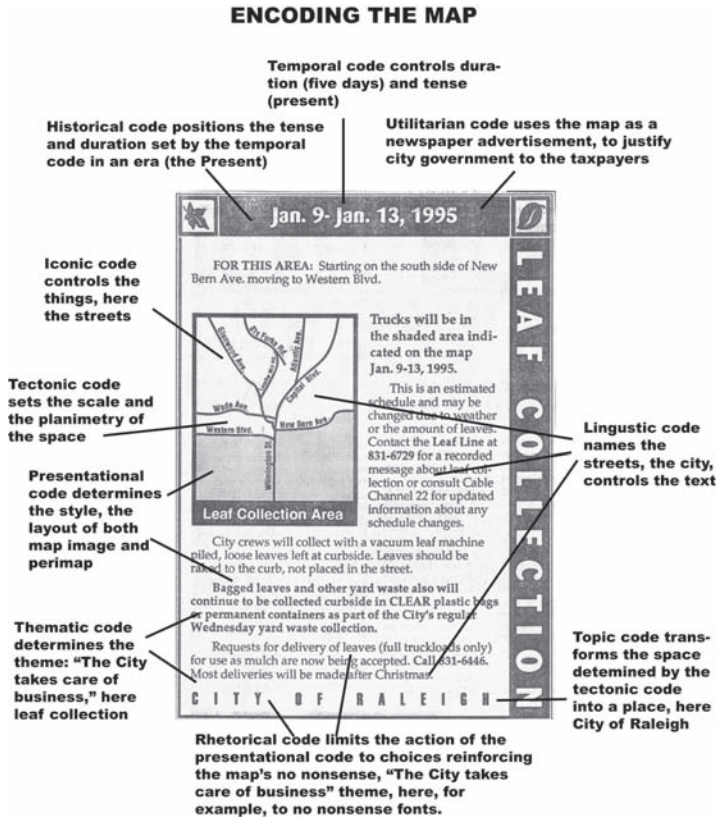
Among the codes of intrasignification five at least are inescapable: the *iconic,* the *linguistic,* the *tectonic,* the *temporal,* and the *presentational.* Under the heading *iconic* is subsumed the code of "things" with whose relative location the map is enrapt: *Ocotea skutchii,* the streets of Genoa, rates of death by cancer, the losses suffered in Napoleon's Russian campaign, airways, subways, the buildings of Manhattan, the Attendance Area for Wiley Elementary, the rivers, roads, counties, airports, cities, and towns of North Carolina. The iconic is the code of the inventory, of the world's fragmentation: into urban hierarchies, into hypsometric layers, into wet and dry. The *linguistic* is the code of the names: Barro Colorado Island, the *Via Corsica,* the *Corso Aurelio Saffi*; trachea, bronchus and lung cancer, white males, age-adjusted rate by county, 1950–1969; *France, Amérique du Nord; Moscou, Polotzk;* LEE 4 AZI 1989; the Graybar Building, the Seagram; Cape Fear River, U.S. 421. The linguistic is the code of classification, of ownership: identifying, naming, assigning. The relationship of things *in space* is given in the *tectonic* codes: in the *scalar*—in the number of miles (or feet) encoded in every inch—and in the *topological*—in the planimetry of cities, the stereometry of mountain ranges, the projective geometry of continents, the topographometry of the field traverse, the simple topology of the sketch map giving directions to the party. The tectonic is the code of finding, it is the code of getting there: it is the code of getting. Because there is no connection, no communication, except *in time,* the codes of filiation are *temporal,* codes of duration, codes of tense. The *durative* establishes the scale, the map's *durée,* its "thickness": as the map of rates of death from cancer, *1950–1969,* is "thicker" than the *1978–1979* North Carolina highway map, which is "thicker" than the "The vote Tuesday, county by county." The durative reveals (or hides or is mute about) lapses in cosynchronicity. The *tense* says . . . *when:* some maps are in the past tense ("The World of Alexander the Great"), others in the future tense ("Tomorrow's Highways"), but most maps exist in the present ("State of the World Today"), or, if they can possibly get away with it, the *aorist*: no duration at all (no thickness), out of chronology (not lost—just out of it), free of time (such maps attain to myth at the very level of language).

Each of these codes—iconic, linguistic, tectonic, and temporal—is embodied in signs with all the physicality of the concrete instantiation of the expressive pertinent element. On the page, on the sheet of paper, on the illuminated display with its flashing lights, these concrete instantiations are ordered, arranged, organized by the *presentational* code: they are . . . *presented.* Title, legend box, map image, text, illustrations, inset map images, scale, instructions, charts, apologies, diagrams, photos, explanations, arrows, decorations, color scheme, type faces are all chosen, layered, structured to achieve speech: coherent, articulate discourse. It is a question of the architecture of the picture plane, the perimap: what's in the center and what's at the edge, what's in fluorescent pink and what's in the blue of Williamsburg, whether the paper crackles with (apparent) age or sluffs off repeated foldings like a rubber sheet, whether the map image predominates or the text takes over. It is never, even at the lowest level, a question merely of escaping the stigmas of para-

nomia and aphrasia, dysphemia and idiolalia, dyslogia and cacology. At the very
bottom it's a question of fluency and eloquence, and soon enough of vigor and force
of expression, ultimately of polemic, for wherever it may begin the code of presenta-
tion soon enough carries the map *out* of the domain of intrasignification into that
of extrasignification, into that of the society that nurtures it, that consumes it . . .
that brings it into being.

Among the codes of extrasignification five again are inescapable, the *thematic,*
the *topic,* the *historical,* the *rhetorical,* and the *utilitarian* (Figure 3.7). All operate
at the level of myth, all make off with the map for their own purposes (as they
made the map), all distort its meaning (its meaning at the level of language) and
subvert it to their own. If the presentational code permits the map to achieve a
level of discourse, the *thematic* code establishes its domain. *On what shall the map
discourse? What shall it argue?* Though it is precisely the thematic code that has dic-
tated their appearance on the map, from the perspective of the reader, the theme
is experienced as a latency inherent in the "things" *iconically* encoded *in* the map:
roads, for instance, it is a map of roads and highways; it asserts the significance of
roads and highways (if only by picturing them, if only by foregrounding them); its
theme is Automobility (the legitimacy of Automobility). Or it is a general reference
map, a map of hydrography and relief carved into political units and plastered with
railroads and towns, that is, a map of a landscape smothered by humanity, tamed,
subdued (the red railroads—sometimes black—inevitably reminiscent of the bonds
by means of which the Lilliputians restrained Gulliver), its theme is: Nature Sub-
dued. And precisely as the thematic code runs off with the icons, so the *topic* code
(with a long *o* from *topos,* place, as in *topography*) runs off with the space established
by the tectonic code, turns it from space to place, gives the map its *subject,* bounds
it (binds it), names it (via the linguistic code), sets it off from other space, asserts
its existence: *this place is*: Attendance Area for Wiley Elementary, Leaf Collection
Area (Figure 3.7). Just so the *historical* code. Only it works on the time established in
the map by the temporal code. Are there bounding dates to the map's *durée*? Then
the historical code appropriates them to an era, assigns it a name, incorporates it
in a vision of history (it establishes the map's subject . . . in time). So an archeo-
logical map of Central America acquires the title, "Before 1500/Pre-Columbian
Glory;" one of 19th-century plantation crops, political units, selected urban places,
cart roads, railroads, and battles the title, "1821–1900/Time of Independence"; yet
another of similar subjects (though with the addition of a sign for refugee centers)
the caption "1945–Present/Upheaval and Uncertainty."[34] There is no time that can-
not be reduced to these sequacious causal schemata, absorbed into these . . . plati-
tudes, made comfortable and safe because grasped, understood.

If the thematic code sets the subject for the discourse, if the topic and histori-
cal codes secure the place and time, it is the *rhetorical* code that sets the tone, that
having consumed the presentational code most completely orients the map in its
culture (in its set of values), pointing in the very act of pointing somewhere else (to
the globe) to itself, to its . . . *author,* to the society that produced it, to the place and
time and omphalos of that society, the more dramatically as the aspect of the globe
toward which it points is alien, is exotic, that is, can have its title set in a typeface
that mimics . . . *bamboo.* It is a code of jingoisms, a code that beats its chest like Tar-
zan, a code of the sort of subtle chauvinisms that encourages the *National Geographic*
to call it a "road" on its map of the Central Plains, 1803–1845, but to call it a "*cart*

ENCODING THE MAP

Temporal code controls dura-
tion (five days) and tense
(present)

Historical code positions the tense
and duration set by the temporal
code in an era (the Present)

Utilitarian code uses the map as a
newspaper advertisement, to justify
city government to the taxpayers

Jan. 9- Jan. 13, 1995

Iconic code
controls the
things, here
the streets

FOR THIS AREA: Starting on the south side of New
Bern Ave. moving to Western Blvd.

Tectonic code
sets the scale and
the planimetry of
the space

Trucks will be in
the shaded area indi-
cated on the map
Jan. 9-13, 1995.

This is an estimated
schedule and may be
changed due to weather
or the amount of leaves.
Contact the Leaf Line at
831-6729 for a recorded
message about leaf col-
lection or consult Cable
Channel 22 for updated
information about any
schedule changes.

Leaf Collection Area

Lingustic code
names the
streets, the city,
controls the text

Presentational
code determines
the style, the
layout of both
map image and
perimap

City crews will collect with a vacuum leaf machine
piled, loose leaves left at curbside. Leaves should be
raked to the curb, not placed in the street.

Bagged leaves and other yard waste also will
continue to be collected curbside in CLEAR plastic bags
or permanent containers as part of the City's regular
Wednesday yard waste collection.

Thematic code
determines the
theme: "The City
takes care of
business," here
leaf collection

Requests for delivery of leaves (full truckloads only)
for use as mulch are now being accepted. Call 831-6446.
Most deliveries will be made after Christmas.

CITY OF RALEIGH

Topic code trans-
forms the space
detemined by the
tectonic code
into a place, here
City of Raleigh

LEAF COLLECTION

Rhetorical code limits the action of the
presentational code to choices reinforcing
the map's no nonsense, "The City takes
care of business" theme, here, for
example, to no nonsense fonts.

Every code is involved in every choice

FIGURE 3.7. The 10 map codes at work. It is easy to point to actions of the five intrasignificant codes; but because they determine the range of action of the intrasignificant codes, the action of the extrasignificant codes is felt dispersed throughout the plane of the map. The iconic code may determine the signs of the map's things, but it does so only "in consultation" with the thematic, rhetorical, utilitarian, and other extrasignificant codes.

road" on its map of Central America, 1821–1900.[35] Yet even then it is an "American" map, that is, a map that reflects the genius of the *North* Americans, or at least those north of the Rio Grande (for according to the *National Geographic* the ancient Maya had but "*trade* routes" and even the Camino Real was just a "trail"); and, if only because it *is* the mapping society, the mapping society stands at stage center, with all the others in the wings (Figure 3.8). For the rhetorical code, the mere existence of the map is a sign of its higher culture, its sophistication: the map is rhetorical *au fond,* and for this reason no map can eschew it. It is like clothing: even not to wear it is to be caught in the net of meanings woven by the code of fashion. To attempt to shed the rhetorical code is but to shout the more stridently through it: it is its very disregard for the subtler aspects of the code of presentation that so completely characterized the publisher of *The Nuclear War Atlas* as "socially conscious";[36] it is nothing other than their violations of "good taste" that allows us to read the editors of *The State of the World Atlas* as angry.[37] Their *subversion* of the power of the
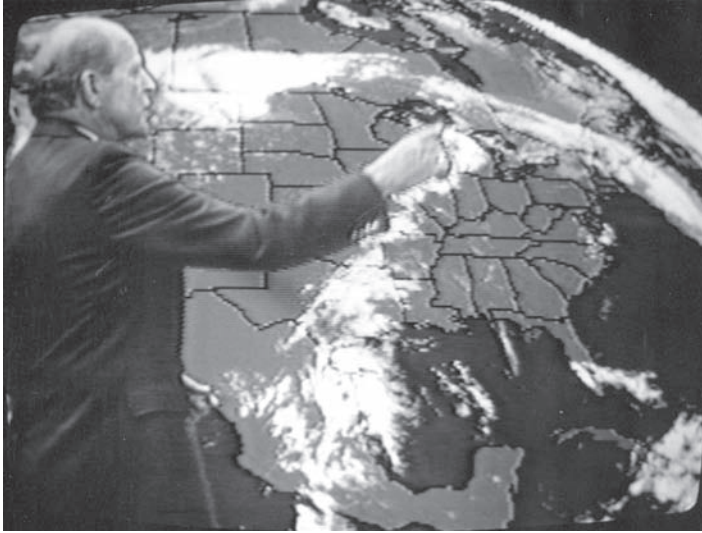
FIGURE 3.8. The rhetorical function of the weather map. A television weatherman points to a map. At the same time, it points back to him, establishing and emphasizing his modernity, sophistication, and thus his reliability. In turn, this flatters our sense of self-esteem for having selected this station over others. This map is all but consumed by its rhetorical functions.

rhetorical code amounts to a bold proclamation of their rhetorical stance (sk8er maps, map nudism, punk maps), the very opposite of the position occupied by the United States Geological Survey, which obscures its stance beneath a rhetorically orchestrated *denial* of rhetoric (dressing itself in the style of science). Elsewhere the map will dress in the style of Art. Or in the style of the Advertisement. Or in the Vernacular (place mat maps, the North Carolina Highway map). The rhetorical code appropriates to its map the style most advantageous to the myth it intends to propagate. None is untouchable. All have been exploited.

As the map itself is finally exploited, picked up bodily by the *utilitarian* code to be carted off for any purpose myth might serve. A professor of curriculum and instruction, commenting on the availability of state highway maps for secondary classroom use, remarks, "It has the governor's picture on it. You can get as many as you want." It is here that the academic model of the map with its scanning eyes and graduated circle-comparing minds breaks down most completely. It has no room for the real uses of most maps which, exploiting both the "juridical" function of the posting and the "connotative" power of the sign are—manifestly—to possess and to claim, to legitimate and to name. What nation-state has failed to signal its birth by the mapping of its domains? Whatever the pragmatic considerations (these are, after all, maps that speak also at the level of language), it has inevitably also been an act of conspicuous consumption, a sign of contemporaneity as well as wealth and power, a symbolic manifestation of the rights of possession (the Xangsi emperor sending his atlas to the Tsar of the Russians). *These* are the uses of maps as certainly as it is the most important function of maps in geographic journals to certify the geographic legitimacy of the articles they decorate. USGS quadrangles, dressed in

their button-down white shirts and suitable ties, these, in their metered regularity (so many sheets per unit area), their sensible no-nonsense layout, their methodical tiling, their obsessive coverage, ultimately know no code other than that of possession except that of exploitation. "To catalogue," Barthes noted, "is not merely to ascertain, as it appears at first glance, but also to appropriate."[38] In the end, geologic survey sheets differ little enough from . . . *maps of military targets.*

Making Signs Talk
to Each Other[1]

The map, then, is comprehended in two or three ways and all at the same time. In the first place, the map is a system of ontological claims (*this is*) and locative assertions about them (*this is there*). These are posted to a map, these *have to be* posted to a map (which is a sign plane), as *signs*. At the level of *language* (at the level of intrasignification), these signs labor to construct a visual analogue of phenomena, attributes, and spatial relations, a model encouraging the circulation of meaning required for the construction and transmission of territorial authority. At the level of *myth* (at the level of extrasignification), the signs then refer to themselves and their makers, trading in the values and ambitions required to project the map into the world of action as a document *capable* of embodying territorial authority. Whereas intrasignification consists of an array of sign functions indigenous to the map and which, taken jointly, constitute the map as *sign,* extrasignification appropriates the complete map and deploys it as *myth*.

In effect, the map acts as a focusing device between these two planes of signification, gathering its internal or constituent signs and offering them up collectively as the system of propositions that is the map (Figure 4.1). Yet what effers from the map is not substantially different from what is afferent upon it—these have simply been repositioned in the semiological function—and whereas extrasignification exploits the map in its entirety, *we have seen how the initiatives of myth extend to even the most fundamental and apparently sovereign aspects of intrasignification, and are ultimately rooted in them.* This is to say that if the postings weren't inherently political, their embodiment in signs would force them to be, for instantiations of conceptual things can't be posted in the abstract; and even the simplest, even the least articulated sign can be—*will be*—appropriated by myth. (There are no innocent postings.) How this works can be best unfolded by traversing the intrasignificant codes in turn, beginning with the iconic.
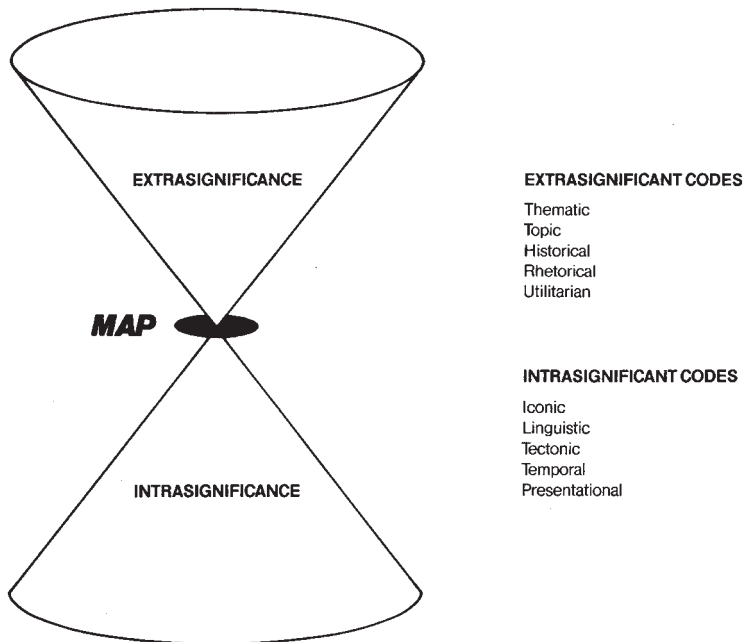
EXTRASIGNIFICANCE

EXTRASIGNIFICANT CODES

Thematic
Topic
Historical
Rhetorical
Utilitarian

MAP

INTRASIGNIFICANT CODES

Iconic
Linguistic
Tectonic
Temporal
Presentational

INTRASIGNIFICANCE

FIGURE 4.1. The map as a focusing device between the domains of extra- and intrasignification: the map gathers up the constituent signs governed by the codes of intrasignification so that they will be able to act as signifiers in the sign-functions governed by the codes of extrasignificance.

Varieties of Iconicity

Iconicity is the indispensable quality of the map, the source and principle of the map's analogy to objects, places, relations, and events. In its capacity as geographic icon, the map subsumes a remarkable variety of signs and the codes that underwrite them; yet the degree of iconicity evident in the map as a whole is not uniformly echoed among its constituents. The dot that posts a town is not iconic in the same way as the intricately shaped area posting a city; the blue line posting a river is not iconic in the same sense as the blue line posting a county road or, for that matter, a shoreline. Pursued far enough, every icon is seen as the product of two procedures: a *symbolic* (substitutive) *operation* that provides the basis of its signifying potential, and a *scheme of arrangement* that yields its specific and individual form. The balance struck between these has frequently been the canon by which we judge signs as symbolic (of the town, for example) or iconic (of the city), but no symbol is *totally* arbitrary (unless it could be stripped entirely of connotation, which it can't), and no icon is motivated free of convention. We can only say that some signs are more explicitly iconic or symbolic in function; and that media of cultural exchange—maps in particular—serve as proving grounds where icons gradually acquire symbolic status through a process of reiteration and cultural distension.

The iconicity of Hermann Bollmann's *New York Picture Map* is so powerful that its conventions virtually disappear from view.[2] On inspection, the picture plane . . . *melts away,* and our attention falls into a landscape of tangible urban forms:

streets, sidewalks, roofs, facades, doors, windows. It seems so literal, so transparent to interpretation, so . . . *natural* that it is difficult to accept as highly conventionalized and essentially symbolic. Yet without our conventions of pictorial rendering, this arresting image would be opaque and meaningless.[3] Make no mistake: iconicity, as Bhattacharya has explained, is the product of a spatial transcription;[4] and its derived form is an arrangement of marks in relationship to one another and to the space they occupy. The icon is motivated not by a monolithic precedent form but by the formal and necessarily *spatial arrangement* it would transcribe on the page, and it can only materialize through a *transcriptive* procedure. This procedure, in Bollmann's map, turns out to be extraordinarily elaborate: involving 67,000 photographs taken with specially designed cameras, an axonometric projection spread in two dimensions by a calculated widening of streets, and, according to the map's jacket, "several unique devices which remain his secret." It emerges from a tradition that is distinctly Western and intensively codified, and it speaks through a familiar (to us) regime of symbolic principles: lines demark intersections of planes and boundaries between solid and void; certain organizations of lines denote rectilinear volumes; recurring tonal patterns denote illuminated forms.

Thus, to characterize iconicity as a simple matter of visual likeness (as though this *could* be a simple matter), or as a formal correspondence between expression and referent, is to mystify its explanation and divorce it entirely from cultural enterprise. Iconicity derives from our ability to transcribe arrangements in space and mark them out in conventional symbols—in other words . . . *to map them.* This ability is as fully realized in a drawing by da Vinci as in a Swiss topographic map, where the natural landscape—like Bollmann's urban landscape—is portrayed as a complex and continuous icon, bathed in light and rendered with the consummate authority of an iconism as richly meaningful for its audience as for its maker.

A map of population distribution produced by the U.S. Bureau of the Census has some of this same pretense (Figure 4.2).[5] Substitute night for day, luminosity for reflectivity, and city form for architectural or geomorphic form, and we have an equally credible—if more remotely viewed—icon of human settlement. But the symbolism of this map is more explicit and less uniform; in fact, it embraces several distinctly different principles. Bollmann's office towers and the Swiss mountains of Eduard Imhof are *posted* as geographic icons, shaped by the space of the features themselves transcribed onto the graphic plane. Isolated cities and towns, however, are posted as geometrically pure squares and circles regardless of their geographic shape; they have undergone an abstraction conventionalizing their form and enacting their status as symbols. Something like this happened to Immaculate Conception in the last chapter.[6]

Beyond and between these options, symbols are disengaged from exact spatial correspondence and are referred to features that are in themselves abstractions. In the first instance, form is given as the consequence of the feature's spatial extension and the topological transformation that implants it on the page. Symbolism remains characteristic: white is city, dark blue is water (or foreign terrain), black is neither. In the second instance, a formal symbolism is activated: white *square* is city or white *circle* is city. In the third instance, symbols are fixed not only in form but in value as well, and they acquire a limited but necessary mobility within a scheme that treats them not as localized occurrences (in which case they have no literal meaning) but as elements of a comprehensive system to be interpreted *en*
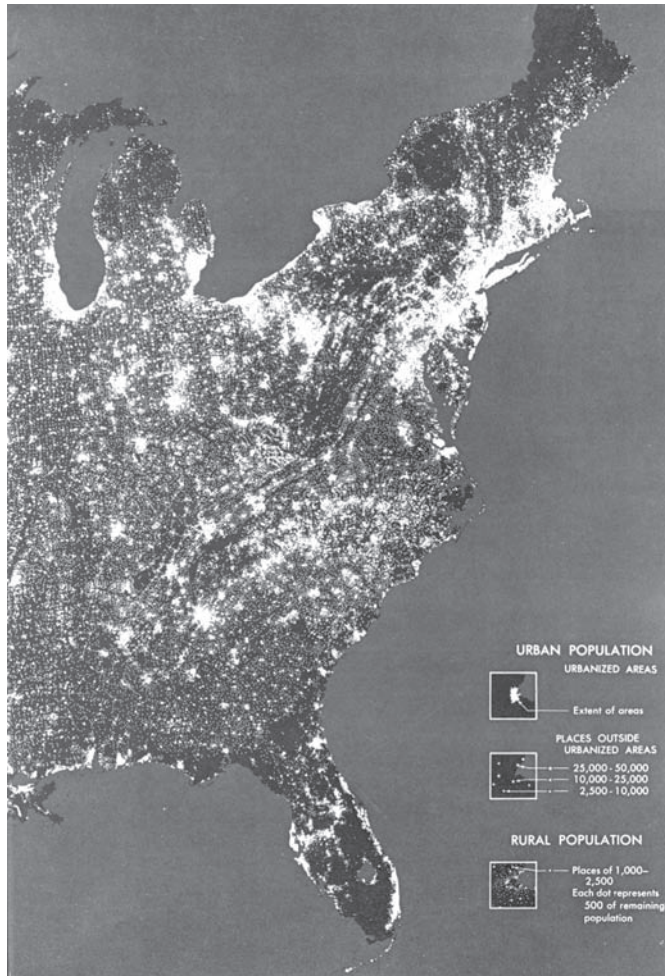
FIGURE 4.2. From a lexicon of graphic symbols, a geographic icon. While significant in itself, each mark, like a point of color in a Seurat painting, is subservient to the impression of the whole. (*Source:* Morris M. Thompson's 1979 *Maps for America,* U.S. Department of the Interior)

masse. This population map is truly a *tour de force,* an exemplar deploying an arsenal of significant strategies from the most abstract and conventionalized to the most geographically constrained and overtly iconic. Although we might expect from this description a baffling and practically indecipherable stew of signs, profoundly different principles of symbolism merge almost seamlessly into an icon that eschews the formal consequences of their application and takes their distribution as the basis of its own.[7]

Signs formed, rather than just characterized independently of geographic space are free to engage in formal metaphor. A lighthouse is signed with an ornamented triangle or an outlined circle and a complement of rays, a mine with an occluded dot or an emblematically crossed pick and shovel. Extracted from map context,

these signs are icons in their own right, but icons of what? The triangular light-
house sign and the circular mine sign are ostensible abstractions of their phenom-
enal counterparts, and, regardless of their degree of abstraction, they remain icons
insofar as they maintain a structural correspondence with them. But the circle and
rays sign is iconic only in respect to the light, not the lighthouse, and it represents
by virtue of a part-for-whole substitution. The pick and shovel sign (with no regard
for technological currency) suggests min*ing* rather than mine by substituting arti-
fact for process. These last two examples are conventional metaphors, parallels to
which abound in maps.[8] They differ from the icons of urban form and symbols of
city size in not referring literally to the phenomena they represent. They anticipate
interpretation by singling out connotations and presenting them as surrogate icons.
Icon is proffered, and taken, as symbol.

     In signs that *are* geographically conformal, metaphor operates through *charac-
teristic.* Green symbolizes trees and blue water with the same conviction they did in
the childhood drawings that implanted these metaphors in our vocabulary, never
mind drought, autumn, and acid rain, and never mind the cubic miles of eroded
silt that choke our rivers. In the map, our forests glow with the robust verdure of a
perpetual spring afternoon, and even the Mississippi shines with a pristine Carib-
bean blue. These metaphors proclaim the map as *ideal* (or at least hyperbole), at
once an analogue of our environment and an avenue for cultural fantasy about it.
False coloration is hardly restricted to remotely sensed imagery; it is characteristic
of *all* our maps, which it dresses in . . . *the most reassuring tones.*

Inviting Words to Realize Their Expressive Potential

It is difficult to imagine a map without language. In the perimap, language assumes
its familiar textual forms: identifying, explaining, elaborating, crediting, caution-
ing, but in the map image and its interpretive template, the map legend, typographic
marks sign the content of the map on different yet complementary grounds.

     In the legend, semantic connections are made between classes of graphic images
or image attributes and linguistic forms of the phenomena to which they refer. In
this capacity, the legend acts as interpreter between the semiological system of the
individual map and the broader system of language so that on seeing a red circle,
for example, we may hear the words "Welcome Center" (even if we're not entirely
sure what they mean). In translating graphic expression to linguistic expression, we
make the map literate and its meanings subject to literary analyses.

     Within the map image, linguistic signs address not only what things, that is,
conceptual types, are *called* ("Lake") but also what their instantiations are *named*
("Superior"): identification is a matter of both *designation* and *nomenclature.* Much
of our geographic nomenclature carries a residuum of designation, as in "Union
City," "Youngs*town,*" "Louis*ville,*" "Pitts*burgh*"; but it is practically obligatory with
respect to natural features. One word, "river" for instance, may occur hundreds of
times within a single map image. The mapmaker who would erase this redundancy,
however, finds that rivers are no longer distinguishable from creeks, nor lakes from
reservoirs. Here language is not just *naming* features, but *illuminating, even establish-
ing, content distinctions* that have, for whatever reason, escaped iconic coding.

     If the function of language in maps were simply toponymic, we could assume

that the linguistic signifiers themselves, if recognizably formed and correctly arranged, would be fixed in meaning. This is clearly not the case. Within the map image, elements of visible language serve as counterparts to iconic signs, overlapping their content and spatial domains and echoing their iconic properties. In the map image, entire words and arrangements of words are given iconic license, generating a field of linguistic signs best likened to concrete poetry. Letters expand in size, increase in weight, or assume *majuscule* form to denote higher degrees of importance. Stylistic, geometric and chromatic variations signal broad semantic divisions. Textual syntax is largely abandoned as words are stretched and contorted and word groups rearranged to fit the space of their iconic equivalents. Clearly, this code invokes more than the disposition of phonetic archetypes (Figure 4.3).[9]

It's not that the map rejects the ground rules of textualized language; if it did, it would quickly degenerate to a vehicle for newspeak or nonsense. Even absurd statements like "Lac Champlain Lake" and "Rio Grande River" are grammatically functional in a bilingual or multilingual culture. *What this code gains in the context of the map is nearly unrestricted access to the means of iconic coding.* Among attempts to produce maps entirely from linguistic signs, the more successful have been cognizant of these means;[10] and in even the most familiar maps the field of typographic

FIGURE 4.3. A map stripped of everything but words: a field of linguistic map signs. Even without internal distinctions of color, its iconicity is immediately apparent in contrast to the surrounding text. (*Source:* Gerald Boulet)

signs, taken on its own, visualizes the geographic landscape in much the same way as the field of graphic signs. The map is simultaneously . . . language *and* image. As word lends icon access to the semantic field of its culture, icon invites word to realize its expressive potentials in the visual field. The result is the dual signification that is virtually synonymous with maps as well as the complementary exchange of meaning that it engenders. The map image provides a context in which the semantics of the linguistic code are extended to embrace a variety of latent iconic potentials;[11] to the same end, it imposes a secondary syntax that shapes entire linguistic signifiers into local icons.

Shaping Space

To reiterate: a code is an interpretive framework, a set of conventions or rules, that permits the equivalence of expression (a graphic or typographic mark) and content (forest, population of less than 1,000 persons, or multilane limited-access highway). In effect, a code *legislates* how something may be construed as signifying something else. In this respect signs are encoded in formation and decoded in interpretation; and it is only through the mediation of a code that signification is possible.

Each map employs a tectonic code—we have discussed this—a code of construction that configures graphic space in a particular relation to geodesic space.[12] This code effects a *topological* transformation from spheroid to plane in sign production and from plane to spheroid in interpretation. It has a *scalar* function as well, logically separable from the topological but not practically independent of it. Whereas the role of this code seems to be evident, its content and expression are less so *because both of these functives are abstract space.* The tectonic code governs a *sign function* that has as its content a *topology* and as the product of its action a *correlative topology.* If map projections and scales have not been widely recognized as codes, it is not because they are difficult to formulate as such—they are indeed *more easily* formulated than the iconic and linguistic codes since in most cases they can be reduced to concise mathematical expressions—but because they do not in themselves produce material imagery. They offer space for space, abstraction for abstraction, *and their work is not visible until it is subjected to iconic coding.* The mesh of graticule lines cradling the map image is not the tectonic code itself, but an *icon* of the topology acted upon by this code. Nor is it obligatory to *render* this topology: frequently, it is manifest only in the shape and disposition of features and, when it is visualized, it serves as often as a sign of the map's "scientificity" as it does a referencing system to implement the literalization or numeralization of space (Figure 4.4).

Yet as we have seen, this code traffics in spatial *meanings,* and the messages it allows us to extract from the map are messages of distance, direction, and extent. It shapes and scales the graphic plane in such a way that these messages emerge from the map image. While iconic and linguistic codes access the semantic field of geographic knowledge, *the tectonic code provides their syntactical superstructure;* this is the code through which we signify not what, but *where.* It is the "*there*" in "*this is there.*" In molding the map image, the tectonic code allows it to refer to the space that we occupy and experience; and inevitably it is laden with our preconceptions about that space. It cannot therefore surprise to find the map projection at the center of political controversy, pretending as it does to validate our cultural centrism and
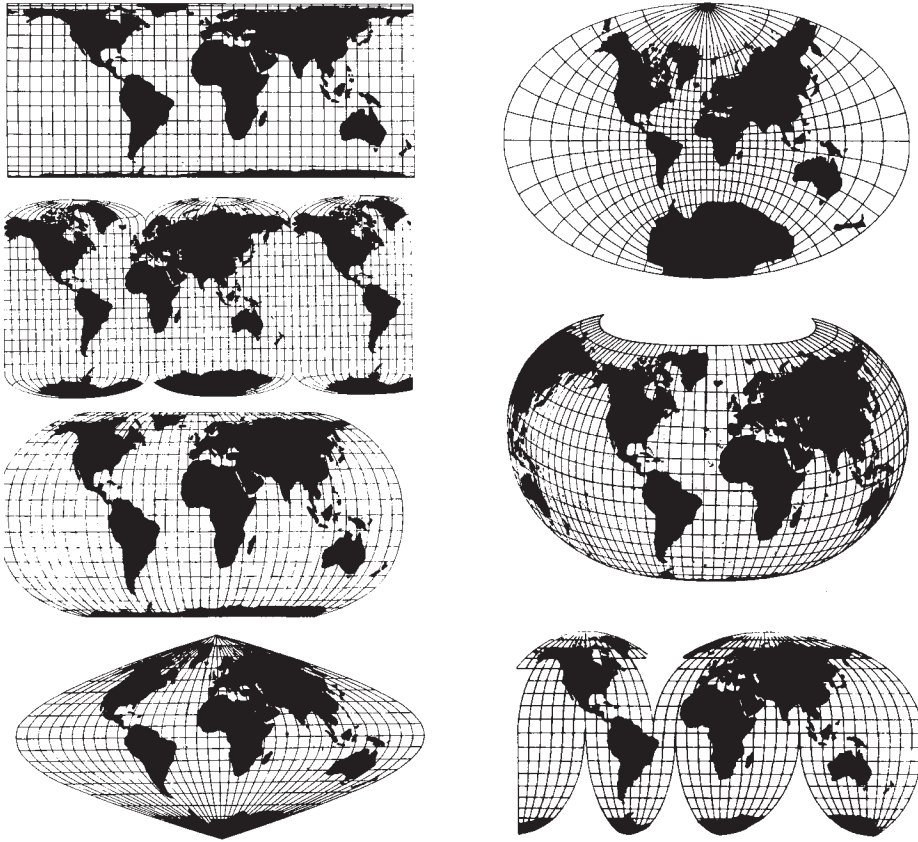
FIGURE 4.4. A congeries of map projections. Icons of geodesic space, transcribed through a variety of tectonic codes. While scale and viewpoint maintain a general consistency, extreme regional distortions arise as the consequence of topological transformation. The mapmaker's choice is not based on a chimerical concept of objectivity, but on the degree to which these distortions support the underlying proposition of the map.

objectify our territorial aims. It has these potentials because it allows us to view the world as we choose, as much or as little of it as we like, from whatever vantage point we like, and with whatever distortions we like; and, even though we know better, it nevertheless projects an aura of ubiquity and authenticity. It can do so because we recognize it as the only thing exact—if in the most limited sense—in a practice that propagandizes exactitude as though it were the reason for its existence.

What Time Has This Place?

"Every map is out-of-date before it's printed." This adage is a staple of the mapmaker's office. It's customarily dragged out for the benefit of the novice, held up as a fact of life (like death or taxes), and then put aside as an inevitable consequence of the complexities—of the *paradox*—of the mapping process. If meant seriously, it's

as a barb at the sluggishness of the mapping bureaucracy, but for the most part it evokes laughter or sentient smiles rather than angst (*let's not get too wound up over it; we said out-of-date, not obsolete.* It's not the sort of thing mapmakers lose sleep over; it just makes them . . . uneasy.

Somehow we've gotten the idea that maps have nothing to do with time. We'll indicate a date of publication, and perhaps a time frame for data collection, but that's about as far as it goes; and these gestures have more to do with the status of the map as a document than with any issue of *map time.* We shrug that off, if a bit nervously, because we've learned to make maps in the terms they can resolve: *anything that changes fast enough to render the map genuinely obsolete before it can reach its audience doesn't belong in the map in the first place.* The map is opaque to these things. It filters them . . . out. That's partly a function of scale: maps are macroscalar and macroscopic, and, after all, we *are* mapping mountains and not the pebbles inching down their slopes. But the things we're increasingly interested in mapping don't have this short-term permanence at any scale; they're more in the nature of *behaviors* than geographic fixtures.[13] These interests may inspire new map forms, but they haven't forced us yet to admit that maps *embody* time as surely as—in fact *because*—they embody space. It remains conventional to think of the map as either a snapshot, *in* time but not of it, something with time evaporated out of it like one of those "satellite maps," or as a 3-hour exposure of Grand Central Station in which actions, events, and processes disappear, and all that register are *objects of permanence* (as implied by the durative code of the USGS). We *may* be aware of emplacing time in the photograph, and even of permanence as the arbitrary consequence of this act, but we refuse to extend these understandings to the map. Time remains . . . *a hidden dimension,* the *Twilight Zone* of the map. But the map *does* encode time, and *to the same degree* that it encodes space; and it invokes a temporal code that empowers it to signify in the temporal dimension. That the action of this code on temporal attributes should be explained by the action of two subcodes, which parallel those acting on spatial attributes, is hardly surprising. The map employs a code of *tense,* concerning its temporal *topology,* and a code of *duration,* which concerns its temporal *scale.*

Tense is the direction in which the map points, the direction of its reference in time. It refers to past, to present (or a past so immediate as to be taken as present), or future—relative, of course, to its own temporal position. So we have maps in the past tense (*East Asia at the time of the Qing Dynasty*), maps in the present tense (the *1986–1987 North Carolina Transportation Map*), and maps in the future tense (of tomorrow's weather, or a simulation of the consequences of global warming). We also have temporal *postures,* the fantastic map (Dune, of Middle Earth, or World of WarCraft) with its present and past separate, but not entirely detached, from our own; and the allegorical map (the *Carte de Tendre, The Map of Matrimony, The Road to Hell*) that proclaims itself *atemporal* or *eternal* and, thus, presumes the *aorist* of the Greek. As maps slide into the past they become *past* maps ("antique" is a term reserved for past maps of some virtue or special appeal) where they continue to refer to *their* pasts, presents, and imagined futures. The posture of the facsimile and the counterfeit is one of position rather than reference, the facsimile admitting (if only in a whisper) of its true temporal position.

The distinction between present and past is always difficult. A map positioned in the last century is obviously *past*—or is it? The physiographic map of 1886 is

past by virtue of its cultural references—its references to the state of physiographic knowledge or the state of graphic representation in 1886—not by virtue of its content, which we still insist we can scale into . . . immutability. Erwin Raisz's physiographic maps, interleaved among the pages of the modern atlas, appear transported there from another time—*and they are*—but we take them all the same as maps *of the present.*[14] Without a more stable yardstick, the passage of mapped time is marked off in editions. For the atlas these are accelerated by the pace of political and developmental change and braked by the constraints of map production; for the topographic map it's modulated by the intensity of localized activity; and with the digital database it's fixed in a perpetual, virtual present.[15] Meanwhile, the USGS quadrangle expresses time—that between the map in hand and its predecessor—with a violent purple tint that says . . . *these things are new.* Cherished globes have been sacrificed to garage sales, the megabuck atlas is becoming an art investment, and we even have a class of disposable maps (with a life span roughly equal to that of a newspaper) characterized not so much by their funk as their anticipated, and almost immediate, obsolescence. We are increasingly conscious of the distance between present tense and past tense; and while it's still remarkably elastic, it is—as everyone tells us—shrinking fast.

The *durative* code of the map operates on the scalar aspect of time. As spatial scale constitutes a relationship between the space of the map and the space of the world, temporal scale constitutes a relationship between the time of the map and the time of the world; that is, the map embraces this or that span of world time, it has a certain thinness, or thickness. For example, an electronic map of traffic density in downtown Raleigh: in one minute it plays out the events of an entire day. This map has a *temporal scale* that is the ratio of one interval (a minute) to another (24 hours), or 1:1440. *It's just like a spatial scale.*[16]

This shouldn't be surprising since the territory brought into being on a map is no more spatial than it is temporal. As I said in the second chapter, territory does not materialize out of or consist of thin air. For a territory to materialize as a posting, it has to be built up from constituent postings, and these postings implant time into the map along with space. Consider someone mapping an afternoon stroll around her neighborhood. Stepping out of the front door, she runs into a friend with whom she chats for a few minutes before heading on her way. She walks, makes a turn, walks, turns again and so on, and finally returns home (Figure 4.5). On returning home, the walk becomes a *closed traverse,* space has been "captured," and *time has collapsed into space.* The time is still present in the map, but . . . *as space.*[17] In Charles Joseph Minard's *Carte Figurative* of Napoleon's Russian campaign, time is literally distance, marked out by the rhythm of falling boots and shrinking roll calls.[18] Less dramatically, but more explicitly, the "Driving Distance Chart" at the back of the AAA road atlas recognizes each segment as simultaneously a spatial interval (255 miles) *and* a temporal interval (5 hours and 20 minutes).[19] Curiously—or perhaps predictably—it also tries to subvert its identity as a map, even proclaiming itself a "chart" (read, "*not* a map"), though it still looks like a map and functions as one.

We can pretend that the dimensions of the map are entirely synchronic, that it has no diachronic quality except as a specimen of technical or methodological evolution; but every mapmaker who has grafted a new road onto an old, or dropped the still warm symbols of his latest research onto the cool plate of a 20-year-old base map knows better. The potential for anachronism is vast; and sometimes it runs
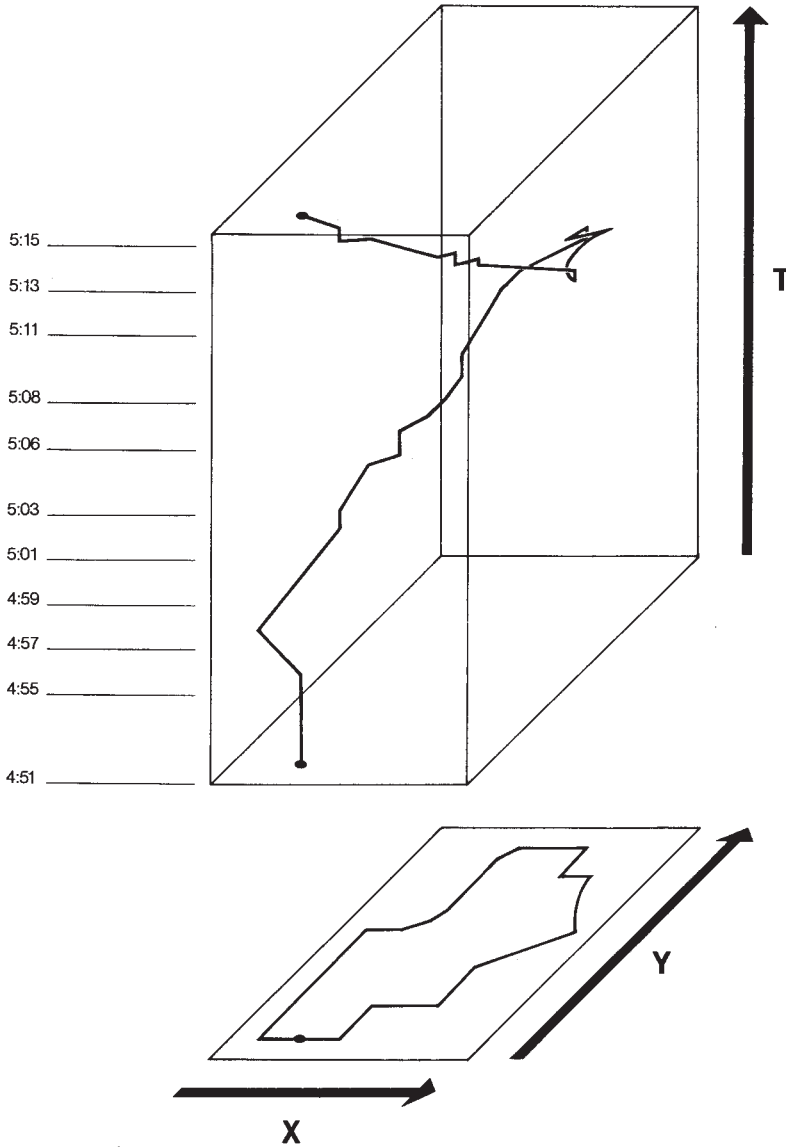
FIGURE 4.5. A spatiotemporal map of the afternoon stroll, and a planar projection in which the temporal dimension has been collapsed to zero thickness. Space emerges as the product of synchronization (temporal flattening) and closure of movement.

amok, as in the maps that drag our earliest continental explorers across a fabric of 48 American states or 10 Canadian provinces. Time is always present in the map because . . . *it is inseparable from space.* Time and space are alternative and complementary distillations, projections of a space/time of a higher dimensional order. We cannot have a map without thickness in time unless we can have a map without extension in space. We cannot squeeze time out of the map, only onto it.

It's Not a Simple Set of Rules

The time of the map, the space of the map, the phenomena materialized in this framework, and the roster of terms and toponyms cast into it are . . . not the map. Expressed through a complex of iconic and linguistic marking schemes, they become the content of the *map image*; but the *map* is much more than this solitary image orphaned on its audience's doorstep. The map image is surrounded, sometimes invaded by a *perimap,* a crowd of signs: titles, dates, legends, keys, scale statements, graphs, diagrams, tables, pictures, photographs, more map images, emblems, texts, references, footnotes, potentially any device of visual expression. The map gathers up this *potpourri* of signs and makes of it a coherent and purposeful . . . *proposition.* The organization of the map and perimap is the province of a presentational code, which takes *as content* the relationship among messages resident in the map and offers *as expression* a structured, ordered, articulated, and affective display: a legitimate discourse.

The more apparent aspects of this code are intrasignificant. It acts on the structure of the map, dividing and proportioning the space of the page, staking out the prospective geometry of blocks, columns, channels, and margins. It proceeds from the primacy of the rectangle, echoing our Euclidean systemization of environment (objects, rooms, buildings, streets, cities), use (trims, folds, stacks, racks, packages, pigeonholes), and reading itself. Within this latent superstructure the ingredients of the map are laid out, ordered by a positional scheme fixing relations of sign to sign and sign to ground and imposing on the map a *program,* a discursive strategy. Discourse is articulated through emphasis (large or small, prominent or subdued) and elaboration (the relative complexity of signs, the intricacy of their meaning).

But the presentational code works beyond schemes of graphic organization. As it acts on both the map image and the perimap, its effects are *manifest in the map taken as a whole*; and some of these are aimed clearly toward extrasignification. The map has a discursive tone: soft/loud, even/dynamic, complacent/agitated, polite/aggressive, soothing/abrasive. The majority of "good" maps position themselves on the left side of these oppositions, more conscious of the demands of . . . professional decorum than sensitive to those of their subject matter, or perhaps their intent is to pacify by shading even the most urgent and disturbing themes into Muzak (the reverse is equally incongruous: some of the most thematically mundane maps bludgeon their viewers with symbols that weigh on the page like musket balls). The map also reflects on itself. It asserts its status among maps in its consumption of resources as mean or lavish, frugal or conspicuous: the scale of its effort, the virtuosity of its craft, its opulence of color, material sensuality, the abundance of surface left unprinted, its sheer size. These gestures are all the more obvious in the atlas, where they can pile up into an object of palpable thickness and weight. So at one extreme we have the Park Avenue hedonism of the *World Geo-Graphic Atlas,* bound by a cloth-wrapped and gold-imprinted cover a quarter of an inch thick and framed by striking end papers that sprawl over nearly 5 square feet.[20] At the other extreme we have the grim imperative of *The Nuclear War Atlas:* an anti-atlas in the form of a Marxist tabloid, a document one could well imagine run off after hours on a hand-cranked press and thrust at nervous yuppies on street corners, or nailed to a senator's door.[21] Government maps are especially status-conscious, announcing the cost of their printing or the percentage of recycled pulp in their stock in an

effort to disarm the bellicose taxpayer. The map also proclaims its alignment: its professional camp (a Mapmaker's map as opposed to a Designer's map), its institutional allegiance (a National Geographic map as opposed to a Bartholomew, a Rand McNally as opposed to an AAA) and occasionally the method and aesthetic of its author (a Bollmann map of Manhattan as opposed to an Anderson). It has a projective aspect as well: it's prepared for a particular audience. It's manufactured for the urbane or the profane, the casual or the attentive, for those at ease with maps or for those afraid of them, for the executive or the mercenary, the well-to-do or the student, the sighted or the blind. It speaks in *their* language: in clinical ascetic, in hot-color High-tech, in journalistic cartoon, in Country and Western, or suburban rec-room.

The presentational code of the map can't be explained as a simple set of rules for graphic organization, especially without defining *whose* rules. Its action is not limited to the structural aspects of the perimap or confined to affairs of visual priority and reading sequence. The map isn't a debating club exercise; it's set firmly in the real world, where the abstraction of structure, order, and articulation cannot be cut away from issues of aesthetics or even belief, any more than the grammar of this text can be separated from its meaning or the attitudes and values of its author.

Maps Are about Relationships

Maps are about relationships among which meanings circulate. In even the least ambitious maps, simple presences are absorbed in multilayered relationships integrating and disintegrating sign functions, packaging and repackaging meanings according to the map's propositional logic. As a consequence, the map is a highly complex supersign,[22] a sign composed of lesser signs, or, more precisely, a synthesis of signs; and these are supersigns in their own right, systems of signs of more specific or individual function. It's not that the map conveys meanings so much as the reader *unfolds* them through *a cycle of interpretation* in which he or she (or they) continually tear down and rebuild it. But however elaborate, this is not an unbounded process. Inevitably, it has a lower bound—particular postings that resist decomposition—and an upper bound—the integral supersign of the entire map that accesses the realm of extrasignification. Between these extremes it may be usefully stratified. Twofold stratifications have been proposed, but they don't go far enough.[23] Explaining how the map generates and structures the signing processes by virtue of which it is a map calls for at least four strata or levels of signification: the *elemental,* the *systemic,* the *synthetic,* and the *presentational.*

At the *elemental* level, visual occurrences (marks) are linked with geographic features (instantiations of conceptual types) in a set of germinal sign functions, indecomposable postings. At the *systemic* level, signs—in fact, supersigns—are composed from similar elements into systems of features and corresponding systems of marks (these in fact post instantiations of higher-order conceptual types, as a *river system* is composed of a variety of streams, a *highway system* of a variety of roads, a *topography* of numbers of contour lines). At the *synthetic* level—in effect, a super-supersign—dissimilar systems enter into an alliance in which they offer meaning to one another and collude in the genesis of an embracing geographic icon (at which point we post a still higher-order conceptual type, a landscape, the Wiley Elemen-

tary Attendance Area, Raleigh, or North Carolina). This is the map image. *Presentation* is the level at which the map image is integrated with and positioned in relation to its perimap, and with which we have finally—or primarily—a complete and legitimized map. Note that it's not that maps are perceptually composed or assembled from constituents, nor that they are perceptually decomposed or dismantled into constituents, but that the map is entered at any level of signification (perhaps many all at once), and that interpretation proceeds in either direction, by integration or disintegration, toward map or toward mark.[24] It may be tempting to regard these levels of signification as stages in a sequential process, which, set in motion, moves inexorably toward a condition of greatest or least integration, but that's not the case. These interpretive levels are *simultaneous states* and, although the map, or part of a map, may occupy only one of these states at one instant for one observer, they are all equally accessible through a process of perceptual transformation, that is, a restructuring or refiguring of the map.

Elemental Signs *Are* Somewhere

Elemental map signs are indecomposable postings. They cannot be broken down to yield lesser signs referring to *distinct geographic entities.* They are the least significant units that have specific reference to features, concrete (Omaha) or abstract (1,000 pigs), within the map image. Appraised in terms of the map's graphic signifiers, this criterion is easily confused; and we must keep in mind that a sign is not its expression, *but the marriage of expression and content.* The elemental map sign operates at the lower bound of the map's content taxonomy, and below this bound reside connotation and characteristic but nothing that can be construed as feature. Strict linguistic models of maps become hopelessly contorted over this issue if their analogies are pushed too far. *Q.–What is the graphic equivalent of a phoneme? A1.–There isn't one. A2.–It's a misguided question.* As we have seen, the map is an iconic medium that imposes its behavior on language, not the other way around; and there is no reason to expect graphic signs to observe the rigidly contrived, and separately evolved, protocol of phonetic representation.

At the elemental level, graphic mark (a cross on a square, a blue line) is equated with the instantiation of a conceptual type (a church, a river). But the elemental sign is not, of necessity, univocal. It is common practice to invent map signs that as elements are polymorphic, polychromatic, polyscalar, and in consequence polysemic; and, although each sign generated through such principles refers to one feature—only one thing is posted—it expresses simultaneously several of that feature's attributes.[25] The elemental nature of map signs resides in the singularity of their posting, not the simplicity of their meaning. Visual simplicity is no yardstick either; elemental signifiers are not restricted to visual primitives like dots and lines. They may just as easily assume more complex or more overtly iconic forms: a juxtaposition of flags signifies a border crossing, a bull's-eye a city, a string of dots and dashes a political boundary. In spite of their complexity, these are elemental signs; they are not decomposed in interpretation: one flag signifies nothing without the other; the dot of the bull's-eye cannot be stripped of its enclosing circle; the patterned line cannot be reduced to Morse Code. None of these will dissolve into autonomous signs.

The autonomy of a sign, and therefore its elemental status, can only be assessed in view of the *entire lexicon of the map that accommodates it.* Take, for example, the signification of a church with the image of a square surmounted by a cross. If the square is also deployed *sans* cross to represent buildings in general, or if other signifiers can be exchanged for the cross to denote a variety of building types, then the square is an elemental expression and the crucifix (or anything else) appended to it is subelemental. The cross is, in effect, a qualifier. Its content is characteristic, not feature; and regardless of its symbolic potency or self-sufficiency outside the map, in the map it has no *geographic* reference independent of the square that serves as its vehicle. This is an elemental *construct,* the syntactical product of two signs, one conjugated with another. Its expression is structurally divisible into two or more signifiers with both separate and joint meaning (building + Christianity = church). If, on the other hand, the square appears only in conjunction with the cross, it has no reference independent of their union, and they must be jointly taken, not as construct but as an undifferentiated element similar to the juxtaposed flags. The importance of this distinction is that it indicates the presence or absence of an elemental syntax.

How are we to interpret two signifiers that apparently claim equal reference to the same feature, as both blue line and blue-tinted area do in the standard lake sign? We could regard these as coextensive signs manifest, in Klee's terms,[26] as medial and active conditions of the same visual plane. This may be valid with respect to *possible* postings of lakes, but a map can only admit one such possibility to the exclusion of all others: we will not find one lake posted as outline, its neighbor as colored area, and the next as both.[27] Neither signifier is redundant in the map, *which adopts both,* because, in that context, neither signifies in the other's absence. An alternative analysis, equally from the Formalist perspective, would identify the lake sign as one visual element: formed by its outline and characterized by the color blue (blue in this case has no form but is only an attribute *of* form). Taken as a basis for explaining how the sign functions, how it relates content and expression, this puts us in an absurd position. A lake is signified by a blue line that closes on itself; and, if within that figure we find a blue tint, then the lake is characterized as having water in it! Both of these postures—the former accepting line and area as simultaneous signifiers of the same signified, and the latter accepting only the line as denoting feature and denying formal status to the area it encloses—refuse to acknowledge what we already take for granted, that the blue line posts the *shoreline* of the lake and the blue tint its *surface.* Correctly or incorrectly, with naïve or deliberate motive, this is how we interpret it, and this is how we map it. Of course, the shoreline feature, strictly speaking, does not exist except as a boundary between water and land or as a locus at which the depth of the water table reaches zero with respect to the land surface (whatever that is). But if we can accept contour lines and other isolines, then we have certainly learned to accept the shoreline: the *surface* of the lake is no more concrete—it is just the boundary between water and air—and the fact that it's planar (we can water ski on it) rather than linear makes it no less an abstraction.

In principle, then, we regard the land surface and the water table as only roughly parallel planes (but as everywhere coextensive), and where these planes intersect, we conventionally demark their intersection with a blue line and place a blue tint to one side of that line, preferably the wet one. What we have then are two abstractions, shoreline and water surface, that we are willing to grant status

as features while at the same time recognizing them as two of many aspects of *connotations* of the lake (or pond or ocean) concept. So we have another type of sign construct (shoreline + surface = lake), only this time both of its components are features. And it turns out that the blue line, in and of itself, does not post the shoreline after all (although it may post a river in the same map) but does so only in the presence of a blue tint on one side and none on the other: *as part of a sign construct.*[28] Thus whereas the language of the map is drawn from a store of culturally prescribed possibilities, its terms are specifically defined only in application, where the semantic field and syntactical procedures of the individual map form a unique dialect or *sémie* (Figure 4.6).

Map signs have to be considered in terms of both expression *and* content. Formalist postures that regard only signifiers but not signs don't cut it, since our conceptualizations of phenomena structure, even dictate, the manner in which we discourse about them. An elemental sign is a *sign of elemental meaning,* one that refers to an element of the landscape which, however arbitrary, we are not inclined to tear into constituent bits. Given this, it's possible to build systems of signs and systemic meaning.
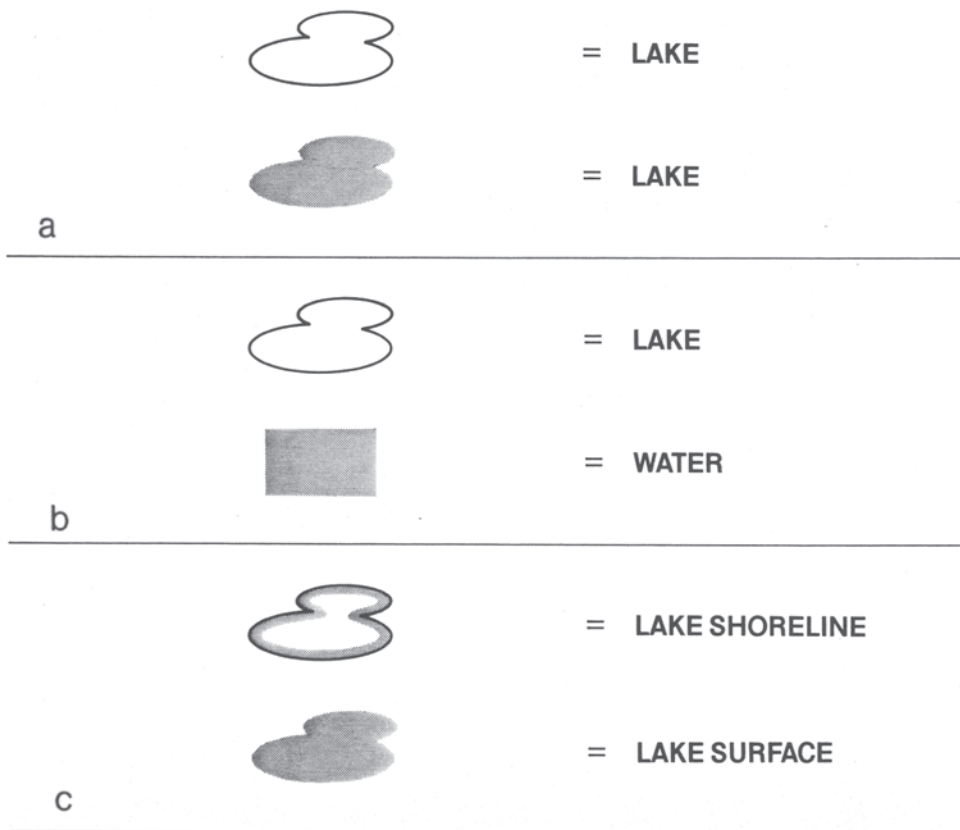

FIGURE 4.6. Alternative interpretations of the lake sign: *a* and *b* from a Formalist perspective, and *c* as a sign construct. The resemblance between the shoreline in *c* and prelithographic lake signs is anything but coincidental.

Sign Systems *Go* Somewhere

A sign system is a set or family of similar elemental signs *extensive in the space of the map image*: a distribution of statistical units, a network of channels, a matrix of areal entities, a nesting of isolines. Here we're dealing with road systems, river systems, systems of cities. These require that we interpret many like signs as one sign—as a single super-posting—a syntactical product but here one of . . . *geographic* syntax. This systemic signifier is shaped by the disposition of its corresponding set of phenomena in geodesic space and by the topological transformation that brings this space to the surface of the page. It is also shaped by the way we define elements in the first place. Were we to map, say, the distribution of mountainous regions in the United States as everything standing more than 1,500 meters above its surroundings, we would find in our map a quite different sign system than if we had chosen 2,000 meters. It isn't usually this innocent. What if we were mapping toxic levels of airborne pollutants? What the map says on this subject is determined by what standards, *whose* standards, we accept as a yardstick of toxicity. *In content a system is, after all, a system of features, that is, of instantiated conceptual types that exist only when we recognize them as such* (Figure 4.7).
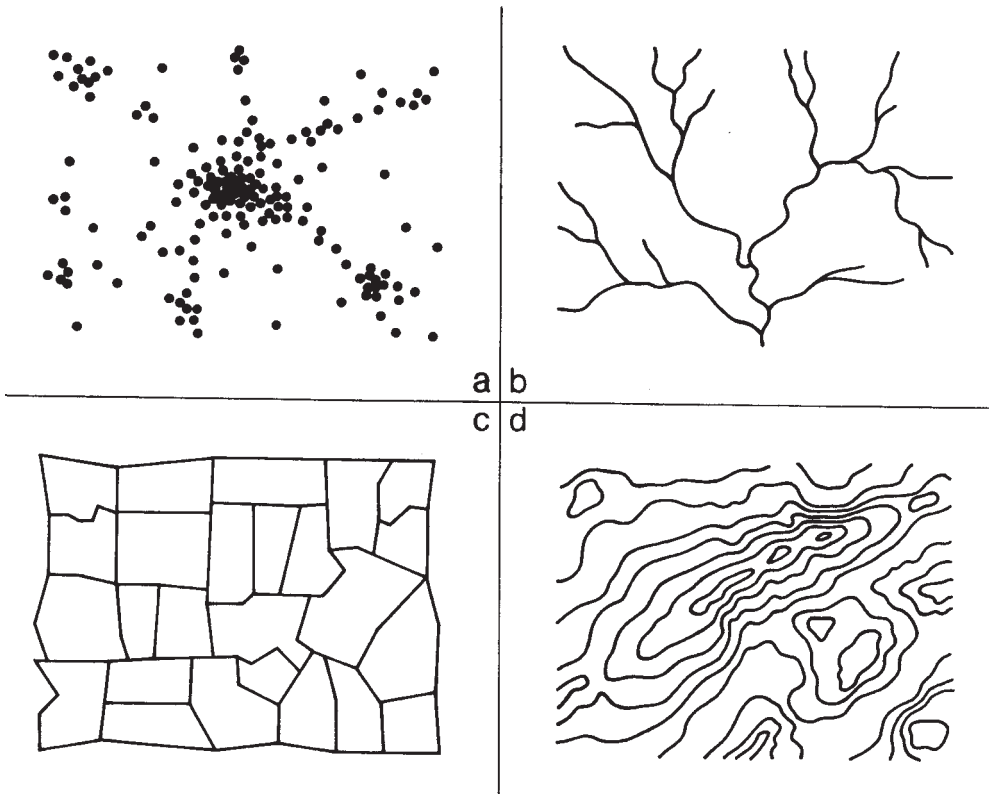

FIGURE 4.7. Typical cartographic sign systems: *a,* a discrete distribution, *b,* a network of signs, *c,* a sign matrix, and *d,* nested signs. Regardless of implantation or graphic symbolism, each system structures the landscape in a distinctly different manner.

An arrangement of signifiers constitutes a system only by virtue of our ability perceptually to organize its elements into something whole. At the systemic level, the bases of affinity among elements are those of *implantation* (yielding point, line, or area systems) and those formal and chromatic attributes variously termed *qualitative, nominal, distinguishing,* or *differential.* Not surprisingly, the latter are as effective among linguistic signs as among iconic signs, distinguishing hydrographic nomenclature, for example, by italic form or blue color. What is surprising, however, is the degree of variation the systemic signifier will tolerate without falling to pieces. Our highway maps, almost to the last, serve up pavement in a *smorgasbord* of colors: red, blue, yellow, black, brown, whatever's in the printer's pantry. If the object were to post a coherent highway *system,* then we could hardly do more to subvert its recognition. But that object is complicated by, for example, the necessity of distinguishing politically based *subsystems* (of sifting out the relative accomplishments of federal, state, and county treasuries). These maps can't just be written off as the products of illogical design or aesthetic insensitivity; they are graphic examples of how the extrasignificant functions of the map *penetrate* to the most practical and seemingly dispassionate design decisions.

We can get away with this sort of thing because, with the exception of scattered distributions, cartographic sign systems are typified by connectivity. Their elements link up, abut, cradle, or nest within one another. *They have anatomies.* We recognize primarily their structure and utilize the characteristics of their elements mainly to highlight subsystems that would be otherwise undifferentiated, or to unstick systems of similar structure. *That is to say, we attend more to the syntax of the system than to the semantic import of its components.* We distinguish blue highways from rivers not because their signifiers are a little wider and a little less sinuous, but because they are *structured differently as systems,* because they are manifestly *different landscapes.* The system is a landscape because, whereas the element simply *is* somewhere, the system . . . *goes* somewhere.

Sign Systems in Dialogue

Since maps are about relationships, it's obvious there can be no such thing as a monothematic map. Consider this staple of academic mapmaking: an array of graduated circles against the barest outline of subject area. Such a map image may post a shoreline (usually elaborated beyond any conceivable utility), the water surface, the land surface, and one or more proprietary boundaries, and—almost forgot— whatever it is the graduated circles might be posting (say numbers of hogs). Stripping off the circles leaves us with an absolute minimum of three sign systems, and usually twice that many, lurking behind the ostensibly servile trace of the pen. Certainly, mapmakers design maps for mapmakers—as architects design buildings for architects and politicians make laws for politicians—but to pretend that this is monothematic is . . . *insane.* Can we really take that much for granted? Are we so thoroughly hypnotized that we can't even *see* the map?

Maps are about relationships. In other words, they are about how one landscape— a landscape of roads, rivers, cities, government, sustenance, poison, the good life, whatever—is positioned in relation to another. The map synthesizes these diverse landscapes, projecting them onto and into one another, with less than subtle hints

that one is correlative to another or that *this* is an agent or effect of *that*. The map can't simply say that something is present (present . . . *in what?*) or that it is distributed in a certain way (distributed in relation . . . *to what?*). At this level, the map image as a whole is the supersign, and the various *systems* it resolves to are its constituent signs, signs that can only have meaning in relation to other signs. Merleau-Ponty puts it this way:

> What we have learned from Saussure is that, taken singly, signs do not signify anything, and that each one of them does not so much express a meaning as mark a divergence of meaning between itself and other signs. Since the same can be said for all other signs, we may conclude that language is made of differences without terms; or more exactly, that the terms of language are engendered only by the differences which appear among them. This is a difficult idea, because common sense tells us that if term A and term B do not have any meaning at all, it is hard to see how there could be a difference of meaning between them; and that if communication really did go from the whole of the speaker's language to the whole of the hearer's language, one would have to know the language in order to learn it. But the objection is of the same kind as Zeno's paradoxes; and as they are overcome by the act of movement, it is overcome by the use of speech.[29]

What could be signified by any system of distributed dots, or branching lines, or nested lines? *Not much.* If juxtaposed with a sign system that we could recognize, or furnished with a nomenclature that allowed us to supply that system, they could become signs, not by virtue of any abstract geographic reference but *in relation to* another sign system that holds meaning for the observer.[30] If you have to resort to the map title to determine that *this* map of teenage suicides takes place in Los Angeles, then you're probably too far removed to be concerned. What the map *does* (and this is its most important internal sign function) is permit its constituent systems to open and maintain a dialogue with one another. It's obvious why a road folds back on itself when we can see the slope it ascends, or why two roads parallel one another a stone's throw apart when we can see them on opposite banks of a river, or why an interstate cramps into a tense circle when we can see the city and imagine its rush-hour torment. We *know* the behavior of this system so well, in fact, that we can take it as an index of other systems in the total absence of their posting.[31] On the face of it, the map confirms these understandings; but they are understandings . . . *that have already been created by maps.*

The *gestalt* of each sign system is positioned against the semiotic ground of another sign system, or a subsynthesis of systems.[32] The roads in the state highway map aren't grounded against an insignificant white surface; they're grounded against North Carolina or Illinois or Texas. What lies between the roads isn't aether (it isn't 40 pound Springhill Offset either): it's tobacco and loblolly pine and patches of red dirt rolling over the Piedmont, or rugose mats of corn dotted with crows and John Deeres, or relentless miles of sand and prickly pear rippling in the heat. *There is nothing in the map that fails to signify.* So the flow of water is interpreted against the ground of landform, and *vice versa*; and the pattern of forestation is interpreted against the ground of both, as both and each are interpreted against it. In the synthesized map image . . . *every sign system is potentially figure and every sign system is potentially ground* (Figure 4.8). There is nothing inherently or irrevocably ground about even the landmass: try telling a truckload of surfers the shoreline in
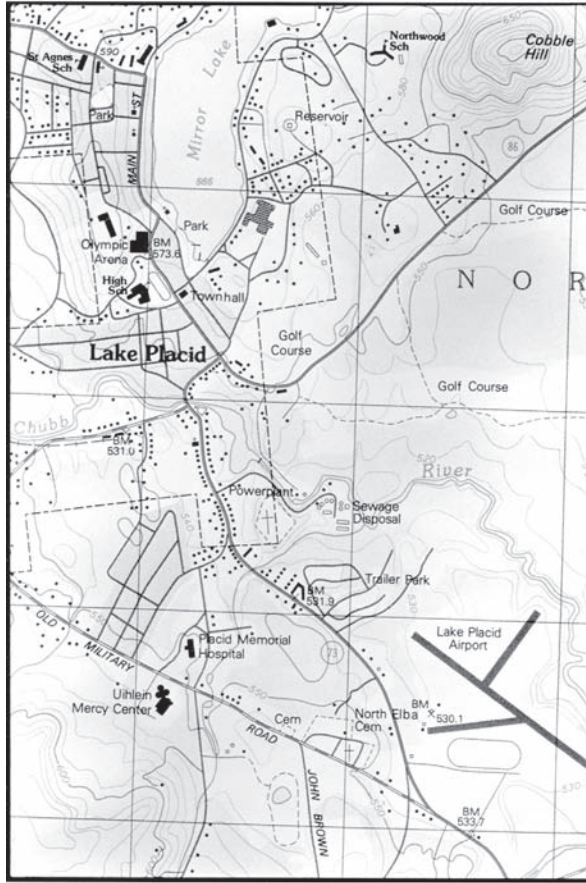
FIGURE 4.8. A synthesis of signs. Thematically diverse landscapes merge in a richly coded supersign, exhaustively deconstructed and reconstructed by the map user in an effort to reveal topical and relational meanings. (*Source:* Morris Thompson's 1979 *Maps for America,* U.S. Department of the Interior)

the highway map is just a backdrop to the road system. They'll let you know you have it all backwards.[33]

The map image is a synthesis of spatially and temporally registered *gestalten,* each a synthesis in its own right; to pretend that this whole is no more than the sum of its parts, or that we can do no more than recommend a certain alignment of their priorities, is to reduce our concept of the map to that of a diagram. No degree of thematic constriction can silence the conversation among map signs. The map models the world as an interplay of systems and presents it to us as a multivoiced analogue, with harmonies and dissonances clearly discernible. Through the map we observe how systems respond to one another, and appraise the nature and degree of that response. We *explore the world through the map,* not as vicarious Amazon travelers hacking across the pages of *National Geographic,* but by remaking it in our own chosen terms and wringing as much meaning as we can out of what we've made.

Injecting the Map into Its Culture

In presentation the map attains . . . *the level of discourse.* Its discursive form may be as simple as a single map image rendered comprehensible by the presence of a title; or as complex as those in *The New State of the World Atlas,* hurling multiple map images, diagrams, graphs, tables, and texts at their audience in a raging polemic.[34] It may be as diverse as vacation triptiks, rotating cardboard star finders, Perspex-slabbed shopping center guides, chatty supermarket video displays, or place mats for Formica diner tables. Presentation is more than placing the map image in the context of other signs; it's placing the map in the context of its audience. Robert Scholes identifies discourse, in the arena of literature, as

> those aspects of a text which are appraisive, evaluative, persuasive, or rhetorical, as opposed to those which simply name, locate, and recount. We also speak of "forms of discourse" as generic models for utterances of particular sorts. Both the sonnet and the medical prescription can be regarded as forms of discourse that are bound by rules which cover not only their verbal procedures but their social production and exchange as well.[35]

And he notes that the "coding of discourse is a formal strategy, a means of structuring that enables the maker of the discourse to communicate certain kinds of meaning."[36]

Discourse is preceded by a code of presentation and by the notion of an audience capable of applying that code to reach meaning *through* structure. This means that the idea of "percipient" must be extended to the entire culture of mapmakers and map users and include, as one of its most prominent aspects, their ability to generate and utilize strategic codes that permit maps to speak *about* the world rather than simply of it.

At this point the map is entirely accessible to the processes of extrasignification and is subject to their appropriation. It can be seized and carried off whole (necessarily whole) to serve the motives of myth. The plan of the shopping center, color-coded, with shops thematically and alphabetically organized and numerically keyed becomes an expression of the fact that "We've got it all: kewl clothes, books, CDs, jewelry, cameras, cappuccino, pizza, and parking." The diner placemat ceases to be a regional guide to places of interest and focal points of recreation (it was never meant as a gravy blotter or it wouldn't have been printed in the first place) and becomes the Chamber of Commerce's propaganda vehicle, complete with smiling check-shirted fishermen tugging against smiling bass the size of Volkswagens. The map is simultaneously an instrument of communication—intrasignification, given the benefit of doubt—and an instrument of persuasion—extrasignification and its propensity toward myth.

Presentation locates the map front and center in all this action, at the vertex of both planes of signification. It's not a quirk of house style that populates the *National Geographic* map with maize-laden Cherokee or the state highway map with trees, bees, civil war artifacts, and cavorting tourists. It's the deliberate activation of popular visual discourse. It's not just pragmatism or objectivity that dresses the topographic map with reliability diagrams and magnetic error diagrams and multiple referencing grids, or the thematic map with the trappings of f-scaled symbols

and psychometrically divided grays. It's the urge to claim the map as a scientific instrument and accrue to it all the mute credibility and faith that this demands. Presentation, as the end and the beginning of the map, closes the loop of its design. It makes the map whole and, in doing so, prepares it for a role that begins where its avowed attention to symbolism, geodesic accuracy, visual priority, and graphic organization leaves off.

It injects the map into its culture.

PART II
Counter-Mapping

Counter-Mapping and the Death of Cartography

Presentation may inject the map into its culture, but this does *not* obligate the culture to accept it, not without a fight at least, no matter how it's dressed, no matter its credentials, no matter the weight of the authorities from which it's issued. While I hasten to add that most maps *are* accepted—and accepted as unproblematic pictures of the real—this is *not* the fate of all maps; and while there are cases of maps being rejected as early as the 16th century, as we cruise into the opening of the 21st not only are maps being rejected with increasing frequency but a whole culture of *counter-mapping* has emerged. Rooted in map art practices that date to the early 20th century; in the mental maps movement of the 1960s; in Indigenous and bioregional mapping and critical cartography and Parish Mapping; with all kinds of fusion, interbreeding, and boundary crossing; and fueled by a widening perception of global injustice, it is counter-mapping that shows us where mapping is headed. While the hype focuses our attention on the new technologies with their satellites, their gazillion miles of optical fiber, their computer hardware, and their miraculous software (that is, on their extraordinary capitalization), it's the new attitudes, visions, and radical philosophies of the counter-mappers that are really taking maps and mapmaking in a whole new direction, a direction with the *potential* to free maps at last from the tyranny of the state.

It's easy to overstate this. Although the next four chapters will trace the evolution and very real achievements of the counter-mapping culture, I should acknowledge immediately how marginal and fragile it is. Yes, Google Earth has its ludic dimension—and we should revel in it—but it also has its military applications, and Google Earth merely hints at the insane apparatus of surveillance and control that the official world of maps and mapmaking has mutated into. If counter-mappers can make gateau out of technological crumbs, it's as well to admit that they're essentially unfunded, working in the refuge corners, and reaching small if growing audiences. Yet counter-mapping practices played an essential role in the creation of the Territory of Nunavut where the Inuit became the first Indigenous peoples

in the Americas to achieve self-government in recent times; and counter-mapping fuels the beating at the heart of the horrible situation in Palestine. It's not a practice to ignore.

These examples imply that counter-mapping is played out over long stretches of time—the counter-mapping that led to the creation of Nunavut began in the early 1970s, that of Palestine in the 1920s—but it doesn't have to be. Some maps elicit an almost *instant* counter-map, one of which at least bears the official name, *protest map,* that characterizes the class with which I begin. I'll follow the motives driving protest maps into "critical cartography," which, after having sketched the interests that "professional cartographers" have had in *marginalizing* mapmaking's critical past, I'll trace from its origins in the 16th century to the present. I'll then turn from this more or less "internal" critique to one mounted by "outsiders," outsiders including bioregional planners, Indigenous mapmakers, community mappers, Green mappers, and Common Ground's Parish Maps Project. In the next chapter I'll look at so-called Public Participation GIS and go on to describe the *effective* public participation geographic information systems mobilized by Guy Debord and the Situationists, Bill Bunge and the Detroit Expedition, and Jake Barton and the City of Memory. The chapter after that takes up the history and practice of map art. The concluding chapter is a case study of how counter-mapping has played out in Palestine.

Protest Maps

Intriguingly enough, protest maps appear in three registers: that of the office, that of the streets, and that of the press. In the official register are the maps made to establish, advance, or illustrate . . . *official protests.* These protests are often, if not always, about other maps. In Hillsborough County, Florida, for instance, a "protest map" is attached to a "protest," where a protest is an official form on which objections can be raised to flood risk designations proposed by recently resurveyed flood maps.[1] Residents of Austin, Texas, are being encouraged to file similar protest maps, as indeed is anyone who feels ill-served by the maps of the National Flood Insurance Program that are being updated as part of the Map Modernization Program of the Federal Insurance and Mitigation Administration (FIMA). FIMA has even prepared *A Guide for Community Officials: Appeals and Protests to National Flood Insurance Program Maps* that describes the form that protest maps must take.[2] On the other hand, in Stillwater, Oklahoma, protest maps are prepared by city staff to help planning commissioners prepare for public hearings on proposed Street Improvement Districts. These protest maps are of properties whose owners are protesting inclusion in the proposed districts. Such usages of "protest map" are widespread.

In the register of the streets are maps *of* or *to* protests. That is, these are maps that let you know how to *get to* protests. As a genre they seem to have come into their own during the Republican National Convention of 2004 in New York when it seemed like every newspaper and blog carried maps not only of the convention sites, but of the sites for protests too. These rapidly became known as protest maps, so that invitations such as this have become common: "If your group wants to be represented at the event (table, leaflets, protest maps, etc.), please get in touch with

us." The etymology is apparent in: "I would like to invite you to attend our protest. Maps of campus are available and protesters are asked to arrive at the mall by 12:45 because, while Bush is inside, the event media will have nothing to cover except the protesters outside"; and also as in, "Hi everybody. There is a protest on the Balnagown estate of Mohamed Al Fayed on Sunday 27th April at 12 noon. This is because of Mr. Al Fayed's continued vociferous opposition to land reform. Dubbed the 'Big Red Ramble' because of him describing the Scottish Parliament as 'communist' (!?), all are invited for a peaceful protest. Maps provided. We will cause no damage and leave only footprints."[3]

Many times protests like these are planned with sufficient publicity to give governments opportunity to respond; or with experience governments develop policies for dealing with protests.[4] Often these result in maps posting the sites where protests are *acceptable*—official protest sites[5]—and it happens (imagine!) that these then provoke the production of maps protesting the locations of the acceptable protest sites.

A protest in essence is a solemn declaration of opinion, usually of dissent, and this sense is nicely focused by the official protest maps with their need to be "certified by a registered professional engineer or a licensed land surveyor," unless derived from "authoritative sources" (such as the Bureau of Land Reclamation or a state department of highways and transportation). The process is formal, carefully framed, and the maps that resolve the protests have the force of law. These maps are members of a whole class of documents in an enormous system of dispute resolution that runs from the complaint counter of your neighborhood big-box retailer up through the appellate courts. But protests may also be registered in such dramatic, typically collective forms as strikes, boycotts, rallies, and marches and may even involve violence; these are the sorts of protests the maps on the table with the leaflets are directing people to. What we're referring to as the register of the *press* includes maps that, like *official* protest maps, are actual protests (not merely of or to them), but that at the same time are distinctly *un*official (often *anti*-official) and partake of the noisy, public, self-consciously rhetorical character of *street* protests, oriented more toward ferment than resolution.

Doubtless there are earlier protest maps in this press register, but perhaps the most famous is "The Gerry-mander: a new species of monster, which appeared in Essex South District in Jan. 1812" (Figure 5.1). With a few strokes of the pen, the map transformed a recently configured Massachusetts electoral district into a kind of winged salamander, with a name that combined that of the lizard with that of Massachusetts governor Elbridge Gerry. Engraved by Elkanah Tisdale for the March 26, 1812, issue of the *Boston Gazette,* the map was widely reprinted—broadsides appeared immediately—by Federalist sympathizers protesting the redistricting scheme that gave Gerry's Republicans, if not Gerry himself, a decisive advantage in the upcoming state elections.

Tisdale's map is sometimes regarded as a metaphorical or satirical map, but then satire—trenchant wit, irony, or sarcasm used to expose and discredit vice or folly—is a frequent companion of protest. Heavier on the sarcasm but playing in a related key is McArthur's Universal Corrective Map of the World. Stuart McArthur, an Australian, was a 12-year-old when a teacher told him it was wrong to orient a world map he'd drawn south up. He was 15 when, an exchange student in Japan, he was ridiculed by his fellow American exchange students "for com-

A new species of *Monster*, which appeared in *Essex South District* in Jan. 1812.

" *O generation of* VIPERS ! *who hath warned you of the wrath to come ?*"

FIGURE 5.1. The original 1812 gerry-mander map. This map transformed a recently configured Massachusetts electoral district into a kind of winged salamander.

ing from the bottom of the world." He was 21 when he published the map that fulfilled the vow he'd taken in Japan to set things right, protesting with his map not only the usual north-up orientation, but people's prejudice against the south: "Never again," a text on his map declares, "to suffer the perpetual onslaught of 'downunder' jokes—implications from Northern nations that the height of a country's prestige is determined by its equivalent spatial location on a conventional map of the world."[6]

Maps in Protest

In a world dominated by maps oriented north up, it may happen that *any* map with south on top comes to be taken as a kind of protest against the hegemonic point of

view, but protest usually involves an awareness not only of what it's in favor of (south up), but of what it's opposed to (north up). In fact, protest is *often* clearest about what it's against. (When "protest" is used affirmatively, as in a phrase like "protested his innocence," it's always in the face of denial or doubt.) What makes McArthur's Universal Corrective Map of the World a protest map is the "Corrective" in his title, which inescapably brings to mind the view being corrected, just as the "Gerry-mander" brings to mind the shape of electoral districts less easily transformed into lizards. It's rarely that facts are being contested in protest maps in the press register, as they always are in the official register. Instead it's the way the facts are framed. "Gerry-mander" does not question the shape of the new electoral district. It insists that we look at it askance. The Corrective map does not propose a new world. It asks that we look at the old world anew.

Here's another example. In a discussion paper of 1971, the Detroit Geographical Expedition published a map it had compiled of the "Citywide Pattern of Children's Pedestrian Deaths and Injuries by Automobiles." The map displayed the deaths and injuries as dots on a background of Detroit streets. It also indicated the location of the city's black population with a meandering dashed line. It's not hard to see that most of the kids killed by cars lived in black neighborhoods, but this is a conclusion someone looking at the map has to draw. A couple of pages further on, the Expedition zoomed in to give us a map that drew the conclusion for us: "Where Commuters Run over Black Children on the Pointes–Downtown Track" (Figure 5.2). There's no mistaking the protest here. The map no longer displays a "pattern" but locates crime scenes, and the deaths are no longer caused by automobiles but by drivers specifically characterized as commuters. Any Detroiter would have known that these commuters were white and on the way between their work downtown and their homes in the exclusive Pointes suburbs to the east. That is, this is a map of where white people as they rush to and from work run over black children. That is, it's a map of where white adults kill black kids. It's a map of racist infanticide, a racial child murder map.

Again, "Where Commuters Run over Black Children on the Pointes–Downtown Track" proposed no data that hadn't been on the less inflammatory "Citywide Pattern of Children's Pedestrian Deaths and Injuries by Automobiles." It did, however, ask that we think about the data differently. Gwendolyn Warren wrote about this difference in an article that accompanied the maps:

> The way the city is situated, there is the central place downtown and then there are rings which go outside of that and the big ring right outside downtown Detroit is the Black community. All the area about a mile going out from downtown Detroit is one-way traffic and runs right through the heart of the black community. And on one specific corner in six months there were six children killed by commuter traffic. But, naturally, these deaths of the children or the injuries or whatever it happened to be were disguised as something else. They never said that a certain business man who was working for Burroughs downtown who was on his way to Southfield went through the Black community by way of this commuter traffic and killed my people—Black children. Even in the information which the police keep, we couldn't get that information. We had to use political people in order to use them as a means of getting information from the police department in order to find out exactly what time, where, and how, and who killed that child. The fact that it actually establishes a pattern proves it is not "accidental."[7]
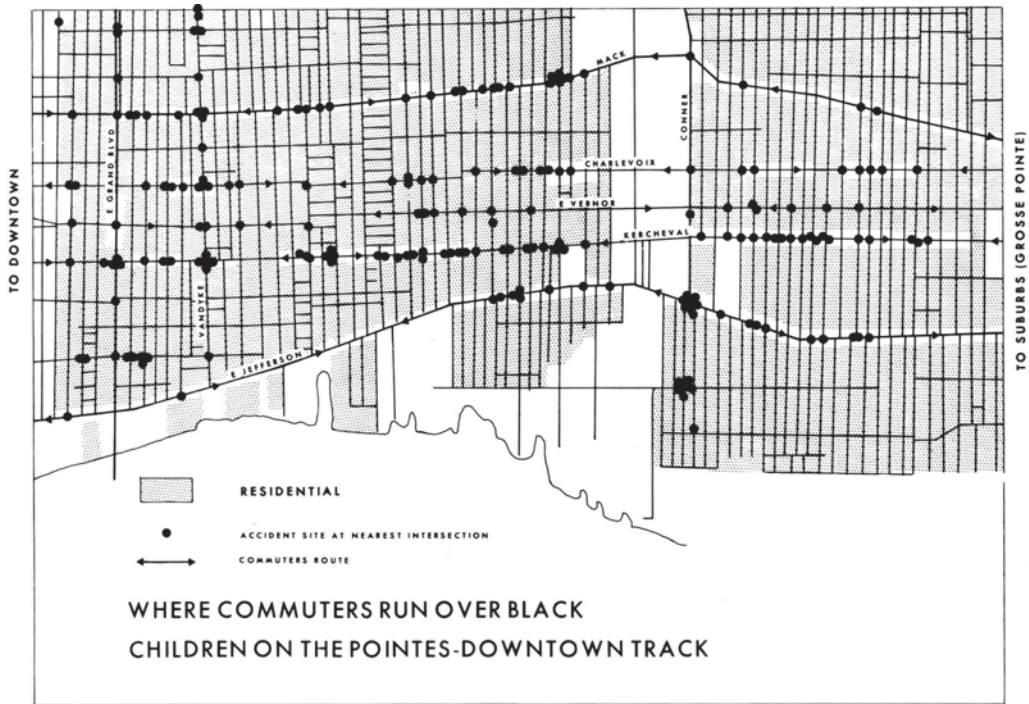
FIGURE 5.2. Where commuters run over black children on the Pointes–downtown track. This map doesn't simply display a "pattern" but locates crime scenes. (*Source:* Detroit Geographical Expedition and Institute)

The protest, the anger, is on the surface here. It radiates from the map.

A similar anger radiates from the maps in *The Nuclear War Atlas* that I mentioned in the last chapter. William Bunge published this atlas in 1982 as a two-sided poster, text on one side, 28 maps on the other. The poster folded, Bunge recalled, "into a 5 in. × 8 in. size designed for peace demonstrations where it was abundantly sold."[8] Black, white, and red, the very design and layout of the maps were inflammatory, but the reframing of data that had been culled from a variety of impeccably reserved sources (*Progress in Nuclear Energy, Health Physics, Child Psychology*) was largely carried out by the titling: "The March of Doom," "Patriotic Poisoning," "The Sea of Cancer." This last was a map of the United States largely covered with red stippling that indicated areas that would be exposed to 100 or more rems of radiation in a full nuclear war. "Not only will most of the United States be washed in immediate radiation," reads the caption, "but even the white areas on the map are safe only in the sense that people in the open escape short term damage but not long term. The cancer is everywhere." A map of the world makes the point that the boundaries of a missile-armed United States and Soviet Union were global:

> To state the new geographic reality using the militaristic language of the 1980s, "The Russians are not coming. They are already here." At least they are straight up in the sky above us and thus are bounded by the earth's surface, not "contained" by boundary lines. They can kill anything on the earth's surface and for a considerable depth

below it; the Americans likewise. "Containment" has been a mathematically proven bankruptcy for almost twenty years.[9]

By dramatically reframing simple truisms like these, *The Nuclear War Atlas* gave people whole new grounds for protesting nuclear weapons.

If the poster edition of *The Nuclear War Atlas* had been self-published and largely distributed by its author, Kidron and Segal's 1981 *The State of the World Atlas* was a whole other story. The initial object of their protest was the state: "It is our contention that the destructive aspects of the state have come crucially to exceed the constructive ones," they wrote in the atlas's introduction.[10] Their maps documented the way states have proliferated and expanded into the remaining nonstate areas of the planet. Their maps documented the military preoccupation of states and their squandering of resources on war. Their maps documented the unequal distribution of state resources, and the impact of the state on labor, society in general, and the environment.

The maps made no pretense about being neutral, and if the first edition's maps framed their subjects with titles like "The State Invades the Sky," "Arms for the Sake of Power," "Bullets and Blackboards" (mapping the ratio between soldiers and teachers), "Slumland," "Fouling the Nest," and "The Dying Earth," the second edition added incendiary subtitles for any who might have missed the point.[11] For example, below the title, "Scourges of the State"—a map of prisoners, capital punishment, state assassinations, and torture—the second edition now appended: "All states are armed against their citizens. Many states use exceptional methods to terrorize them." A quarter of the volume was taken up by notes about Kidron and Segal's data sources. One of these commenced, "The morally repulsive priorities of the state can be illustrated in many ways; but perhaps nowhere more eloquently than in the comparison between expenditure on preparations to promote injury or death and expenditures to heal and sustain life." It is always possible to disagree with Kidron and Segal, *but it is never possible to mistake their point,* which, after all, was the purpose of their reframing.

Maps in this register do not have to be literally run through a press, nor of course do they have to be protesting the state of things in the world. Maps of this type have become ubiquitous on the Web where often they're protesting other maps. I've already discussed the mapping and counter-mapping of the results of the U.S. presidential elections of 2000 and 2004, but protest maps can also concern themselves with lesser if no less inflammatory issues. In 1931 Harry Beck made a sketch in an exercise book of a map of the London Underground.[12] Beck's ambition was to make the system intelligible by reducing its routes to vertical, horizontal, and diagonal lines; by increasing the scale of its route-dense center; and by eliminating surface detail except for an equally stylized Thames. Beck's map, many times revised and issued in uncountable forms and numbers, in time became an icon, not only of the London Underground, but of modern design. In 1992 the conceptual artist, Simon Patterson, produced a lithograph called *The Great Bear*.[13] Except for its title, which is a common name for the constellation Ursa Major, the print reproduced the then contemporary version of Beck's map except, when you looked closely, you realized that Patterson had replaced the station names with those of philosophers, actors, politicians, and others whom we sometimes think about as "stars." For example, Patterson renamed the stops on the Bakerloo line after engineers, those on one branch of the Northern line after musicians, and those on the other branch after

movie stars. The Fra Angelico station stands where the Saints line crosses the Italian Painters line; and Geoff Hurst, on the Footballers line, is only a stop away from William Randolph Hearst on the Louis line. Patterson has worked in an equivalent fashion with paint chips, the periodic table, electric circuit diagrams, slide-rules, air traffic route maps, constellations, and The Last Supper (for example, *The Last Supper Arranged According to the Flat Back Four Formation (Jesus Christ in Goal)*). "I like," Patterson says, "disrupting something people take as read."[14]

The Great Bear soon became an icon in its own right (a copy hangs in the Tate), and it attracted its own imitators: there was the *London Undergrub* (all the stations named after food), the *Undergroans* map (an "impolite" version), the *Untergrund* map (in German), an Anagrams map (in which anagrams had been made of all the station names), *The Company Sponsored Map* (with the names changed to match, or nearly match, the name of well-known companies), an upside-down version, and one on which the Underground lines had been flipped over the Thames so that south London now had most of the lines.[15] In 2005 Thomas David Baker produced the *Moviemaker Tube Map*: "I liked *The Great Bear,*" Baker wrote, "but I didn't like the way when a station was both on the Artist and the Footballer line that the replacement person was just an Artist or a Footballer, but not both. Doing it for movies—using Director, Actor, Cinematographer, etc. for the lines—meant I could make sure that each individual representing an interchange had done the job represented by each line that goes through that station." In early 2006 the *Musical Map* appeared in *The Guardian,* with each line named for a type of music (soul, reggae, pop, etc.) and each station after an artist of that type (The Four Tops, Peter Tosh, U2, and so on). Artists at intersecting stations had to fall into the mixed genre of the intersecting lines (and so Prince where the Funk line intersects the Pop line). This map prompted the creation of still other versions.

Geoff Marshall, a tube fanatic (and holder of the world record for going round the entire system in the least amount of time), decided to gather these maps together into a folder, "Silly Tube Maps," on his website.[16] In addition to maps on which the names had been changed, Marshall posted a score of others (a map of stations with toilets, a map showing travel times between stations, a map on which dotted walk lines connected stations less than 500 meters apart), and links to still others, including the London Tube Map Archive with its three dozen versions. Marshall made variations of his own, including *The Real Underground* that showed which portions of the Underground *were* underground, and a map on which the station names had been omitted, which became the basis for further variations on the part of others (the *London Undergrub* had in fact been inspired by Marshall's site). In March 2006, a lawyer representing Transport for London (TfL), which owns the Tube Map, threatened to shut Marshall's site down unless Marshall removed "ALL images which infringe my client's intellectual property [by] midnight on Monday 13 March." Marshall immediately posted the threat, which stirred a storm of controversy and finally . . . a protest map.

Needless to say, it's in the style of Beck's tube map. However, here the stations have been renamed "in," "March," "2006," "Transport," and so on, to create the sentence, "in March 2006 Transport for London's lawyers suddenly took offence to tube maps designed in the style of the Great Bear by Turner Prize nominated artist Simon Patterson being hosted by world record holding tube enthusiast Geoff Marshall and used legal bullying to force their removal. We think the people respon-

sible for this decision are," and here you have to pull back to see the larger pattern made by the lines and stations which reads, in Harry Beckese, "Wankers" (Figure 5.3).[17]

The *Wankers* map embodies everything we have come to expect of a protest map. Its creator, who wishes to remain anonymous, spelled out his motivations for me:

> I read Geoff's blog on the subject, and I thought, "what a colossal waste of public money" or words to that effect. Nothing he was doing was harming TfL, if anything, it was the reverse, and here they were, setting the packs of highly paid lawyers on to him, with my [expletive deleted] money. Particularly as it was just after the *Guardian* had published a map with musical artists, and made a big fuss of it. I think that's what inspired some people to create other maps—I saw some of the less functional maps as artistic endeavors. TfL knew he couldn't afford to defend himself; it seemed like corporate bullying, and it just stuck in my craw; even if you put the most benign view on their actions, they show a great misunderstanding of the internet and the difference between commercial websites, and personal sites; Geoff doesn't even carry any advertising, even though he gets a whole lot of traffic. At the time, I think it was Saturday 11 March, I had a fair amount of free time, and not much else to do, so I set about with a graphic package designing it. I thought it might cheer Geoff up a bit.

The map also makes it clear how hopeless the categorization of maps is. More than enough ink has been spilt already over whether or not Beck's original *Underground* map is a map, but only pedants refer to it as "the Diagram." What type of map it is, however, is another question. Helen Wallis and Arthur Robinson may have regarded it as a "Route map," whereas Erwin Raisz would have been more likely to call it a "Transportation map." It's possible that none of these would have thought Patterson's *The Great Bear* was a map at all. Certainly none of them had a category for art maps, much less art map parodies (or parodies of a parody, for whatever else it is *The Great Bear* is certainly a parody).

Thinking about the *Wankers* map as a protest, however, gets at its motivation as well as its content and form, and motivation in the end is what really matters about all these maps. Like the anonymous creator of *Wankers,* their makers were all moved by a perception of injustice: to people who don't think they live in floodplains, to the voters of Massachusetts, to Australians, to the black children of Detroit, to the inhabitants of an earth threatened by nuclear holocaust, to victims of the state system, to Geoff Marshall. Thinking about these maps from the perspective of motivation gets at aspects of them that other ways of thinking about them can't, and it
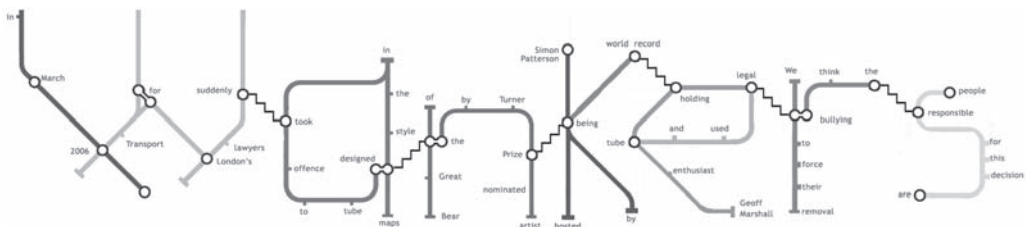

FIGURE 5.3. The Wankers map. This map uses its very form to mount its protest and in an unmistable way. Its author wishes to remain anonymous.

points up their critical take on the maps they're responding to, from flood maps, through the usual maps of nation-states, to property rights in maps of the Underground.

Critical Cartography

But then, given their propensity to undergird the status quo—to instantiate the "real"—maps have been *critically* regarded from their very beginnings, though when critical cartography is usually thought about, it's thought about as something . . . recent. Actually it began in the 16th century.

The *standard* story is that critical cartography developed during the late 1980s and early 1990s in opposition to the hegemonic description of mapmaking as a progressive and value-free transcription of the environment. Included in this standard story is the 1986 "deconstruction" of the North Carolina state highway map that Fels and I did and that, revised, you're just read in Chapters 3 and 4; the 1987 publication of the first volume of Brian Harley and David Woodward's monumental reconstruction of the history of cartography; a series of polemics by Harley, especially the 1988 "Maps, Knowledge, and Power," the 1989 "Deconstructing the Map," and 1991's "Can There Be a Cartographic Ethics"; the first of a number of papers by Robert Rundstrom, in 1990, reassessing mapping among First Nations peoples; John Pickles's 1991 "Geography, GIS, and the Surveillant Society"; the 1992 Power of Maps exhibition I curated for the Cooper-Hewitt National Museum of Design and the accompanying publication of the original *The Power of Maps*; David Turnbull's 1993 critique, *Maps Are Territories,* from the perspective of the sociology of scientific knowledge; Doug Aberley's 1993 *Boundaries of Home: Mapping for Local Empowerment*; the 1994 Smithsonian edition of The Power of Maps; Jeremy Crampton's 1994 "Cartography's Defining Moment: The Peters Projection Controversy"; and Pickles's 1995 collection, *Ground Truth*.[18] Binding this stuff together was the nature of the critique, which was less about ferreting out bad maps or making better ones than about trying to lay bare, understand, and question the presumptions of professional cartography, "professional cartography" here embracing academic cartography, official mapmaking, and the mapmaking of the dominant map houses.

As a story about the origins of a now pervasive critique of the assumptions and practices of professional cartography, the standard story has undoubted merit: the decade did witness an unprecedented attack on the fundamentals of cartographic history, theory, and practice. But construing critical cartography in this narrow beam forecloses an awareness of both a precedent history of critique within the profession of cartography itself, and a much longer history of critical thinking in mapmaking as a whole.

Cartographers Intentionally Foreclosed This Awareness

It's an interesting question, in fact, why we think about mapmaking as something . . . scientific . . . in the first place. Most of the examples we've just looked at imply that mapmaking is a lot more like talking, like writing. You want to direct protesters to a protest, you draw a map. You want to draw people's attention to where white

commuters kill black kids, you make a map. You want to help people navigate the Underground, you draw a map. Certainly there was nothing "scientific" about any of the maps in the early history of mapmaking, which were, in fact, *precisely* a kind of writing. At the moment I'm thinking about the *circa* 1407 map of Inclesmoor, West Riding, in Yorkshire, that was made in the course of a lawsuit[19]—and plenty of early maps were made in such cases[20]—but now I'm thinking about the duc de Lesdiguières suggesting to Henry IV that "Your majesty will understand much better than I can set it out in writing, if [you] will look at the map of Dauphiné with the Piedmont border."[21] Nor do my examples have to be so idiosyncratic: *no* early surveying or cadastral mapping was scientific, no matter how systematic it may have been (though rarely was), any more than the mapping done by "cartographic" heroes like Mercator or Saxton or the Blaeus was. Actually, maps comprise what is in fact a literature and, like literature, has been a subject of criticism from the beginning.

Mitigating against *any* vision of this critical past, however, has been the conflation of *cartography*—a comparatively recent *professionalization* of mapmaking dating to the first third of the 19th century that was *itself* critical of earlier mapmaking practices—with the whole of mapmaking, most of whose history had preceded the emergence of cartography, and the rest of which paralleled it until cartography's demise in the 1990s.[22] What professional cartography wanted was to be accepted as an academic science, one that progressed from the solution of one problem to that of another (as cartographers imagined other sciences), and to this end cartographers recast the past of *mapmaking* as an almost seamless accumulation of knowledge and technique, and renamed it . . . the history of *cartography.*

Important in this move was the work of Max Eckert, dating from the later 19th and early 20th centuries, work explicitly directed *toward the establishment of cartography as an academic science,* originally "to complement the traditionally practical and handicraft cartography," but ultimately to supplant it.[23] Strategic here was Eckert's effort to articulate mapmaking around a self-consciously hegemonic vision of timeless principles, what Arthur Robinson would later call "The Essential Cartographic Process."[24] While, as we'll see later, these principles were largely concerned with *design,* essential to Eckert's program was the division of maps into two overarching categories: *general-purpose* (or *reference*) maps and *special-purpose* (or *thematic*) maps. This division isolated and so raised the visibility of a practice of small-scale, often statistical mapmaking that could be justified *as a subject in a university curriculum,* especially since it emphasized a division of labor between *technicians,* concerned with "practical and handicraft cartography" who were responsible for the reference (the topographic, the base) maps, and *scholars,* who created the thematic (the special purpose, the applied) maps.

The typification of maps actually emerged early in the history of mapmaking, but originally it was based on differences in scale. On the one hand were maps of the world as a whole, that is, *universal* or *general* maps. On the other hand were *particular* maps, that is, maps of continents, regions, countries, or even smaller parts. Here, for instance, from his *Dictionarium Britannicum* of 1730, is Nathan Bailey: "Universal maps, are such as exhibit the whole surface of the earth, or the two hemispheres. Particular maps are such as exhibit some particular part or region thereof."[25]

This scale-based typology served from the 16th century into the 19th when

geographers, hoping to exploit mapmaking in their own struggle to get geography into the scientific academy, began distinguishing what they called "applied" from what they relegated to "geographic" mapmaking.[26] Here they were inspired by the examples of Carl Ritter and Alexander von Humboldt, and they showcased the high-quality maps of climate, hydrography, vegetation, anthropology, ethnography, and the like that Hermann Berghaus was making, along with such later distillations and revisions as those made by A. K. Johnston and others. As the century wore on, "applied maps" such as these were increasingly distinguished from less narrowly focused "geographic maps" at every scale. Eckert, who was indeed a geographer, refined these map categories in his 1908 paper, "On the Nature of Maps and Map Logic," where he distinguished geographically *concrete* maps that "reproduce facts as they exist in nature, such as the distribution of land and water and of heights and depressions" from geographically *abstract* maps that "present, *in cartographic form,* the results of scientific induction and deduction and in most cases, can be traced back to the study of the scientist."[27] The distinction, flattering to geographers, took hold, and in 1925 Eckert expanded on it in the second volume of his 1,500-page *Die Kartenwissenschaft*: "The applied map design is done at the desk of a scholar, because the practical cartographer has done enough in drawing a perfect base map," Eckert wrote. "Only seldom does the real cartographer proceed to the field of applied cartography. It is generally known that he has other work to do. Moreover he has no time to care about scientific problems and their translation into carto-graphic form which is a full-time occupation, because he is already totally occupied with his manual, but nevertheless scientifically guided work." As Eckert concluded, "The matter of applied map design is the very task of a geographer."[28]

In the first cartography textbook in English, the *General Cartography* of 1938—that's how recent all this "cartography" stuff is—Erwin Raisz distinguished between a pair of related categories that he called *general* and *special,* further refin-ing the distinction in both a second edition of 1948 and a 1962 revision he called *Principles of Cartography*.[29] By 1962, however, Nikolaus Creutzberg had rechristened this *special* category as *thematic* (in fact in a paper of 1953), and Raisz incorporated this new term in his revision: "Maps," Raisz now wrote in 1962, "are of many kinds. Perhaps the most important difference is between serial and individual maps. Large-scale topographic maps and charts come in sets and are usually made in government offices with highly specialized equipment and broken down to jobs with rather rigid standards. In the second class we have maps often on smaller scale which the individual can design and draw. In the first, the technical training is the more important; in the second, the knowledge of geography and certain ability in graphic expression."[30] Marking the growing importance of this second, now "the-matic" category was the simultaneous publication of Eduard Imhof's *Thematische Kartographie* and other texts that soon followed: Erik Arnberger's *Handbuch der Thematischen Kartographie* in 1966, Werner Witt's *Thematische Kartographie* in 1967 (with a second edition in 1970), and Sylvie Rimbert's *Leçons de Cartographie Théma-tique* in 1968.[31]

Implicit in the new classification was a narrative about the genesis of maps. Ini-tially there were three steps. For example, Raisz had written in his 1938 text: "The process of revealing the Earth's pattern has three phases: The surveyor measures the land, the cartographer collects the measurements and renders them on a map, and the geographer interprets the facts thus displayed."[32] The problem with this

version was that it minimized the role of the cartographer, and Arthur Robinson soon collapsed the three phases into two. In his 1953 *Elements of Cartography* —which through its six editions would become the defining textbook for Anglo-American cartography in the second half of the 20th century—Robinson reconceived the process as follows: "The entire field of map making is usually thought of as consisting of two distinct phases. The first is concerned with the detailed large-scale topographic mapping of the land or charting of the sea. The remaining large proportion of cartographic activity is less clearly defined, being usually thought of merely as smaller-scale, special cartography, or simply as *not* the first mentioned."[33]

That is, Robinson aggregated Raisz's *surveying* to topographic mapping and Raisz's *geographic interpretation* to what Creutzberg was rechristening thematic mapping. "Topographic mappers," Robinson went on, "make maps from field or air survey and are concerned with such things as the shape of the earth, height of sea level, land elevations, and exact and detailed locational information. Generally speaking, this group, which includes the great national survey organizations, national land offices, and most military mapping organizations, makes the basic maps from which the other group starts."[34] This "other group" did not make maps from surveys but "using the detailed maps, compiles from them the basic data required and then proceeds to add relationships, generalizations, and a host of other kinds of material. To this group belong the geographers, historians, economists, and many others of the social and physical sciences who are seeking to understand and interpret the social and physical complex on the earth's surface."[35]

Actually, this cartographic genesis creates three, not two, groups of mapmakers. In the first, as we've seen, are those responsible for topographic mapping. Typically government employees, these work with highly specialized equipment at carefully defined tasks including surveying, drafting, engraving, and printing. That is, these mapmakers are technicians, manual laborers, though an adherence to strict standards results in precision and accuracy. The second group uses the first's data to interpret social and physical patterns. These mapmakers are scientists, university people, professionals, mind workers. However, because this intellectual work is based on the careful labor of the topographers, it inherits the accuracy and precision of these technicians. Everyone else—that is, you and me and very many mapmakers—falls into a third group *that is neither trained nor educated in mapmaking*.

Valorized this way at our own and the topographer's expense were university cartographers and what was soon universally known as the thematic map. As it brought the thematic map to prominence, this typology also created a novel map type, the base map, rarely catalogued yet highly prominent in the literature. The base map was what university cartographers compiled from the technical work of the topographers: "All special-purpose maps are made on the foundation of a base map," Robinson wrote in his first edition, where the base map was the subject of an entire chapter. "This base map is compiled first, and the accuracy with which it is made determines in large part the accuracy of the final map."[36] The base map fails to appear in cartographic typologies, however, because once the university cartographer has performed his interpretative magic, the base map disappears, though as a ghost it has long haunted cartographic theory.

Now, classifications are systematic segmentations of the world. Ideally, they're consistent, clearly demarcated, and complete; in other words, they obey unique classificatory principles, consist of mutually exclusive categories, and have slots for

everything in their purview.[37] It may be true that no classification has ever fully satisfied these requirements, but the schemes of Eckert, Raisz, Robinson, Imhof, Arnberger, and the others fall *wildly* short of the mark. Furthermore, the attendant story of how maps are produced is almost wholly untrue. Historically, it is simply false. I mean, it must be obvious that *none* of the maps made in the centuries prior to the inauguration of large-scale topographic surveys could have been based on them; but neither were the vast majority of later maps that were rooted in earlier mapmaking traditions, and these include most urban cadasters, railway maps produced by houses like Rand-McNally, early highway maps, small-scale thematic maps in atlases of the 19th and early 20th centuries, maps of diseases at large and small scales, Sanborn insurance maps, most planning maps, illustrative and advertising maps of all kinds, *ad infinitum.* Indeed, it is hard to say to what extent even today this genetic myth has much validity.

At midcentury, however, as university cartographers struggled to justify their positions on university faculties, none of this mattered. As students of classification have long observed, among other things classifications are about struggles for professional authority. Foreclosing one labeling option as they preset others, categories valorize *this* point of view at the expense of *that.* Valorized by the map types constructed by Eckert, Raisz, Robinson, Imhof, and the rest were academic mapmakers like themselves and the *thematic maps* they alone made, maps that were shifted by this academic sleight of hand from a completely marginal position to stage center.

Thematic cartography took over fast. Robinson had not used the word "thematic" in the 1953 edition of his textbook, but Imhof, Arnberger, Witt, and Rimbert had all published their thematic cartography texts by the time Robinson published his third edition in 1969. Dispensing with efforts to classify map types ("To attempt to catalog with precision the infinite number of kinds and uses of map is an impossible task"), Robinson immediately launched into a history of cartography. Where in the first edition this history had moved from "The Beginnings of Cartography" through "The Early Modern Period" to "Twentieth Century Cartography," in the third edition it moved from "The Beginnings of Cartography" through "The Dark Ages," "The Renaissance," and "The Early Modern Period" to . . . (*Ta da!*) "The Rise of Thematic Cartography." "In addition to the nautical chart and the topographic map," Robinson now declaimed, "a third great class, the thematic map, was added to the repertoire of cartography by the early nineteenth century." Noting that in the past the thematic map had been called the "special purpose map," Robinson claimed that "its main objective is specifically to communicate geographic concepts such as the distribution of densities, relative magnitudes, gradients, spatial relationships, movements, and all the myriad interrelationships and aspects among the distributional characteristics of the earth's phenomena." At that point in his text Robinson recapitulated the substance of his earlier "two phase" description of the field, but when he reached the second, dependent phase, he now added, "The other category, which includes thematic cartography . . ."[38]

By the time of his text's fifth edition in 1984, the positions Robinson had promoted in his third had solidified.[39] Among other things, Imhof's textbook had gone into a second edition in 1972; Arnberger had supplemented his *Handbuch* with his *Thematische Kartographie* in 1977; in 1979 Barbara Bartz Petchenik had provided psychological justification for the claims of thematic mappers in her "From Place to Space: The Psychological Achievement of Thematic Mapping;" and in 1982

Robinson himself had published *Early Thematic Mapping in the History of Cartography.*[40] This last meant that a map type that had existed *only since 1953* now had a history, which, in a mind-boggling burst of retrospective reclassification, relegated *most* of the history of mapmaking to "The Development of the Base Map," even as it hitched the history of *thematic* mapmaking to the prestigious history of science. The following year the first edition of Borden Dent's *Principles of Thematic Map Design* was to appear with its definitive opening: "Maps are graphic representations of the cultural and physical environment," Dent intoned. "Two subclasses of maps exist: general-purpose (reference) maps and thematic maps. This text concerns the design of the thematic map."[41]

Wow!

Can it be surprising that in 1984 Robinson finally felt empowered to risk a classification of his own? While continuing to acknowledge that the variety of maps was unlimited, there were, he now ventured, "recognizable groupings of objectives and uses for maps, which permit us to catalogue them to some degree." He discussed these under three headings: scale, function, and subject. Scale varied, Robinson noted; and there was no limit to the possible subjects of maps; but when it came to function, there were three classes: general maps, thematic maps, and ocean charts. General maps were typified by the portrayal of "things such as roads, settlements, boundaries, water courses, elevations, coastlines, and bodies of water." Thematic maps, which now could be large- as well as small-scale, "concentrate on the spatial variations of the form of a single attribute, or the relationship among several." Charts remained segregated in a separate class to serve the needs of nautical and aeronautical navigation.[42]

The triumphant progress of the thematic map continued. In 1987 Arnberger's *Thematische Kartographie* went into a second edition, and Dent's *Principles of Thematic Map Design,* now called *Cartography: Thematic Map Design,* went into second (1990), third (1993), fourth (1996), and fifth editions (1999).[43] There were, of course, dissenting voices. In his *Cartographic Design and Production* of 1973, J. S. Keates noted that the "expression 'thematic' does suggest that the subject-matter deals with a particular theme or subject, but as this is true of all maps it is not particularly helpful in determining a category."[44] In his later *Understanding Maps* of 1982 (and its second edition of 1996), Keates also argued that cartography had arbitrarily limited its scope with its emphasis on the thematic map.[45] John Campbell acknowledged the reference/thematic distinction in his *Introductory Cartography* of 1984, but he also observed that the "problem with dividing maps into reference and thematic types is that there is no clear-cut dividing line between the two."[46] Philip Gersmehl echoed this sentiment in his *The Language of Maps* of 1991 when he noted that "the distinction between reference and thematic is thus more than a little blurry."[47]

Despite such blurring and polite internal discussions about things like Judith Tyner's special-purpose maps,[48] the orthodoxy of the reference/thematic distinction, and the history and the production hierarchy it entailed (including cartography positions on university faculties), seemed secure as the 1980s closed when it was unexpectedly assailed not only by those soon to be called critical cartographers, but far more massively by Geographic Information Systems (later, in its own attempt to court academic respectability, Geographic Information *Science*). GIS software, particularly once it spread to personal computers and then the Internet, made it possible for anyone with access to a computer to make almost any kind of map, and

since the software embodied most of the intellectual capital of academic cartographers as presets and defaults, it all but made Everyman and Everywoman the functional equivalents of professional cartographers; except that, with no need to justify positions in the academy, neither Everyman nor Everywoman found much utility in the reference/thematic distinction that, consequently, is *fast* disappearing. Cynthia Brewer's 2005 *Designing Better Maps,* for example, rarely uses "thematic" and never defines it; and John Krygier and I entirely omitted "thematic," "reference," and "base map" from our 2005 *Making Maps.* Nor do books like Schuyler Erle, Rich Gibson, and Jo Walsh's 2005 *Mapping Hacks: Tips and Tools for Electronic Cartography* or Janet Abrams and Peter Hall's 2006 *Else/Where: Mapping,* even allude to the concepts.[49] The Age of Cartography (RIP) would seem to be over.

I mean . . . *map mash-ups!* True, maps have always been mash-ups (though more pretentiously cartographers called them "compilations"), but it's beginning to feel as though the cozy world of cartography dreamed up by Eckert and built by Raisz, Robinson, Imhof, Arnberger, and others, never existed at all![50]

Early Critique in the History of Mapmaking

What's so interesting about this history is how . . . *typical* . . . it is of the history of mapmaking in general which, far from being a linear progression from one triumph of exploration and access of accuracy to the other, has been more like the history of writing, of poetry, of the novel, a continuous accumulation, *sans doute,* but one marked by one fad after another, and so one marked as well by wave after wave of "reformation." In fact, mapmaking has been perpetually transformed, all but dialectically, by *successive critiques.* Not all may have been critiques in the sense inaugurated by Immanuel Kant, but critiques they emphatically were, embedded as often as not in novel *ways* of making maps (for example, new projections), novel map *subjects* (for example, those of the early 19th century that Eckert would retrospectively call thematic), or both.[51] The classic example is the world map published by Gerard Mercator in 1569 and the projection implicit in it. This was not, as it is so often portrayed, the acclaimed solution to an urgent problem (as demonstrated by its initial rejection and the *two centuries* it took to become widely adopted), but neither was it merely a novelty.[52] It was, however, *deeply* critical, both of the conical Ptolemaic projections popularized by Renaissance scholars and of the plane charts (*portolanos*) then used by mariners.

This is not something we have to ferret out. Mercator spread his critique across his map in 15 polemical texts. About the Ptolemaic maps, for example, Mercator fulminated that "indeed the forms of the meridians as used till now by geographers, on account of their curvature and their convergence to each other, are not utilizable for navigation; besides, at the extremities, they distort the forms and positions of regions so much, on account of the oblique incidence of the meridians to the parallels, that these cannot be recognized nor can the relation of distances be maintained." About the mariners' charts he fumed that "the shapes of regions are necessarily very seriously stretched and either the longitudes and latitudes or the directions and distances are incorrect; thereby are great errors introduced." And Mercator was critical about more than form: among other things he abandoned the Ptolemaic prime meridian for another; and adduced a north polar landmass, a second Greenland, and a huge protuberance in southwest South America.[53]

Traditionally staged as "a paradox of advances and retrogressions" in the drama, *The Progress of Cartography,* Mercator's map is praised for its ingenuity and condemned for the "cartographical mistakes" it disseminated.[54] In fact, both the map's form and its content are more usefully approached as embodiments of Mercator's critical engagement *with his sources.* Not only did nautical charts disagree with each other, as did the maps of the scholars, but the two kinds of maps were especially difficult to reconcile, a compelling problem for Mercator whose life work consisted in compiling maps from the maps of others. "I had to wonder," Mercator had written his friend, Antonie Perronet, years earlier, "how it could be that ship-courses, when the distances of the places were exactly measured, at times show their differences of latitude greater than it really is, and at other times on the contrary, smaller. . . . [T]he matter caused me anxiety for a long time, because I saw that all nautical charts, by which I was hoping especially to correct geographical errors [that is, errors on the maps of the scholastic geographers], would not serve their purpose."[55] As he admitted to Perronet, "The more carefully I examine, the more errors I find in which we are enmeshed."[56]

"When, blinded [by tradition]," Mercator wrote, "we attempted to harmonize the irresolvable difference between the old and new, we denounced both the ancient and more recent descriptions; in addition, by means of small adjustments, we undermined the current proportions of the coasts as well as the findings the ancient geographers had achieved through great effort."[57] Confrontation like this with conflicting reports brings the problem of knowledge to the foreground in an inescapably critical fashion, raising the contingent nature of knowledge before even unwilling eyes. Ultimately, Mercator's critique of the *portolanos* and the Ptolemaic conics would take the form of his eponymous "projection," a spatial frame that was no sooner published than it became the subject of critiques that continue into the present.[58] Among those first objecting to the projection were the mariners for whom it was expressly designed but who, thanks to its poleward increase in scale, found it hard to understand; and it is this characteristic that has sustained the most extended critique. In 1772 in a veritable counter-projection, J. H. Lambert shrank what Mercator had stretched to maintain *areal proportions* instead of *compass bearing,* and his cylindrical equal-area projection became the first of a number of rectilinear projections reacting against the Mercatorial world. Among its progeny were projections created by James Gall in 1855 and Arno Peters in 1967.

Gall attacked precisely Mercator's commitment to navigators, writing in 1855 that "Mercator's projection sacrifices form, polar distance, and proportionate area, to obtain accurate orientation for the navigator; whereas to the geographer, form, polar distance, and proportion of area are more important than orientation," which, while reversing it, perfectly recalls Mercator's critique of the Ptolemaic conics popularized by the scholastic geographers.[59] Peters, on the other hand, critiqued the Mercator for being "the embodiment of Europe's geographical conception of the world in an age of colonialism." Though, in common with Lambert and Gall, Peters was *not* a cartographer (Lambert was a physicist and mathematician, Gall a clergyman, Peters an historian), Peters had no hesitation about critiquing cartography for clinging to a "closed body of teaching which has developed into a myth."[60] Embattled *cartographers* defended themselves by condemning *all* rectilinear world projections—an hysterical overreaction that reflected the seriousness of the wound Peters's critique had inflicted—a laughable position, were it not so sustained, that continues into the present.[61]

Critique within the Profession of Cartography

As we know, not all critique originated with "cartographic" outsiders such as Lambert, Gall, and Peters. Though some *internal* critique did echo that of outsiders, especially that about the use of the Mercator, much more was directed toward turning cartography into precisely the closed body of teaching that Peters would attack. Thus, while Eckert's *Kartenwissenschaft* did oppose—and vehemently—the use of non–equal-area projections in geography (*especially* the Mercator), Eckert's book was really about map *design*; and whereas broadly traditional in his goals—who ever could have disagreed with Eckert's demand that maps be "correct, complete, appropriate, clear and distinct, readable, and handsome"?[62]—the route Eckert proposed for reaching these goals was both novel and hermetic: *the application of psychology to map design.* "The question," Eckert wrote, "whether an economical map should demonstrate the distribution of only a single phenomenon or of a lot of them will not bring anyone to confusion if his thinking is logically based and if the designer has paid regard not only to the scale and to the purpose of the map, but also to the visual capability of the human eye and to the receptivity of the human brain," adding that, "It would be an extraordinary progress if a scientific cartographer and a psychologist could jointly proceed to empirical tests clearing up by which map charge the human eye and the human brain will be overcharged."[63]

Since it may be doubted that Eckert's concern had ever brought many into confusion—who, making a map, or any communication, would want to "overcharge" the human brain?[64]—Eckert's program has to be understood first and foremost as a bid for academic respectability; yet in fact it also constituted a critique of the practices of his peers, a critique arising from what one of Eckert's memorialists has referred to as "Eckert's rage against overcharging maps with signs."[65] The *multiple objectives* of Eckert's effort to "scientifically" validate his Apollonian preferences appealed to enough others that from the 1950s on, academic cartography became *heavily* invested in the psychological testing of map readers' abilities of—almost exclusively—thematic maps. Robinson's *Elements of Cartography* especially encouraged the practice.[66] While acknowledging that cartography was not a science, Robinson's third edition (1969) stressed that cartography "employs the scientific method in the form of reason and logic in constructing its products . . . [and] has its foundations in the sciences of geodesy, geography, and psychology," a claim that, while profoundly delusional, had lasting effects on the academic training of mapmakers.[67] Arnberger's *Handbuch der Thematischen Kartographie* also followed Eckert in attempting to impose order on the "wild branch that has grown untended and unpruned on the trunk of the topographic map" by formulating a theoretical framework for the establishment of cartography as a *Wissenschaft*.[68]

It was in part what became an unrelenting focus on how undergraduate students read various arrangements of graduated circles, line widths, and color schemes—undergraduate students were the invariable subjects of the "psychological" tests—that prompted the countervailing internal critique of the profession that would come in the 1980s, that together with (1) the profession's ludicrous division of the field into general reference and thematic mapping, (2) its delusional construction of mapmaking as a science, and (3) its bogus construction of its history as a progressive and value-free transcription of the environment. I, Fels, Harley, Woodward, Rundstrom, and Pickles, whether or not we'd call ourselves cartographers (Fels cer-

tainly would, Woodward would have), were all professionally involved with cartography, and our critique aimed at overturning the paradigm of Eckert and Robinson by shifting attention away from the *form* of the map—with which cartography was obsessed—to its *meaning for behavior*. Instead of asking whether the brain was overcharged by the density of symbols, *we asked how the body of the subject was constructed by the map,* that is, how the map controlled, oppressed, subjugated, and otherwise impinged on people.

This shift in commitments, doubtless rooted in more general shifts inaugurated during the 1960s, first surfaced clearly for all to see in differences over the Peters Projection and over Peters's explicit outsider's critique of cartography's political, indeed colonialist, even racist, dimensions. Most professionals, and the official professional organs, pretended either to outrage or to bemusement, wondering how a projection—after all only a mathematical formula!—could be political in the first place, though they nonetheless took the trouble to swipe at Peters's projection for being ugly, for not being Peters's own (it's identical to Gall's), or for being otherwise inappropriate (world projections should never be rectilinear). The internal *critics* of cartography, on the other hand, not only understood but in their various ways empathized with Peters's project. By 1994 Jeremy Crampton had characterized this battle as "cartography's defining moment," and in 2003 I claimed that it had been, "in its way, the death knell of the profession," for the fact was, *no one* had paid the *slightest* attention to any of the official professional pronouncements.[69]

The Outside Critique: Indigenous Mapping

As we can see, then, criticism has long come from within and without the profession, but the *recent* criticism of outsiders in tandem with that of the critical cartographers has been genuinely foundational, attacking nothing less than the *privilege* claimed by the profession to speak authoritatively about maps. Though Doug Aberley, a bioregional planner, published *Boundaries of Home* only in 1993, it brought to widespread attention mapping that had been going on for a while, and in the case of First Nations mapping, for quite a while. Significantly, First Nations, or Indigenous, mapping offers a critique of official mapmaking with respect to its prerogatives, its form, and its content, at the very time that it proposes to undo—or at least to complicate—many of the historical achievements of official mapmaking.[70]

The origins of this contemporary movement may be traced to the early 1970s, with diffuse and complicated roots spreading through the widespread decolonization that followed World War II, the U.S. civil rights movement, and the contorted history of the relationship between modern nation-states and their Indigenous inhabitants.[71] Among other things, the examples of Gandhi, Ho Chi Minh, Fidel Castro, Martin Luther King, Jr., Malcolm X, and others helped to inspire the 1966 founding of the Black Panther Party and what would become the Brown Berets and the 1968 founding of the American Indian Movement.[72] The 1969 occupation of Alcatraz—the year, not coincidentally, that Vine Deloria published *Custer Died for Your Sins* and N. Scott Momaday won the Pulitzer Prize for *House Made of Dawn*—gave the Red Power movement both credibility and enormous visibility. Distinguishing the Red Power movement was its insistence on revisiting Indian "domestic dependent nations" status in search of alternative configurations of political power, including self-determination, self-government, and, by no means least, land.[73]

Many Indigenous peoples were energized, both inspiring and inspired by these and related events. In 1967 Frank Arthur Calder and the Nisga'a Nation Tribal Council brought an action against the Province of British Columbia for a declaration that aboriginal title to specified land had never been lawfully extinguished.[74] In 1973 the Canadian Supreme Court found that there *was* an aboriginal title,[75] and one that dated to a Royal Proclamation of 1763.[76] In light of this decision, the Canadian government adopted a policy of trying to extinguish such titles by negotiating treaties with the peoples who had never signed them; and beginning in 1974 it offered financial support for work that could lead toward such negotiations. The Inuit Tapirisat of Canada accepted funding to study Inuit land occupancy in the Arctic as a first step.

This study resulted in the landmark publication in 1976 of the three-volume *Inuit Land Use and Occupancy Project* that pioneered the use of individual map biographies.[77] In these, "hunters, trappers, fishermen, and berry pickers mapped out all the land they had ever used in their lifetimes, encircling hunting areas species by species, marking gathering locations and camping sites—everything their life on the land had entailed that could be marked on a map."[78] The work drew on an evolving tradition of applied anthropology, especially participant observation; and on a precedent history of the use of sketch maps in ethnographic research in anthropology and geography that dated to Franz Boas.[79] During the 1960s this was being transformed by the mental maps movement in geography and planning,[80] and in anthropology by programs like Evon Vogt's Harvard Chiapas Project with its interest in mapping and aerial photography, and Harold Conklin's work in the Philippines that would result in the publication of *The Ethnographic Atlas of Ifugao.*[81]

The "map biographies" were unlike anything that had existed before, and they inaugurated a new trajectory in the history of mapmaking.[82] Hugh Brody, who had worked on the *Inuit Land Use and Occupancy Project,* described collecting a map in a study he carried out later with the Beaver Indians in northeast British Columbia:

> Joseph had his own agenda and his own explanations to give. He stood by the table, looked at the map, and located himself by identifying the streams and trails that he used. Periodically he returned to the map as a subject in its own right, intrigued by the pattern of contours, symbols, and colors and perhaps also by his recognition of the work that had brought us to his home. . . . As Joseph Patsah told his story, he searched the map until he found a particular bend in a river. . . . He sought the exact place where, in September or October, it is easy to catch fat rainbow trout. He traced the length of a trail that each year he and others used to travel from a spring beaver-hunting camp to the trading post at Hudson's Hope. He satisfied himself that we understood the exact distance between the Reserve and the best of his winter cabins. . . . In the course of talking . . . Joseph had shown his hunting, trapping, and fishing areas on the map; had marked, with colored felt pens, all the places he had lived during a long life.[83]

It was in this and other equally intensive ways that the maps that fill the third volume of the *Inuit Land Use and Occupancy Project* were made, and today variations of this process are in widespread use around the world.

In light of cartography's self-construction as a value-free transcription of the environment, doubt about the scientificity of these map biographies was almost reflexive. "Anticipation of possible challenges to the Indians' maps is defensive and may seem unnecessary," Brody would write in 1981, "But to refuse to anticipate

criticism amounts to a more general rejection of social-scientific concerns," particularly the claim that "research done as part of a political process can actually be conducive to the most reliable results." From a critical perspective, this is key:

> The Indians of British Columbia made maps, explained their system, gave detailed information about their economy, and took us into the bush with them. They did so because they believe that knowledge of their system will result in an understanding of their needs, and that this will in turn help establish and protect their interests. . . . The Indians' maps, like their explanations of them, are clear representations of their use of the land. The clarity comes from a wish to have others see and understand. There may be oversimplifications—lines and circles on 1:250,000 topographic sheets can scarcely do justice to the intricacies of which they are a distant overview. But they represent a reality and have an integrity that social science can rarely achieve.[84]

The maps' accuracy was attested to by appealing to hunting peoples' well-established preoccupation with the truth, by internal consistencies across numerous dimensions among maps produced independently by large numbers of individuals, and especially by the fit of separate communities' aggregated maps, both with each other and the terrain.[85]

The maps *were* scientific, and if not in the vein of geodesy, geography, and psychology as Robinson had fantasized, then in that of ethnography (the practice has been called a kind of ethnocartography[86]), and the Inuit maps went on to play a key role in the negotiations that enabled the Inuit to assert an aboriginal title to the 2 million km^2 of Canada today known as Nunavut. In settling the claims, the Inuit would surrender their aboriginal title for financial compensation, exclusive ownership rights over a large part of Nunavut, and decision-making power in the management, and royalties from the resource exploitation of all of Nunavut.[87] Because the *Inuit Land Use and Occupancy Project* maps were insufficiently detailed for the negotiations (they were too small-scale, lacked any indication of *intensity* of use, and took no account of wildlife),[88] and subsequently published maps were at once too rich with information and too large-scale,[89] in 1985 the Tungavik Federation of Nunavut began the Nunavut Atlas Project, publishing the *Nunavut Atlas* in 1992.[90]

This substantial volume is, in its way, as monumental as Conklin's *Ethnographic Atlas of Ifugao,* capturing as it does—in six foldouts of Owned Lands, and in 27 Community and 118 Land Use and Wildlife Maps (these heavily annotated)—archeological sites, campsites, domestic and commercial fishing sites, outpost camps, major travel routes, intensity of Inuit land use, a host of wildlife information, and the Nunavut Settlement Boundaries. As in the Inuit Land Use and Occupancy Project, field workers interviewed hunters and elders in their homes, asking each to describe his land use directly on the maps, which were then, in consultation with hamlet councils and hunters' and trappers' associations, aggregated into the published maps. The result is an extraordinary portrait of Inuit land use in Nunavut, and it provided the basis for the detailed negotiations that transformed the agreement-in-principle of 1991 into the final agreement of 1993. In 1999 the new Territory of Nunavut was created, the Inuit of the former Northwest Territories thus becoming, as I've already noted, the first Indigenous peoples in the Americas to achieve self-government in recent times.

The role of Indigenous mapping in this process was lost on no one. Beginning in the 1970s, similar mapping projects were initiated among the Inuit, Settlers, and

Naskapi-Montagnais of Labrador, the Beaver and Cree along the Peace River in northeastern British Columbia, the Dene of the Mackenzie River Basin, the Indians of the Yukon, and the Inuit and Cree of northern Quebec, among others.[91] Without question the 1976 publication of the *Inuit Land Use and Occupancy Project* was an important landmark; but Brody's publication in 1981 of *Maps and Dreams*—which continues to be in print in a bewildering number of editions—was of *crucial* significance, laying out the methods as it did in an evocative and persuasive text. Another benchmark was the 1992 publication of *The Nunavut Atlas* and the identification that same year, at the United Nations Rio Summit, of community-based mapping as a key research, community-building, and planning method.

By 1992 projects were under way in Asia, Africa, and Latin America. In an effort to raise the visibility of the Indigenous peoples of the Caribbean coast of Central America, Mac Chapin began working with Bernard Nietschmann, Peter Herlihy, and others on a map published by the National Geographic Society in 1992 as *The Coexistence of Indigenous Peoples and the Natural Environment in Central America*.[92] A large, handsome map in the usual National Geographic fashion—that is, poster on one side (gorgeous pictures and brief country-by-country capsules), map on the other ("Indigenous territories" against five categories of vegetation plus three large insets tracking deforestation and one of pre-Hispanic Panama)—*Indigenous Peoples* was bilingual, as though intended less as a supplement to the Society's journal, *Research and Exploration,* than as a *pronunciamiento* to be displayed in offices throughout the region. Chapin, an anthropologist, was new to the mapping game, but Nietschmann and Herlihy were both geographers, and soon all three of them had initiated projects modeled on the Inuit Land Use and Occupancy Project as transmitted through Brody's *Maps and Dreams*.[93] First with Cultural Survival, then as Rights and Resources, and finally as Native Lands, Chapin organized projects in the Mosquitia of Honduras (with Herlihy) in 1992, in Panama's Darién in 1993, among the Guarani of the Izozog in the Bolivian Chaco in 1995–1996, in the West African Republic of Cameroon in 1998–1999, later in Suriname in South America, and most recently in Papua New Guinea.[94]

This worldwide wave of Indigenous mapping was substantially driven by the interests of granting agencies and philanthropic foundations. The World Wildlife Fund, the Nature Conservancy, World Resources Institute, the World Bank, USAID, the Ford Foundation, the Rockefeller Brothers Fund, and so on, frequently with conflicting motivations, all supported, indeed initiated, Indigenous mapping projects.[95] For example, the Indigenous mapping that spread throughout Indonesia beginning in the early 1990s, best known for the mapping among the Dayak of West Kalimantan, was heavily supported by the Ford Foundation through the World Wildlife Fund, as well as by USAID through its Biodiversity Support Program. The Biodiversity Support Program also supported much of Chapin's work and, through the Philippine Association for International Development, an extensive program of Indigenous mapping in the Philippines and neighboring countries, again beginning in the early 1990s.[96]

During this period Indigenous mapping spread throughout southern Asia and reasonably widely in Africa, with other projects initiated in China, Vietnam, Thailand, Nepal, India, Australia, New Zealand, Jordan, Kenya, Tanzania, the Congo Basin, South Africa, and Ghana.[97] Publication of the special issue of *Cultural Survival Quarterly: Geomatics: Who Needs It?* in 1995 with its examples of ethnocartogra-

phy from around the world[98]; Nancy Peluso's articulation of countermapping, also in 1995[99]; an updated and markedly superior National Geographic map, *Indigenous Peoples and Natural Ecosystems in Central America and Southern Mexico* in 2002[100]; and the 2003 publication of a special issue of *Human Organization* on the participatory mapping of Indigenous lands in Latin America,[101] were other signal moments. The 1998 establishment of the Aboriginal Mapping Network marked a coming-of-age for the movement. In 2003, some 120 Aboriginal mappers from across North America and as far away as Panama, Taiwan, and Malaysia met for the Aboriginal Mapping Network's third international GIS-mapping conference.[102] In 2004 the Indigenous Communities Mapping Initiative convened the International Forum on Indigenous Mapping, which brought together 200 representatives of Indigenous peoples from 24 countries, and it simultaneously published the sumptuous *Mapping Our Places: Voices from the Indigenous Communities Mapping Initiative*.[103]

As you might imagine, this assault on the presumptions of professional cartography extended into the very signage. "Mapping, and cartographic technologies have progressed immensely over the past decades," Claudio Aporta and Gita Laidler wrote in proposing a project for the International Polar Year 2007–2008:

> And yet, the representation of landscapes, topology, toponymy, and landforms remains focused on just that—land. North American topographic maps continue to represent landscapes as interpreted, described, and named over a history of European, American, and Canadian exploration. In Canada and Alaska efforts have been made, and are currently underway, to begin "re-mapping" the north according to the rich diversity of Inuit knowledge (e.g. place names, oral history, and land use and occupancy projects) that is generally overlooked in conventional mapping initiatives. However, the large expanses of blue that delineate the Arctic Ocean and Hudson Bay, among other major water bodies, are left relatively empty in most maps. These "blank" areas are actually ice-covered white expanses for three quarters of the northern year.[104]

The "blank" areas were *in our heads,* in the kind of knee-jerk distinctions we draw between land and water. Aporta and Laidler propose to map Inuit *sea-ice use* patterns as the original Inuit *Land* Use and Occupancy Project mapped *land use* patterns, an undertaking that will have to entail novel iconic and temporal codes.[105]

Novel codes is precisely the way others have approached the problem. In wildly innovative maps, Margaret Pearce and her colleagues have manipulated the iconic, linguistic, topic, temporal, and rhetorical codes to powerful effect. For example, in one map, which attempted to "decolonize" Samuel de Champlain's 17th-century travels among the Anishinabec, Wendat, Wabanaki, and Innu peoples, Pearce and Michael Hermann mapped "Native and non-Native geographies and journals together . . . using narrative technique to encode for place, to subvert the conventions of historical cartography, and address the colonial silences and emotional emptiness of that practice."[106] They questioned each mapping convention they used, dismantling and reassembling it. Identifying a blending of scales in Champlain's experiences, they embedded small-scale overview maps in their title and mapped Champlain's travels as a whole at a larger scale; but within the latter they stretched *sequences* of insets whose scale varied as needed, and whose *color* changed to evoke *emotional* changes. In one sequence of a drowning in the Lachine Rapids, the chaotic shifts in color, direction, and scale attempt to mimic that of the drowning itself.

Because Champlain's journeys made sense neither as a line nor in frames, Pearce and Hermann developed a ribbon-form (Figure 5.4) that narrows and expands, even dissolving when Champlain becomes lost. Eschewing directional arrows, Pearce and Hermann permit their readers to create individual understandings of the journeys by reading the associated texts. These encode three distinct voices: those of Champlain, the Indigenous peoples, and the cartographers in a mix of typefaces and colors (Figures 5.5–5.7). In this way, Pearce and Hermann say, they "present a new way to map Indigenous voice, but also demonstrate that place can be defined by multiple voices. A voice that contradicts does not disrupt place but, rather, lends meaning to that place by showing the many dimensions from which it can be interpreted."[107]

Wholly different was the approach taken by the makers of *Maya Atlas: The Struggle to Preserve Maya Land in Southern Belize,* where the Toledo Maya made maps

FIGURE 5.4. Champlain's journey as a ribbon. To symbolize the characteristics of Champlain's multiple journeys through the map, Pearce and Hermann depicted his route as a ribbon, without arrowheads or directionality. This ribbon narrows or expands with the contracting and widening of Champlain's travel experiences, and dissolves when he is lost; without arrowheads, the reader must use the narrative to interpret the direction. (*Source:* Margaret Pearce and Michael Hermann)
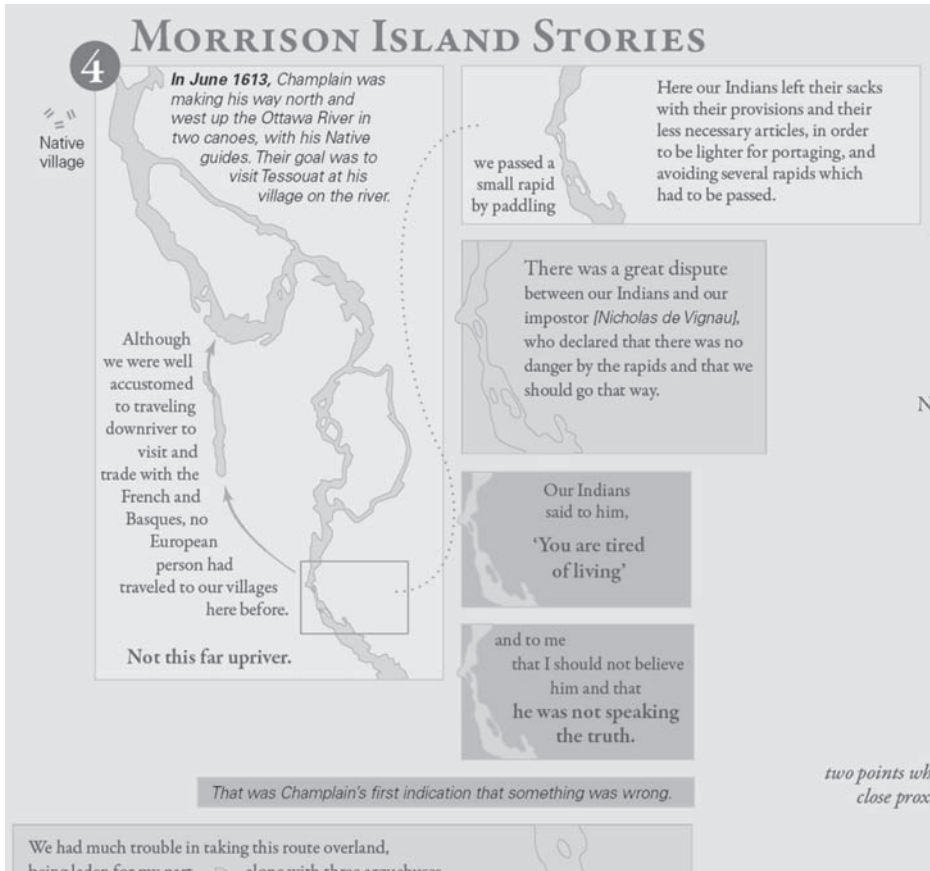
FIGURE 5.5. Posting voice on a map. To symbolize the multiple identities of the story, Pearce and Hermann used type to differentiate between Champlain's voice (in blue Garamond), Native voice (in green Garamond), and the cartographers' voice (black Univers italic). Champlain's voice is quoted from his journals and speaks directly to the reader. It was also important for Pearce and Hermann to empower voices without a written record, so Native voice is represented through an imagined dialogue, sometimes speaking to Champlain and sometimes to the reader. Pearce and Hermann's voices as cartographers are also present, to fill in gaps in the narrative or simply provide their own interpretation of events. (*Source:* Margaret Pearce and Michael Hermann)

"with democratically selected legends, symbols, colors, and land use terms." Bernard Nietschmann observed that "whereas professional cartography follows conventions of standardized map symbols, community-based cartography is different because map symbols are almost always designed and selected by 'town meeting democracy.'"[108] Nietschmann was an important catalyst for much of the work of this second wave of Indigenous mapping. It was Nietschmann who penned the endlessly quoted, "More Indigenous territory has been claimed by maps than by guns. And more Indigenous territory can be reclaimed and defended by maps than by guns,"[109] as well as the even pithier, "Maps are power. Either you will map or you will be mapped."[110] In 1996 Nietschmann created GeoMap with a small group of young
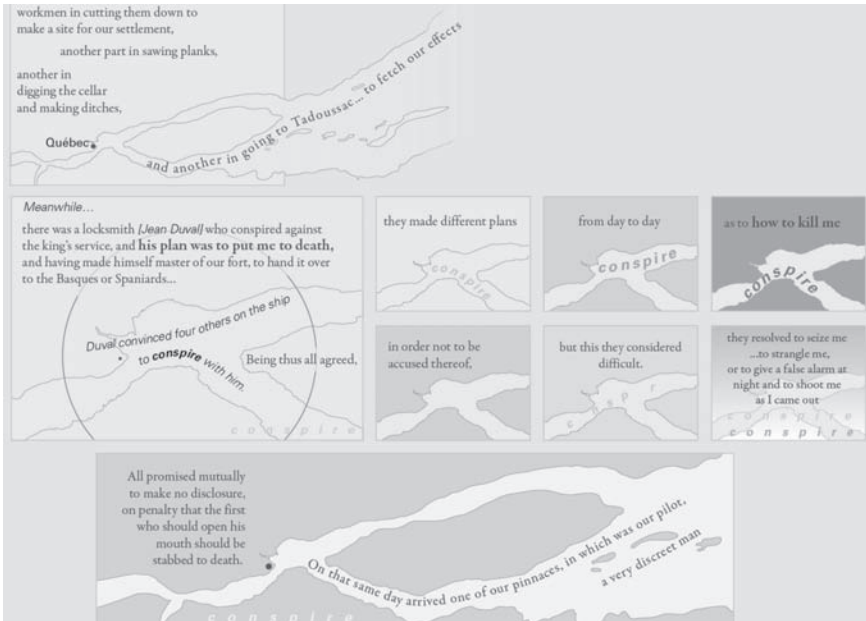
FIGURE 5.6. Posting emotion on the map. Woven into the main map of Champlain's routes are sequential insets that allow Pearce and Hermann to give a greater depth of story for particular places. The sequences also allow Pearce and Hermann a number of freedoms; for example, in these panels, they are using hue and type to symbolize the emotional qualities of Champlain's account of the conspiracy against him as he and his men are building the habitation at Quebec. (*Source:* Margaret Pearce and Michael Hermann)
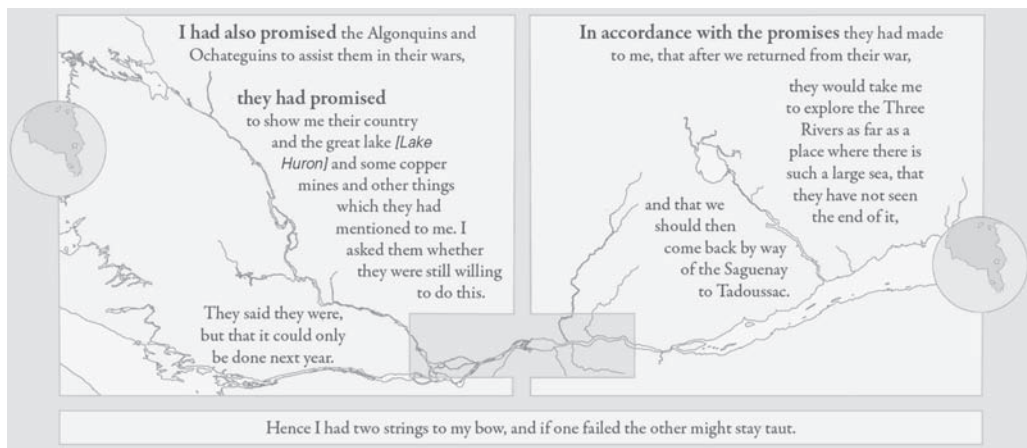
FIGURE 5.7. Posting dream geographies. The sequential insets also gave Pearce and Hermann the freedom to insert dream geographies. James Bay was a place Champlain yearned to reach, though no one ever took him there in his lifetime. Pearce and Hermann inserted it as a dream map, in saturated yellow and orange, to appear whenever Champlain believed he was nearing the realization of his dream journey. (*Source:* Margaret Pearce and Michael Hermann)

cartographers to provide mapmaking training and skills to Indigenous peoples and local communities. Working first with the Miskito in northeastern Nicaragua to help them map their traditional sea and coral reef territories,[111] and then with communities in northeastern Costa Rica, GeoMap's third project was the ambitious and inspirational *Maya Atlas,* released in 1997 as an oversize, full-color, mass-market book.[112]

The beautiful 150-page atlas is crammed with colorful maps of individual municipios made by the municipio residents themselves. Nietschmann claimed that

> the *Maya Atlas* is the first community-made atlas. All other atlases are made by professional mapmakers who most often live and work far from the places on the pages. This atlas is made by the people who live in the maps, in the text, in the photographs. The task was to create a way that people who live in their geography could make maps of it; that is, to make their geography visible and accessible.[113]

This is, of course, not entirely true. *Maya Atlas* could never have been made without Nietschmann and his GeoMap cartographers, to say nothing of the publisher, North Atlantic Books, a leading purveyor of alternative health, martial arts, and spiritual titles. Given that North Atlantic's mission "is to affect planetary consciousness, nurture spiritual and ecological disciplines, disseminate ancient wisdom, and put forth ways to transmute cultural dissonance and violence into service," perhaps it wasn't *just* Nietschmann's powers of persuasion that landed the atlas on the publisher's list, but it was a big part of it. Although, while more than most, *Maya Atlas* actually walks the walk, the roles of Nietschmann, of GeoMap, and of the University of California at Berkeley in the conception let alone the completion of the project, is hard to overlook.[114]

Nietschmann's *reason* for advancing the community-made claim, even for *embroidering* it—he added that "the *Atlas* maps, writing, and illustrations were done by people who live in thatch-roof, wooden houses they made themselves and who eat food they grew themselves. They got up early in the dark morning hours to make wood fires to cook tortillas and warm coffee before walking to their *milpas* to cultivate corn and beans, and then mapped their fields, rain-forest hunting grounds, traditional medicine places, and ancient ruins"[115]—was because he believed that "a map can only be challenged by another map, and the effectiveness of the challenge is based on the geographic authenticity of the mapmakers. A map of homelands or homewater automatically makes all other maps—be they antecedent or subsequent—subject to suspicion because they are made by the occupier's cartographers," adding that a people that uses a map it's made for itself is far ahead of a people who have to locate themselves on the occupier's map.[116] An Indigenous people's map, Nietschmann concluded, "helps to authenticate traditional territory, calls into question a central government's assertion that indigenous people don't have a land or sea territory, and serves internationally to promote greater self-determination."[117]

Whether *any* of this turns out to be true remains to be seen, but little of it is true now, and there are reasons for doubting that much of it ever will be. Power, as I said back in the first line of this book, is a measure of work, and work is the application of a force through a distance. The work of maps is to apply social forces to people to bring into being a socialized space. The forces in question? *Ultimately,* I said, they are those of the courts, the police, the military; but what maps are really good at is replacing, *reducing the necessity for,* the application of armed force. For

armed force, I went on, maps substitute the force of the authority of the map, *but the map's effectiveness cannot be separated from that of the state that backs it up.* This was precisely the point of my drawing attention to the fact that, however attendance zones had been redrawn in the wake of *Brown vs. the Board of Education of Topeka,* Eisenhower still had to call in the National Guard before black kids were able to get into those still-white schools.

It's not, contra-Nietschmann, that maps *are* power but that they *wield* power or, more precisely still, are *used* to wield power. The inspiration drawn from the Inuit's success in forging the Territory of Nunavut may therefore also have been misplaced, for here was a government—the still young Liberal Federal government of Pierre Trudeau, eager to recover from an initial misstep in Indian affairs—that was all too willing to heed the Supreme Court's ruling in *Calder* and admit that Aboriginal peoples may have had more rights than the government had heretofore been willing to acknowledge. Within months the Canadian government had set in place the policy under which claimant groups, like the Inuit, would receive rights, compensation, and other benefits in exchange for relinquishing their Aboriginal title.[118]

That is, before the land use and occupancy mapping had even begun, Canada had already committed itself to some kind of serious land claims settlement. *This* was the force behind the three waves of land use and occupancy mapping, the in-principle boundaries of 1991, and the final land claims settlement of 1993. Contrast this with what's followed the publication of *Maya Atlas* which has been . . . *hard to say.* Why? Ultimately, I would argue, because "authenticity" by itself isn't much of a force. A force is an action that one body exerts on another to change the state of motion of that body, and whereas the Inuit had the Canadian government behind it (and no province in between either), the Toledo Maya had . . . a pretty book? Authenticity? International goodwill? In fact, the year the atlas was published, the Toledo Maya filed a lawsuit against the government in the Supreme Court of Belize arguing that logging concessions infringed on Maya community-protected prop-erty rights. The government responded that, not being Indigenous, the Maya had no such rights, and the Supreme Court effectively ignored the suit. Following a 2004 ruling from the Inter-American Commission on Human Rights favorable to the Toledo Maya—which Belize again ignored—the Maya filed yet further lawsuits with the Supreme Court, which finally in 2007 ruled in their favor, ordering the government to "determine, demarcate and provide official documentation of Santa Cruz's and Conejo's title and rights," though negotiations have yet to begin.[119]

In the Nunavut case it was at precisely this point in the process that land use mapping *began,* yet this is not to say that *Maya Atlas* was in any sense a waste of time. There is no simple algorithm for solving problems in the calculus of public opinion, and a claim might be advanced for the atlas-mapping process as one that galvanized critical energies among the Toledo Maya, or one that added to the pile of evidence that finally weighed in their favor in the 2007 decision, which, it bears repeating, may yet lead nowhere. Contrariwise, it's not easy to *demonstrate* that *Maya Atlas* had any positive effect at all, while it is comparatively easy to point to negative impacts, albeit unintended. Joel Wainwright and Joe Bryan, both actively involved in Indige-nous mapping in Belize—Wainwright was part of the *Maya Atlas* team—have pointed to problems that have arisen with respect to: (1) the differential empowerment of those involved, both within the Toledo Maya and between it and the legal teams,

funders, government agencies, and Berkeley mapmakers; (2) boundary construction, which has led to conflicts with neighbors, a decrease in transcommunity collaboration, and a reinscription of state power; and (3) a kind of deflation following the realization that any achievement so far has been—and one hates to say this—*merely* moral.[120] That is, actual power remains firmly in the hands of the state.

Every Indigenous mapping project raises unique problems, but Wainwright and Bryan point to similar problems that have arisen in Nicaragua; among others, Jefferson Fox, Peter Hershock, Dorothy Hodgson, Pauline Peters, Albertus Pramono, Richard Schroeder, and Peter Walker have identified similar problems in Malawi, Thailand, Tanzania, East and West Kalimantan, Cambodia, and elsewhere, including Canada where the Nunavut achievement remains unparalleled.[121] Central here is the fact that since *maps are instruments of the state,* trying to use maps against it is like spitting in the wind. Once this is acknowledged, much of the excitement about Indigenous mapping begins to sound like no more than . . . excitement. For example, Nietschmann's "A map of homelands or homewater automatically makes all other maps—be they antecedent or subsequent—subject to suspicion because they are made by the occupier's cartographers," begs the question, *suspicious in whose eyes?* Not in the eyes of the occupier, certainly, who rather looks with suspicion on Indigenous maps and . . . *whose eyes matter?* Since in almost every one of these cases mapping is advanced as part of a land claims strategy, ultimately the only eyes that matter are those of the state.

This is broadly acknowledged in project after project where, no matter the backward-leaning efforts to make maps that are authentically Indigenous, it's always acknowledged that the results have to be able to play in state court systems and therefore have to look, feel, and taste like state-sponsored maps. *Which in fact they are! Almost all of them.* For beneath the antistate rhetoric run the veins and arteries of one government agency after another. The Inuit Land Use and Occupancy project, after all, was paid for by the Canadian government, and so was so much of the rest of the mapping in Canada. And as we've seen, the second wave of Indigenous mapping has been substantially supported by USAID, whether through its Biodiversity Support Program, through the Philippine Association for International Development, or some other front—that is, by the U.S. agency on whose website one can read, "U.S. foreign assistance has always had the twofold purpose of furthering America's foreign policy interests in expanding democracy and free markets." Peter Herlihy's recent work in Mexico has been supported by . . . *the U.S. Army.*[122] That is, all this supposed counter-mapping is not only *state* mapping but deeply colonialist, thoroughly imperialist!

From the perspective of the history of mapmaking sketched in Chapter 1, this is scarcely worth noticing. After all, the map has been worming its way into every conceivable nook and cranny for the past 500 years, and from this perspective Indigenous mapping is no more than a further penetration of the map into minute cracks from which it has heretofore been kept. The ironies, of course, are that today the "victims of the map" are the ones doing the mapping. Promised that people using maps they've made themselves are ahead of people who have to locate themselves on the invader's maps, Indigenous mappers find that in the end they have to locate themselves on the invader's map anyway, for, to say it again, it's only in the invader's courts that their land claims can be heard where, win or lose, *their mere presence validates the state's claims to authority.*

This contradiction plays itself out in the bizarre claims made for the maps

themselves that they are at once Indigenous and not Indigenous. The claim to indigeneity, to the *authentically Indigenous,* is of the essence, for it is solely their claim to speak in the People's true voice that warrants their denial of official cartography's privilege to speak authoritatively: "*You claim this,*" the Indigenous maps say to the state's existing maps, "*but we who live here speaking in our authentic voice claim otherwise.*" As Nietschmann understood, this is powerful, and it has led to what can only be characterized as an *indigeneity race* as succeeding projects raise the indigeneity ante, from the field workers (such as Brody) who with Indigenous interpreter-guides interviewed elders and other hunters in the Inuit Land Use and Occupancy Project, to the training of Indigenous field workers à la Chapin and Herlihy, to the town-meeting democracy mapping of the *Maya Atlas,* with its tortillas and wood fires.[123] Here's Marcus Colchester writing about his Guyana work of 1994–1997:

> What was innovative was not that it aimed to end with a detailed map of the land use of the Upper Mazaruni based on indigenous knowledge, but that this was achieved by a team of indigenous technicians from the area itself. This team was provided with training by outside experts but then left to carry out the actual data gathering themselves, in their own languages, without external technical assistance until it came to the last stage of entering field data into computers and generating the final map.[124]

And there's the rub, at the very end there, where everything the Indigenous technicians have gathered is seized by the outside experts and dumped into their computers. You know, despite the genuinely good intentions, and the hard work to implement them, there is about all these assurances of indigeneity something inescapably patronizing, a whiff of amazement that monkeys can be trained. *What? Indigenous technicians can't be taught to use computers too?*[125]

And yet this last step, this final turn to the computer, is every bit as critical as the claims of indigeneity, for unless the end product is a map in the eyes of the court—that is, it looks like other maps that lawyers and judges have grown up with—it might as well not have been made. That is, the Indigenous peoples might as well have come to court with Indigenous forms of land claims, with songs and chants, with dances, with other forms of Indigenous expression.[126] The insistence that Indigenous peoples bring maps—and I mean *maps* as the state has nurtured maps for the past 500 years—comes from outside interests, from anthropologists and geographers, from lawyers, from courts, and state governments. Used to thinking through maps, used to conducting business with maps, these demand maps from those doing business with them. If Indigenous peoples had made maps indigenously—and again, *maps,* not Indigenous forms of land-claims making, however legitimate and expressive—what would be the need of outside experts coming in to interview them, to train them in the first place?

These peoples, not forming states, never had any need for maps, and it is precisely their lack of maps that calls for the intervention of the experts and the transformation of Indigenous knowledge into the kind of knowledge that state courts can recognize. Asked what it could mean to "train" mappers if the knowledge is already in peoples' heads, and whether mapmaking alters the way Indigenous peoples see things, Chapin has said:

> No, it does not alter their views. It is technical cartographic training—how to represent space. It takes their knowledge (in time traveled, for instance) and teaches them how to

represent scale—just technical stuff. They are very good artists, they just need to know how to make maps. We did not want to give them base maps to fill in, since the product would not be their own map. Some maps are messed up on distance, but they use aerial photographs to correct them.[127]

Coming from an anthropologist, this is inexcusable. If you gag at, "No, it does not alter their views. It is technical cartographic training—how to represent space," you positively have to throw up when you come to the reduction of Indigenous knowledge to "time traveled," of the cartographic *épistémè* to "just technical stuff," and of who knows what kinds of differences to "messed up on distance."[128]

If Chapin is just being disingenuous it's bad enough, and if he really believes these things he needs to return his Ph.D.,[129] but the real problem is that no matter what the worldview and space–time conceptions of the people in question, they *have to be bent* into the worldview and space–time conceptions of the court or risk being dismissed as . . . *unintelligible.* Of course, bending them this way means taking on board all of professional cartography's spatial epistemology, including its commitment to discrete boundaries, especially since these tend to be bundled into available GPS and GIS technologies. In contradistinction to Nietschmann's 1995 insistence that an Indigenous map made with computer technology, "will have transcendental powers because it can easily be translated by everyone everywhere; it transcends literacy; [and] it is visually comprehensible," came Walker and Peters' caution six years later that "the job of mapping should not end with the drawing of boundaries; where social scientists assist social groups to draw maps, it is crucial that they also document and communicate *what these boundaries mean for local people.*"[130] The questions Peluso asked in 1995 still *have not been answered*: "The key theoretical questions about the impacts of counter-mapping on resource control," she wrote, "are to what degree new notions of territoriality reflect older ones; how the reinvention of these traditions benefits or works to the detriment of customary practice, law, and resource distribution; and how the intervention of NGOs . . . affect the villagers' access to and control over . . . resources."[131] Whatever maps have, it ain't "just technical stuff," and it sure ain't transcendental powers either.

Whatever maps have *they carry with them,* no matter who's doing the mapping. The problem with Indigenous mapping, therefore, is that it's simultaneously cooptive and reactionary, first forcing Indigenous peoples to adopt a technology of those who used that very technology to seize Indigenous lands in the first place; and then enmeshing Indigenous peoples in a kind of schoolyard name-calling—"You map me, huh? I map you!!"—that leads *only* to the principal's office. When the result is heightened dignity, enhanced security, and greater access to resources, doubtless this is one way to go, but Nietschmann was twice wrong when he insisted that "a map can only be challenged by another map, and the effectiveness of the challenge is based on the geographic authenticity of the map makers." A map's effectiveness is a function of the social forces the map is able to put into play, and maps can be challenged—and have been for 500 years—by military action, armed revolt, varying degrees of resistance, political action, actions at law, and even stories, songs, and other expressive behavior, as the Gitxsan and the Wet'suwet'en demonstrated when they entered the Gitxsan *adaawk* (a collection of sacred oral traditions about their ancestors, histories, and territories) and the Wet'suwet'en *kungax* (a spiritual song or dance or performance tying them to the land) into evidence in the suit they brought against British Columbia and Canada in 1987.[132]

Ten years later, in *Delgamuukw v. British Columbia,* the Supreme Court of Canada found that forms of evidence like these had to be accepted in Canadian courts. Chief Justice Lamer observed that, "notwithstanding the challenges created by the use of oral histories as proof of historical facts, the laws of evidence must be adapted in order that this type of evidence can be accommodated and placed on an equal footing with the types of historical evidence that courts are familiar with, which largely consists of historical documents." Concurring, Justice LaForest added that "it is self-evident that an aboriginal society asserting the right to live on its ancestral lands must *specify* the area which has been continuously used and occupied. That is, the general boundaries of the occupied territory should be identified. I recognize, however, that when dealing with vast tracts of territory it may be impossible to identify geographical limits with scientific precision. Nonetheless, this should not preclude the recognition of a general right of occupation of the affected land. Rather, the drawing of exact territorial limits can be settled by subsequent negotiations between the aboriginal claimants and the government," which would be, in the Nunavut case, at precisely the stage in negotiations when the Inuit were compelled to initiate the Nunavut Atlas Project.[133]

A few years after *Delgamuukw,* the Martu Aboriginal people presented an Australian court with *a dish of sand* from their country, on the understanding that it would be returned once a determination of their native title claim had been made. The court accepted the sand, acknowledging that the "symbolic gesture was a demonstration of the claimants' strongly-held belief in their ownership of their traditional territories."[134] The Aboriginal people of Fitzroy Crossing won their right to appear in court after presenting Australia's National Native Title Tribunal with a painting known as *Ngurrara II*: "Frustrated by their inability to articulate their arguments in courtroom English, the people of Fitzroy Crossing decided to paint their 'evidence.' They would set down, on canvas, a document that would show how each person related to a particular area of the Great Sandy Desert—and to the long stories that had been passed down for generations." The tribunal accepted the painting, one member commenting that the painting was "the most eloquent and overwhelming evidence that had ever been presented" to them.[135] In the end, maps *were* made, though the court came close to expressing regret about the necessity: "Although the Court has to set boundaries in order to define the area of a native title determination, it is a fact that in the extremely arid region of the Western Desert boundaries between Aboriginal groups are rarely clear cut. They are very open to human movement across them. Desert people define their connection to the land much more in terms of groups of sites, thinking of them as points in space not as areas with borders." Notwithstanding this concession, the long lists of coordinates setting the boundaries concluded the decision.

Yes, *of course!* The claims will *always* be mapped—that's how map-immersed nation-states do it—but the resulting map will be just another state map; there'll be nothing Indigenous about it, not in any conventional sense of Indigenous. Yet having been challenged by a song, a dish of sand, a painting, *no state map can ever again be quite the authoritative thing that it was.* And this in the end has to be the systemic contribution of Indigenous mapping to cartographic critique—no matter its manifold contradictions—that of calling into question the authority of the state's maps. Unless the contribution lies in the very contradictions, cracking open, the way they do, the shell of the map as they remake it.

The Outside Critique: The Parish Maps Project

Parish Maps proffer their critique in a very different way. For one thing their makers unapologetically acknowledge their citizenship in nation-states, England and Italy mostly, though projects are underway in Poland and Spain, so they're not only *immersed* in a 500-year-old tradition of mapmaking, they can draw from its entire span. And they do.

Then, since title's not an issue, there's no imperative for the maps to assume any of the formalisms required for an appearance in court. This frees them to take on a variety of forms, and some of these are as far removed from the world of maps as the sand of the Martu, the painting from Fitzroy Crossing, the *adaawk* of the Gitxsan, or the *kungax* of the Wet'suwet'en.

Taken together, the two considerations free Parish Maps from the grip of the academy as well. Academics have written almost nothing about these maps that better than 2,500 English parishes have made since the mid-1980s, made, it's worth noting, with no help from NGOs.[136] The maps are made by people acting in their own interests with no direction from above. The maps are all about self-initiated local action.

At the same time there are plenty of similarities. For one thing it would be bootless to ignore the fact that most of the people making Parish Maps are Indigenous, not merely in the sense of "belonging to a particular place by birth"—though that's not dismissible—but in that of "having originated in and being produced, growing, living, or occurring in a particular region or environment." This is sort of a theme that runs through a number of parish maps where at the moment I'm thinking of the map made by the village of Copthorne (Figures 5.8, 5.9) in West Sussex that its makers constructed as an oak rising from a tangle of roots consisting of 1,400 Copthorne family names:

> The dominant oak tree design was chosen as a natural feature of the local landscape, as well as a symbol of strength, in our case the strength of community spirit. Roads, footpaths, and boundaries form the branches. Within the roots are family names from the current electoral rolls, for as with roots that give life to the tree, so its people sustain the community. There is an acorn, the fruit of the tree, for each organization born from village life. Around the roots and branches are the wildlife that share the local woodland, heath, and common. The map was produced from over 150 original paintings and drawings.[137]

Within the acorn format, each village organization—there are 34 of them (the Jack and Jill Play Group, the Copthorne Village Badminton Club, the Copthorne Players)—was free to describe itself as it wished, and the paintings were done by people as young as 3 and as old as 80.

Looking at this attractive map of the village with its common, the schools where the village has educated its children since 1842, and the church the community's attended since 1867, we find it easy to imagine that Copthorne dozes in a world wholly divorced from that of the Nisga'a Nation or the Toledo Maya fighting for their land, but in fact Copthorne is locked in a battle every bit as serious for its way of life. While in 1803 Copthorne mobilized its own "Home-Guard" against a threatened Napoleonic invasion, today it fights "the very different threat of slow strangulation through the combined vested interests of commercial profit and political ambition

FIGURE 5.8. Copthorne village map, 2000. The mapmakers chose the oak to symbolize the strength of their community spirit. The village is posted as the tree's leaves, the villagers as its roots. (*Source:* West Sussex County Council)
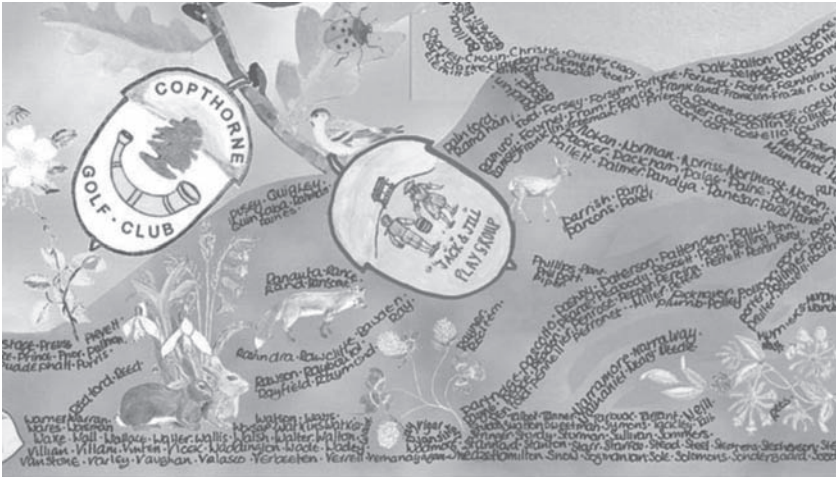
144

FIGURE 5.9. Copthorne village map detail. In this detail you can see the villagers' names forming the roots of the oak, and in the acorns village organizations. (*Source:* West Sussex County Council)

which has no concern for our culture and way of life." The Copthorne Preservation Society sees its "intact village culture" under intense threat from "becoming the rat run for traffic using the M23," from "becoming a major waste industrial center through the development of the Clay Hall Lane Waste Site," and from "losing our Common Land to unwanted housing development."[138]

Copthorne always spilled across the border between Sussex and Surrey counties, but England's local government reorganization of the 1970s really messed up Copthorne's borders. Christine Cheesmur, who worked on the map, complains that the overlapping boundaries "endlessly complicate our lives when it comes to council matters, schooling, and everyday things like bus passes and postal addresses." It was this that really drove the mapmakers who "wanted to show what the village meant to them as a community in its own right, to record their existence as a village, *as their home*—not just a buffer village between local authorities and most certainly not just a part of a merged Gatwick conurbation at the mercy of planners, developers, and big business."[139] If *title* is not an issue in parish mapping, *place* is; and because title's not an issue, the commitment to place that's submerged in Indigenous mapping's concern for territory can swarm to the fore in Parish Maps.

And that is precisely the role envisioned for Parish Maps back in 1985 when Common Ground first proposed the idea. Sue Clifford and Angela King had created Common Ground in 1983 as a nonmembership charity and lobby for what they thought about as *local distinctiveness.* Clifford has written that:

> In forging the idea of *Local Distinctiveness* Common Ground has been working on liberation from preoccupation with the beautiful, the rare, the spectacular to help people explore what makes the commonplace particular and to build ways of demonstratively expressing what they value in their everyday lives. We contend this should be an inclusive process, encouraging local people to debate what is important to them as well as luring the experts to appreciate a broader view.

> Local distinctiveness is about the conspiracy of nature and culture to intensify variegation and it is about anywhere. It is about detail, patina, authenticity, and meaning, the things which create identity. Importantly it focuses on locality (neighborhood, street, parish), not the city or the region. It is about accumulations and assemblages, about accommodation and change, not about compartmentalization and preservation. It must include the invisible as well as the physical: symbol, festival, legend, custom, language, recipe, memory may be as important as street and square.[140]

It was obvious to Clifford and King that these were things that could never be known or even described from the outside, and so "better to ensure that local culture has sufficient self-knowledge and self-esteem to be confident in welcoming new people and new ideas." To this end they floated a slew of proposals and campaigns: Trees, Woods, and the Green Man; New Milestones; Save Our Orchards; Apple Day; Tree Dressing Day; and ABCs.

The ABCs are typical: all you do is make an alphabet of locally distinctive things. Here, this is from a Shaftesbury ABC in progress: "**A**bbey . . . 'Ancient Lights' . . . King Alfred 888 CE . . . **B**yzant . . . Beech Trees . . . Badgers . . . Bimport . . . Butt's Knapp . . . **C**arnival . . . Cnut . . . " and so on. You could do this individually, but Common Ground encourages you to form a group, or to make it a project for an existing one. What will it be for, Common Ground asks? Local interest? Initiation for newcomers? Tourists? As an agenda for local action? What form will it take? Will it be a poster? Will it be verbal? Or illustrated? With line cuts? Or photographs? Or all three? Or something else? Making an ABC focuses attention on the near-at-hand and underfoot so easily taken for granted, and so, easily *overlooked,* and so, easily *lost.* Creating an ABC also "liberates us from classifying things as rare or beautiful to demonstrate what we care about in the everyday. It is useful in that it levels everything, it reshuffles things and juxtaposes them in ways that surprise and make you think." As with every Common Ground initiative, "This can change what we see, disperse our complacency, make things we take for granted seem new to us, and encourage us to action."[141]

To turn an idea like the ABCs into a practice, Common Ground prints leaflets, brochures, booklets, gives talks, commissions exemplars, mounts exhibitions that it tours, collects examples, assembles these into exhibitions, publishes books filled with them, and maintains websites. This is exactly what they did with Parish Maps. By "parish" they hoped merely to convey a useful sense of the local:

> the smallest arena in which life is played out. The territory to which you feel loyalty, which has meaning to you, about which you share some knowledge, for which indignance and protectiveness is easily roused, the neighborhood of which you have the measure, which in some way helps to shape you. . . . It is in this sense of a self-defined small territory that Common Ground has offered the word parish, implying people and place together.

Because they needed examples to show people what they were talking about, in 1986 they commissioned 18 artists—among them some big names (Anthony Gormley, Helen Chadwick)—to map places toward which they felt a particular attachment.[142]

The maps traveled around the country in a 1987–1988 show called *Knowing Your Place* (accompanied by a leaflet); the maps illustrated articles; and the maps

appeared in Common Ground literature. A detail from David Nash's *A Personal Parish (Blaenau Ffestiniog),* for example, decorated the cover of Common Ground's 1991 *Parish Maps* brochure; Ian Macdonald's *Echoes of Change (Cleveland)* took up most of the brochure's centerfold; and a detail from Simon Lewty's *Parish Map (Old Milverton)* concluded it.[143] A larger detail from Lewty's map, in full color, wrapped around the cover of Common Ground's *from place to PLACE: maps and Parish Maps,* where two of the artists, Lewty and Balraj Khanna, wrote about their maps.[144] Six of the maps were turned into postcards, including Conrad Atkinson's *Cleator Moor,* where Atkinson grew up "amidst Blake's dark Satanic mills." Today Cleator Moor is dependent on the nearby Sellafield Complex, with its nuclear power plant (currently being decommissioned) and two nuclear fuel reprocessing facilities. In daubs of color across an Ordnance Survey map of Cleator Moor, Atkinson has scrawled "strontium," "leukemia," "ruthenium," "invisible presence," "residues of power," and similar phrases in a kind of graphic dirge.

At the same time a few parishes began making maps. Jane Whittle recalls starting work on the Redlynch (Wiltshire) map in 1986, a large embroidered quilt that took two years to make (and another year to complete the *Redlynch Book* and footpath guide).[145] That same year mappers in Buckland Newton (Dorset) painted a series of maps of the geology, the roads, the field names, the trees and woods, on so, on the inside gable end of their village hall.[146] In Uplyme (East Devon) the idea was seeded when Lexie Sumner saw a piece about Parish Maps on television. This turned into a nine-month project, 100 questionnaires, a 5- by 6-foot map, and a poster the sale of which has brought the parish thousands of pounds.[147] Ten years later when Common Ground published *from place to PLACE,* over 2,000 Parish Maps had already been made.

Among these maps was one of Charlbury in Oxfordshire that Kim Leslie describes as "a very modern and richly decorated parish map":

> Steeped in detail through delicate pictures and text, it vividly brought to life this little Cotswold town and its surrounding countryside. And it wasn't made by professional mapmakers, but local and very talented people who clearly had great affection for where they lived. Maps like this stir the imagination, they urge visits.[148]

It was only by chance that Leslie had come across a copy of this map as he was dipping into the map collection of the University of Sussex, but he was so taken with it that he made a point of visiting Charlbury and meeting its makers who told him about Common Ground and The Parish Maps Project. Fired by the idea, Leslie proposed a Parish Maps project to West Sussex County Council when it began casting about for a way to celebrate the then forthcoming millennium. As inspired as Leslie by the Charlbury map, the council approved and authorized the start-up money that let Leslie give talks all over the county, produce a fact sheet, organize a conference, and launch a newsletter. Elizabeth and Miles Hardy, who had led the Charlbury team, came down from Oxfordshire to share their experience, and of course Common Ground contributed.

Parish after parish made maps: Aldwich, Apuldram, Arundel, Balcombe . . . Haywards Heath, Henfield, Highbrook, Hunston . . . Pulborough, Rogate, Selsey, Shipley . . . West Hoathly, Woolbeding and Linch, Yapton and Ford. By the time Leslie put an exhibition together in 2001, 87 parishes had made maps of which the Worthing Museum was able to hang 66, most of them originals. Over 2,000 volun-

teers had contributed to the making of the maps and, whether artists, calligraphers, gatherers of information, organizers, or fund-raisers, all had given freely of their time. The money, from a variety of sources including local business sponsorships, treasure hunts, plant sales, and grants of various kinds, largely went to the production of prints and postcards of the maps and the maps' professional mounting to costly conservation standards. The sale of these has raised surprisingly large sums of money for a range of parish projects. The Worthing exhibition was accompanied by a smart, full-color catalogue that has helped to spread the word.[149]

With the passing of the millennium, the word was dropped from The West Sussex Millennium Maps Project but the project has continued, producing an atlas that is in its way as inspiring as the *Maya Atlas* and as monumental as the *Nunavut Atlas.* Leslie's *A Sense of Place: West Sussex Parish Maps* is an oversized, 300-page, hardbound, full-color collection of 75 West Sussex Parish Maps, each reproduced in full along with any number of details, together with a text by Leslie or by members of the team that made the map. Dedicated to Clifford and King, *A Sense of Place* is without much competition the most simply beautiful collection of maps I have ever seen.

There are those for whom being beautiful is less than a recommendation. A recent visitor flipping through the atlas—what else to call it?—shut the book with the complaint, "I can't believe them. They're too pretty to take seriously." Another, finding it open on my desk to pages 82–83 asked, "Where's Monty Python when you need them?" I could see what he was getting at. On the left-hand page are five lovely watercolor details from the Easebourne map arranged around some text: "Cowdray—the Tudor ruins," "Village shop," "Easebourne Primary School," "Easebourne Priory," and a fawn; on the right-hand page, three gorgeous watercolor details and a close-up of an inset map from the—and this was part of his problem—Elsted with Treyford cum Didling map. "I mean," my friend continued, " . . . *what kind of a name is that?*"

Okay, picking on the name is *not done,* but a causal flick through the atlas does reveal a kind of cuddly uniformity, and David Crouch and David Matless have raised questions about the linkages of politics and aesthetics in Parish Maps generally. About the very map of Charlbury that so attracted Leslie, they write that the map

> appears as an exercise in comprehensive realism but its imagery is carefully selected. A particular iconography of the place is set up: older buildings, a flora and fauna denoting a settlement in harmony with its parish land, a landscape written over by layers of history. The making of a map "like an old painting" is also bound to a particular social aesthetic: "we wanted the map to be interesting to look at, and council houses are not pretty." One-third of Charlbury housing is council-owned and yet nothing of the large estate appears on the map. The image of the map as a place's "wedding photograph" would seem to entail cropping-off part of the family.[150]

There's no way of excusing this—it's like the yearbook at a high school where I once taught simply leaving out all the Special Ed kids—but the problem of selectivity cuts every direction. For example, Crouch and Matless fail to point out that Atkinson's map of Cleator Moor, which they describe as "a document of angry attachment, a lament rather than a celebration," while certainly not posing as an exercise in comprehensive realism, has nonetheless also carefully selected its imagery and set up a

particular iconography of place, and indeed it's hard not to notice that Crouch and Matless's criticism is itself bound to "a particular social aesthetic."[151]

But that being said, they have a point, if one better caught by my friend's "too pretty to take seriously" than their "appears as an exercise in comprehensive realism," for whatever "comprehensive realism" may be, it's something few Parish Maps seem to be striving for. If anything they seem more interested in looking like the "100 aker wood" of Ernest Shepard, an illustrator who, unsurprisingly, lived adjacent to Easebourne in Lodsworth, whose beautiful Parish Map appears on pages 152–155 of *A Sense of Place.* But the problem with dismissing maps like those of Lodsworth, Easebourne, and Elsted with Treyford cum Didling as too pretty to *believe* is that Lodsworth, Easebourne, and Elsted with Treyford cum Didling are actually too pretty to *exist.* Nonetheless they do. Easebourne's map may even achieve comprehensive realism, for the place is the heart of the great Cowdray Estate, all 17,000, carefully managed, premier polo-playing, highly profitable acres of it, with its magnificent views to the Downs, its mile-long avenue of sweet chestnuts, and its ancient oak once visited by Queen Elizabeth in . . . 1591. That is, the land itself is as likely to be bound to "a particular social aesthetic" as the map (Figure 5.10).

It's true, of course, that an interesting map of the Cowdray Estate might be made that posted the Mexican oil fields; the impact on Mexico of the first Lord Cowdray's support for Porfirio Díaz; the railroads, dams, tunnels worldwide; and all the rest that in 1909 permitted Cowdray to buy the estate from the Earl of Egmont—it would explain a lot about the almost breathtaking picturesqueness of Easebourne today.[152] Their absence from the Parish Map of Easebourne not only recalls Edward Said's complaint about the failure of 19th-century British novels to represent the sources of the colonial fortunes that underwrote so many of them—Sir Thomas Bertram's, for instance, in Austen's *Mansfield Park,* or Rochester's in Bronte's *Jane Eyre*—but also recalls the world map on which Franco Moretti posted

FIGURE 5.10. The Heyshott Commons, one of the finest remaining heathlands in West Sussex, is another part of the great Cowdray Estate. Lord Cowdray himself is a regular sight cycling through the parish. This lovely map hangs in the Village Hall. (*Source:* West Sussex County Council)

the locations of colonial sources of wealth in British sentimental novels, here in the Caribbean, South America, there in Africa, India, the South China Sea.[153]

What's ultimately interesting, though, is the way Parish Maps can draw these sorts of considerations out as Ordnance Survey sheets, for example, can't; this is unquestionably a tribute to the heightened expressivity of Parish Maps. Whatever distinctions Ordnance Survey sheets might allow you to draw between, say, Cleator Moor and Easebourne, they would wholly fail to capture the differences that the simplest Googling brings to light where, for example, on the opening page for Cleator Moor, I find a YouTube video, *The Devil Made Cleator Moor.* This turns out to be a drive down its main street with titles overlaid—"Fear," reads one, "Lawless," "Despair," "Abandon Hope All Who Enter," "Misery," so on. The YouTube comments are dominated by cracks like "Cleator Moor biggest shithole on earth! In all my life I never lived in such a dead, boring dull town," "They should spray the entire town in Burberry colors then drop a bomb on it," which is immediately followed by, "It really isn't as pleasant as that," "Hahaha! Fantastic! I used to live in Cleator Moor. . . . Hated it with a passion," or, on the upside, "cleators not that bad i live in egremont cheist man give it sum slack."[154] Other Cleator Moor videos feature drinking, falling down, throwing up, and the old folks dancing at The Knight Club. Over in Easebourne, meanwhile, the most popular video—and there are only a couple (including one made by a student for his media studies coursework)—is of the reroping of the flagpole on the spire of St. Mary's Priory.

Okay, you can't *read* these differences from the differences between Atkinson's *Cleator Moor* and the Easebourne Parish Map, but you can sure anticipate them. Atkinson loved Cleator Moor. He has three huge sculptures in its market square (they're his memorials to the town's mining past), and he's furious about the town's condition. The Easebourne mappers love Easebourne, and they feel privileged to live there (as given the prices for real estate they should). Atkinson, meanwhile, lives in Davis, California, where he's a professor at the University of California (although when he made his map he was Artist in Residence at Edinburgh University). Can this be a surprise? "Leukemia," "ruthenium," "cancer causal relationship"—*What? He should have stayed? Are you kidding?*

The differences between the maps, then, are demonstrably attributable to their figuring of Cleator Moor's, of Easebourne's local distinctiveness; and closer attention to the West Sussex maps reveals a lot of this beneath their mostly superficial similarities. At first the Turners Hill Parish Map looks like the maps around it, with its decorative fringe wrapping a sweet map drawn in an almost childlike fashion, except, *whoa!* there's nothing but cars in the fringe, cars and trucks, 52 of them! (See Figure 5.11.) And two jets in the sky, *jets!* Okay, that's easy, Turners Hill must be near Gatwick (it turns out to be only 5 miles away) and, okay, then the cars must mean Turners Hill has already become the "rat run" Copthorne's afraid of turning into. And rather then being child*like,* the map turns out to be the only one in the collection wholly made by kids, the students of Turners Hill Church of England Primary School (see Figure 5.12), at the time under its apparently amazing head, Anne Mudd (the school has an awesome website, and a wind turbine, and a garden, and chickens). Every day 20,000 some vehicles surge through the village, so "It is with some feeling that [the kids] show more wheels than buildings," Leslie notes, though when they do show buildings they concentrate on the village center, the school itself, the fire station across the street from it, The Crown at the crossroads,

FIGURE 5.11. Turners Hill. The map was made by the students of Turners Hill Church of England Primary School. Note the cars and trucks growling around the frame. (*Source:* West Sussex County Council)
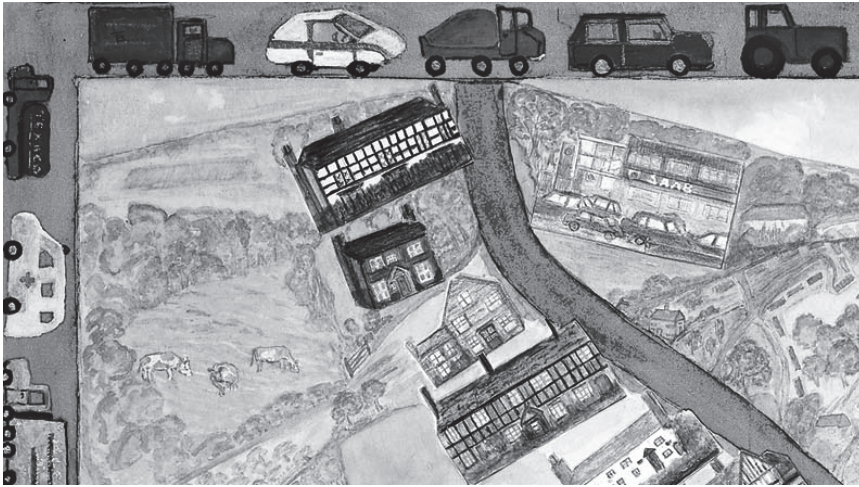
FIGURE 5.12. Turners Hill detail. Kim Leslie writes that "It is with some feeling that the [students] show more wheels than buildings." (*Source:* West Sussex County Council)

and some cottages built in 1919 for the workers on Lord Cowdray's Paddockhurst Estate. This lies to the west of the village, creating a buffer against the growth that has afflicted its neighbors, Copthorne and Crawley Down, but the kids don't show the estate anymore than they do Alexander House to the east, ancestral home of the Bysshe family and now luxurious spa hotel. It's the village that the kids map, with its unbearable traffic, not its lineage or its claims to fame. It's an amazing map!

Wholly different is the map of Walberton and Binsted. Again there's that fringe wrapped around the map, but check out the map proper: it's crisp and clean, there's a legend, a graphic scale built into the alphanumeric index, and a 500-meter grid. It turns out that the Walberton Action Group has been making maps for a while, first one of house names to help guide postmen around the unnumbered properties, but then to help the police and ambulance drivers; another of local bus routes; six for a series of village walks; and so on. Inspired by the 1992 Rio Summit's injunction that we all have parts to play in saving the planet, the Walberton Action Group's map is only part of its initiative: there are its conservation program, the Churchyard Heritage Project, and its Parish Hedgerow Survey. In 1997 it carried out a Valued Features Survey, and its Parish Map has spawned the Walberton History Group with its projects to reproduce and interpret 18th- and 19th-century parish maps.

Then there are the parishes that aren't immune to the charms of the past but are just as interested in acknowledging the present. Lyminster may bracket its map between the historic castle of Arundel and Knucker—the water dragon that used to live there—but between the two you can find reproductions of modern road, Travel Inn, and McDonald's signs. "What will all this roadside clutter look like when the next parish map is made in years to come?" Leslie wonders. "What will survive? This type of detail makes these present-day maps a significant record for the future." Acknowledging that "What we take for granted today will be the history of the future," Felpham's team, too, believed the map should be as much about the present as the past, and in addition to mapping every house, phone, and even letter box, has included images of buses, bus shelters, traffic signs, recycling bins,

and the mobile library. The team that mapped Selsey has anointed it with suitable historicity, but also acknowledges the housing developments and enormous trailer parks that blanket the old fields above the beaches, "immortalizing," as the local paper put it, "Selsey's past and present." While working on the map, the Selsey Parish Map Group began mapping vegetation for its Biodiversity Action Plan, and feeding information to the Sussex Wildlife Trust's hedgerow survey.

Beneath their superficial similarity the maps are often *startlingly* different. The map of St. John's Street in Chichester, aside from being that of a street instead of a parish, was constructed exclusively from photographs laid down along the spine of the street (the map's 8 feet long); the map of the Whyke neighborhood, also in Chichester, was composed around an air photo (as was Arundel's); Chidham's map embraced fabric painting, embroidery, and appliqué (and if St. John's Street and the Whyke neighborhood each took in less than a parish, Chidham's map took in much more); and Cocking's map consisted of 48 low-relief bronze panels spiraling down a 15-foot column weighing three-quarters of a ton to a pair of bronze maps at the bottom (and it only took the team six years to make). What most of them *shared* was an extraordinary inclusivity, a great deal of anxiety about the future, and a beauty that is sometimes astonishing.

The inclusivity almost always involved making sure everyone got at least a questionnaire soliciting input, as well as a canvassing of clubs, schools, and churches by the group making the map. Here's the protocol followed in Lavant:

> In the best tradition of maps, this one is loaded with local knowledge and prompts the curious to find out even more. Michael Burton's team of mapmakers, led by Robert Tedman and John Farren, tried to involve as many as possible to achieve this result. After sending a detailed questionnaire to every household in the whole parish asking what they wanted to include, a group of over twenty was formed, made up of artists, researchers and those with detailed knowledge of the village. They involved the young people from both the schools, the village primary school and independent Lavant House Rosemead, whose pupils contributed the wildlife illustrations of birds, animals, trees, and plants.[155]

Haywards Heath, one of the few large towns to make a map for the project, and 10 times the size of most of the participating parishes, could scarcely hope to involve everyone, but on its release the map was hailed "as the town's first 'democratic map'—the first to be made by the people for the people," and the opening words in its credit line read, "Produced by local artists from local knowledge." Just above the credits there's a frieze of small drawings of groups of people: "Preschool," "Schools," "Youth Groups," "Churches," "Sports," "Music, Art, & Drama," "Advice & Support," "Over 60," "Social Clubs," "Professions & Business," "Gardens & Allotments," "Ex-Service."[156]

Haywards Heath has grown fivefold since the 1930s, and growth like this is what fuels the anxiety the maps express. Tangmere, whose unusual map has a Spitfire in flight filling half of it, was a small rural parish until World War II when the Royal Air Force built an important air station here. As this base dwindled in importance during the 1960s, Tangmere began to rethink itself as a rural parish, only to face a threefold increase in population as the former airfield was developed into acres of greenhouses (most of England's peppers are grown here) and housing for the Chichester market. Both old-timers and newcomers seem to feel that

this has worked *so far,* but they're anxious to maintain their identity and distance from Chichester and not devolve into nothing more than the suburb implied by the names of two recent developments, Chichester Business Park and City Fields. They want to remain Tangmere in their own right. This is Copthorne's desire, and that of Coldwaltham, Watersfield, and Hardham, that of Felpham, Crawley Down, Turners Hill, indeed West Sussex generally, which like it or not is very much part of London's commuter belt.

The prosperity this means has been generally welcomed, and it's one reason so few of the maps turn their back on the present, but further growth too often threatens not merely the identity but the physical reality the identity translates into: open views of the coast and downs, spreading oaks, small schools, and then all the things the Parish Maps Project was intended to surface—the sound of church bells, the cows on their way to the milking parlor, the ancient Saxon church, the secret gardens behind the houses, the neighbors, a street's homeliness, the cowslips, the rabbits, the footpaths along the river, the flint, the chalk, the sandstone, the silver band, the brass, the school fête, the twitten in the Hornet, the gravel-pit lakes, the yew forest, the pigs.

The love the mappers feel for these things suffuses their maps with an aureate beauty. Everyone of these maps is so attractive, often in manifold ways, that it's almost invidious to single any out. But I find myself pulled to look again and again at the colors and textures of Chidham's large fabric map—incredibly lush!—at Copthorne's green-blue spreading oak, at the seductively detailed map of Fenhurst, at the moody painting of Heyshott's downlands, at the infectious liveliness of the map of tiny Highbrook, at the kids' beautiful map of Turners Hill, and at the complicated richness of mingled techniques in the ethereal map of Washington.

As much as their democratic construction, it's the maps' beauties that call into question the ability of professional, academic, and commercial maps to make useful, or even reliable sense of our current situation; and doubtless it's the ability of Parish Maps to do precisely this that accounts not only for their immense popularity in England,[157] but their growing presence in Italy where they're being promoted—as *mappa de comunità*—through the ecomuseum movement.[158] Donatella Murtas, of the Instituto di Ricerche Economico Sociali del Piermonte (in Turin), who had come to see the Worthing Museum exhibition, later held exhibitions of a selection of the Sussex prints in Turin and Pietraporzio. Kim Leslie in turn made presentations about the Sussex project in Turin, Biella, Genoa, and Argenta—Common Ground was also involved—and this has led to an expanding network of exchanges.[159] It's a kind of marriage made in heaven because ecomuseums are explicitly about place and place identity, they're all about local participation, and they're committed to enhancing the life of their local communities.[160] Through the rapidly expanding ecomuseum network, the Parish Maps idea is spreading around the world.[161]

It's hard to say, of course, what with the deafening din of Google Maps and dashboard-mounted GPS units that—*gasp!*—talk to you, how many will really hear the call sent out by Indigenous mappers, by Parish Mappers, but it's perfectly clear that it's they who are pointing to the future, while the electronic wayfinding machinery is doing nothing more than automating the past.

A couple of days ago an acquaintance said, "I don't understand why people need to make maps anymore. They've got Google Earth."

When I pointed out that Google Earth didn't provide a lot of names he said, "You just click on the 'Show Map' button on the toolbar!"

I said, "Wait a sec," and brought out Leslie's *A Sense of Place.*

He flipped through the pages for a couple of minutes, stopping now and then to take a closer look. "Oh," he said.

And then, "You know, we could make one of these for the neighborhood."

C H A P T E R   S I X

Talking Back to the Map

And of course he's right, we could make a map of the neighborhood, a gorgeous, affecting map. He and I could do it together, or I could do it, or we could get a bunch of neighbors to contribute. I've been working on a whole *atlas* of a neighborhood, been working on it for years (Figure 6.1). Isn't that what this is all about, taking the map back, taking the map back into our own hands, making it serve our interests—yours, mine, human interests—instead of those of a profession, or a state?

Which, whatever their interests might be, are rarely human.

I don't know if this has come through—I sure hope it has—but as long as I've been interested in maps I've been enervated, enervated and pissed by the presumption of cartographic professionals that they alone held the keys that unlocked the power of the map. I've wanted to believe that the ability to make maps was like the ability to write, one that came with being human in a society that used maps to communicate, and I resented the posture of the profession that the ability to make maps was one that came only with exhaustive training at the hands of professional cartographers. Or more recently with software they'd cobbled together.

I resented their rules for making maps the same way I resented the rules English teachers had for writing, every sentence must have a subject and a verb, no sentence can begin with a conjunction, no sentence can end with a preposition. Who were they to tell me how to write, me who could hardly fail to see the infinite violations of every one of their rules in the very examples they gave us to study? And who, when I began to pay attention to maps, could not fail to notice how rare it was to come across a map that followed the cartographer's rules, every map must have a legend, every map must have a title, every map must have a scale, even when I confined my attention solely to maps produced by professional cartographers?

But once I'd acquainted myself with the history of mapmaking it was easy to see that cartography was no more than a passing, and probably aberrant, phase in the larger history of mapmaking, part of the broad "professionalization," the general "enbourgeoisment," that during the 19th century had swept through what we might call the "white-collar" trades. White-collar apprenticeships dried up as their burden was off-loaded to an increasingly universal education. Trade and craft names were Latinized. Gravediggers turned into morticians. Newsmen became journal-
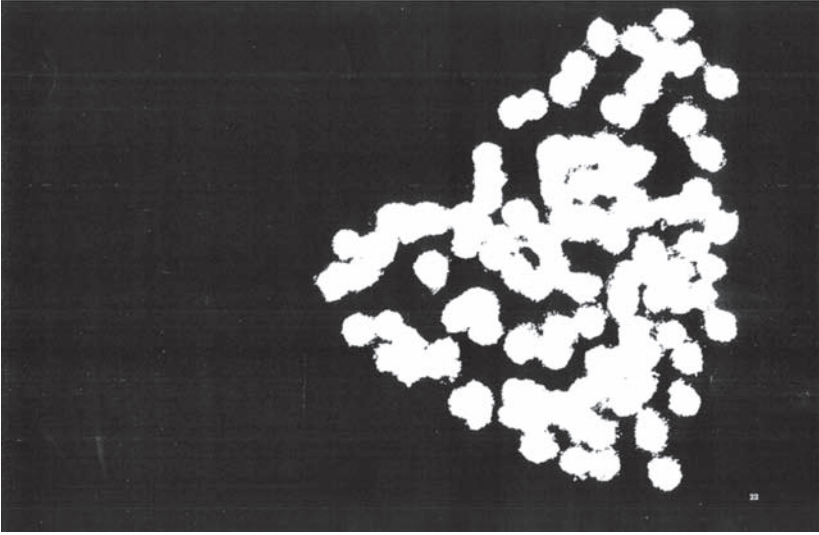
FIGURE 6.1. Streetlights. On this map we posted the streetlights in the Boylan Heights neighborhood using a pochoir brush to suggest the pools of light they cast at night for a neighborhood atlas I've been working on. (*Source: Dancing and Singing: A Narrative Atlas of Boylan Heights*)

ists. Teachers turned into educators. Mapmakers became cartographers. Ivan Illich refers to the 20th century as The Age of Disabling Professions—"disabling" because the professionalization of so much life-work tended to disable nonprofessionals from imagining that they could bury a body, start a newspaper, teach, or make a map.[1]

Illich thinks that professions are cults, and he points to the way professions organize to prevent the practice of their mysteries by outsiders. Strong professions do this by conning legislators into passing licensure laws; less strong ones settle for certification programs; the least strong get along as they can. So, it's against the law to practice medicine without a license, and public school teachers and accountants need to be certified. But anyone can call him- or herself an interior decorator, or a cartographer.[2] Nonetheless, all professions repel threats to the integrity of their professionalism by denigrating nonprofessional work as at best incompetent, if not literally dangerous or actually evil. Since the plain fact is that almost all maps have always been made by nonprofessionals, at least by nonprofessional cartographers, cartography as a profession has been comparatively quiet about the quality of non-professional work, contenting itself, like home decorating, with praising what it has seen as good. But when threatened, as by the popularity of Arno Peters's map, it has responded with full professional hauteur.

The complete failure of the profession's remonstrances in the Peters's case to have *any effect at all* was the first sign I caught that the profession was dying. As I came to see it, cartography, incapable of comprehending, much less responding to the intellectual challenges of the past half century, was expiring from its own torpor when GIS came along to roll the corpse over the cliff, but when I wrote "Cartography is Dead (Thank God!)," I hadn't done the postmortem work I have since.[3]

Around the country, retiring cartographers are rarely being replaced; increasingly, cartography staff are being assigned more general graphic design duties; cart labs are being converted to other uses; and enrollment in map-interpretation courses is dropping fast.[4] This isn't because *map use* is down. Map use is *up,* way up. Interest in maps is at an all-time high, and as we've just seen, it's spreading. It's because people are reclaiming their ability to make maps, not just the dumb stick-a-map-pin-in-a-Google-map type, or even the professional-looking choropleth maps you can make with online-GIS tools, but the kind of really interesting and really important maps we've just looked at, the kind exemplified by Parish Maps and Indigenous mapmaking.

This assertion of a native ability to make maps amounts to a . . . what? I don't know, a democratization of mapmaking. One that completely changes the way the game's been played, not just for the past 100 or so years that have been scarred by the rise and fall of cartography, but for the almost entire 500-year history of mapmaking. When did a bunch of housewives ever get together to make a map before? When did a bunch of primary school kids ever make a map before that was published in a hard-back book in full-color and given the same treatment as maps made by adults? When did a bunch of Indians ever get together before to vote on map symbols and then make a map of their own place that was taken seriously by a court?

Never, that's when. And when I first heard about public participation GIS I thought, wow, this democratization is reaching even into the refuge corners of cartographic professionalism! Regrettably, this turned out not to be the case, but then the plain fact of the matter is that the interests of the state in maps is so long-standing, so deep, and so pervasive that any *real* deprofessionalization is going to be a long time coming. It's going to have to come from someplace we can't even imagine.

Public? Participation? Geographic? Information? Systems?

The first time I heard the letters P P G I S said in such a way that I knew they had to mean something was in 2005 at the Denver meetings of the Association of American Geographers. It was in a session to which I'd gone merely to hook up with a colleague a couple of whose students were making presentations.

At first I stayed out of politeness. I think it's insulting to walk out on someone who's speaking, even when the paper I *want* to hear is in a concurrent session somewhere else. Because I do this, I sometimes end up hearing presentations I never intended to, as in this case one on "The Politics of Scale in Public Participation GIS." I was fascinated and I stayed to hear "Scale and Networks in Collaborative GIS Provision for Urban Grassroots Community Organizations," "Participatory GIS for Growth Management in the Cheat Lake Planning District of Monongalia County, West Virginia," and "Internet-Based Participatory GIS: The Delaware County, Ohio, Recreation Trails Project."[5]

I was "fascinated" in the root sense of the word. I was bewitched, mesmerized, spellbound by a dizzying sense of having been here before, of having heard—years and years earlier—identical sentences being delivered in the same earnest tones, a kind of spell by incredulity: *how could we be doing this all over again?*

As I looked around, I was knocked out by how little had changed. The room we were in was decorated in the same louche pastiche of a hotel baroque, contradicted exactly the way it always had been by the contemporaneity of the technology, slides in those days, but with the same litter of cables duct-taped to the florid carpet, the same slightly darkened room, the same screen, the same spotty attendance. The subjects of the talks were the same too, university researchers reaching out to impale people—publics, communities, users, often poor, always marginalized—on the researchers' latest ideas, these too the same except for the intrusion of the computer. Except for the most recent acronyms, even the vocabulary was the same—*public, needs, collaborative, grassroots, community organizations, participation*—and just as denatured as I remembered it.

Or maybe it was even more denatured. Sitting there in Denver, I had the feeling that "public" had never meant public so little, or "participation" meant participation less. On top of this was a kind of smugness that seemed to come from a theoretical sophistication vouchsafed by a familiarity with the content—if not with the spirit—of contemporary Continental philosophy, particularly its self-reflective, self-critical mode, as if being aware of their hegemonic potential inoculated the programs being described from being hegemonic in fact.

I guess "hegemony" might have been a new word. I don't remember people in the 1960s and 1970s tossing it around with the abandon they do today.

I was *so* disheartened.

Not, let me say, because it was old hat. There's nothing wrong with old hat. If your head's cold and the hat fits, wear it. Nor was it the way this same-old same-old was being passed off as "urgent new problems" that were being "addressed" with "powerful new tools." Inevitably, each generation imagines its problems are new, and if they weren't urgent, why would it be tackling them? Just as each generation imagines its tools are more powerful than those of its predecessors. No, all that I took for granted.

It *was* harder to accept that all the work on public participation had come to so little. Despite 30 or 40 years of results, it was still coming as a shock to these young researchers to discover that the new technologies mattered less than the old politics. Undoubtedly *we* were just as naïve, and I consoled myself that these too were lessons each generation has to learn. Less easy to blow off, after 20 or 30 years of my writing about the social construction of maps—to say nothing of John Pickles's writing about the social construction of GIS—was the *obliviousness* to the social construction of GIS. Yet, I thought, isn't that the way social construction works? If it were easy to see, it wouldn't be so powerful.

No, as old and wasted as all that made me feel, it wasn't any of this that sucked the energy out of me. What did have that effect was the realization that the wonderful democratization and invigoration of mapmaking that I'd convinced myself was taking place was maybe more chimerical than I had encouraged myself to believe. I had pinned *such* hopes on GIS.

I mean I really had been thinking about GIS as taking the power of the map out of the hands of a cartographic elite and putting it into people's hands, sort of the way the spread of literacy took the power of reading and writing out of the hands of the priests and put it into the hands of an ever-growing number of people.[6] PPGIS should have been in the forefront of such an effort, but I didn't leave that session in Denver feeling that a democratization of mapmaking was taking place at all. In fact,

the feeling I got was that in the hands of PPGIS, GIS was merely replacing cartography, *not* liberating mapmaking.[7] Since that session in Denver, I've acquainted myself with the PPGIS literature,[8] sat through a whole PPGIS conference,[9] and listened to scattered presentations whenever I was able,[10] and the feeling has intensified. Were I asked for a thumbnail sketch of the field at the moment, I'd have to say, despite the high idealism and great goodwill of perhaps all its practitioners, that PPGIS is scarcely GIS, intensely hegemonic, hardly public, and anything but participatory.

Public Participation

Significantly, none of these issues is independent. Let me take the last first. "Participation" is not a complicated idea. It means "taking an active part in activities with others," where "active part" means . . . *active part.* The roots make this really plain. The "part" part has to do with "portion," and its deep root with "grant" or "allotment"; the "cip" part—*ceps*—with grasping, with taking, capturing, catching. Linked together they're about *taking one's portion,* about *getting one's share.*

The sense is plain enough when we speak of participating as beneficiaries in a health plan, or of participating in a crime. In neither case is there any sense of looking on, of spectatorship. One can no more participate in GIS by looking something up than one can participate in football by reading the sports page. Passive participation is oxymoronic.[11] Yet despite inspiring examples to the contrary, that's what most PPGIS seems to be about—providing websites where people can . . . look stuff up.[12]

Public is another simple idea. It means "of, concerning, or affecting the community or the people." In its noun form, it explicitly refers to "the community or people *as a whole.*" Its root too is worth recalling, *publicus,* from *populus,* meaning . . . people. Other words derived from this root include "people," "populace," and "popular." It may be as articulated as can be, but in this sense there can be only *one* public, not multitudes of public*s*.[13] Indeed, it does not stretch the idea much to *contrast* "public" with "stakeholder,"[14] since stakeholder and public interests rarely coincide and are often antithetical.[15] Yet in reading the PPGIS literature, how rarely one finds *public* participation. Instead there's the participation of stakeholders, however broadly defined.[16]

I appreciate as much as any why both "participation" and "public" have been twisted so far from their ancient but still most common forms. If I seem insanely reductionistic about these terms, it's because I've long labored in the public participation trenches. As a newly minted geography Ph.D., with a specialization in mental maps, I joined North Carolina State University's School of Design faculty to put my social science to work in the "real" worlds of architecture, landscape architecture, and urban planning. The Environmental Design Research Association had but recently held its inaugural meeting at the school, and its faculty then included Randy Hester and Henry Sanoff, both of whom would go on to publish influential textbooks in user needs analysis and participatory planning, and later Basil Honikman, Robin Moore, and Graeme Hardie.[17]

But aside from the research-oriented work that went on in the school,[18] I immediately found myself caught up in the effort to prevent a proposed highway from wiping out an adjacent neighborhood. The cost of our victory was the bridge that

led into my own neighborhood, one of only two remaining Warren trusses in the State of North Carolina, which a new coalition proceeded to fight for and lose. When the university proposed to drive a highway serving its proposed campus extension through the city's finest public swimming pool and through yet another neighborhood, the fight was on again, and victory achieved through a broad coalition of neighborhood groups and other concerned people. The hardest battle was fought, for years, over the city's plan to drive a major highway through the campus of the state's then premier mental hospital. I led the effort that forced the city to hold a referendum on the proposal. Fifty-two thousand people voted in this referendum—my idea of *public* participation—and though the road was approved (by a hair) our effort had transformed the project from the most brutal kind of bulldozing and stream burial into one with comparatively sensitive siting, stream reconstruction, sound walls, and elaborate landscaping. (It tripled the cost of the road.) During the past decade I've been deeply involved in a $15 to $20 million project to reconstruct the street I live on, which runs from the state capitol past the university to the fairgrounds. As a board member representing merchant interests on the lead nonprofit, community-based intermediary, I've been involved in every aspect of the project, from decorating our float for the university's homecoming parade, numberless hearings, design charettes, and small-area planning sessions, to service on state DOT committees overseeing engineering feasibility studies and the Federal Highway Administration's approval process—my idea of public *participation.*

So I *know* how hard it is to get people to pay attention, affected stakeholders to say nothing of the public at large, how hard it is to get them to come to meetings, how hard it is to get them to speak out, especially how hard it is to get them to do this over and over down the long road that is invariably traveled; and I understand *fully* the necessity of checking the public participation boxes on the stacked forms that have to be submitted to every level of government for the prosecution of even the most trivial plan. Because I appreciate the reality that public officials respond more vigorously in hearing rooms packed with people, *even when the people don't speak,* I thoroughly respect the notion that such shows of concern be registered. I'm even committed to the idea of registering the number of hits a project website gets. Every show of interest has a value. But to conflate the opening of a browser window with helping to put up yard signs under the single rubric "participation"—much less with regular attendance at public hearings or active work in design charettes—is not only to denigrate actual participation but to promote notions of participation that could easily undermine the very idea. (Unless, the cynic in me wonders, that's the intention.) Just as conflating under the rubric "public" the property owners adjacent to a project with citizens who though less proximate nevertheless have compelling interests, is to completely evacuate "public" of every shred of its historic significance.[19]

My concern, however, arises less from considerations of justice—though these are compelling—than from consideration of how the indiscriminate use of "public" and "participation" promotes the hegemonic potential of PPGIS. It becomes harder and harder to object that the public has not been involved when for months all the plans have been available on a city's or state's website. This form of access, incidentally, has had the perverse effect of *reducing* public/official contact to mandated "public hearings," with their preregistration requirement, their 3-minute limit on speaking, and their content-analysis-style summary duly filed at the appropriate tab

in the project's official three-ring binder. Shrinking the public to adjacent prop-
erty owners and reducing participation to website hits so lowers the threshold for
public participation as to render it meaningless, while at the same time permitting
the public participation boxes to be checked off on the appropriate forms as the
approval process hurtles through the Section 106 and 4(f) consultations on its way
to an EA/FONSI.[20]

The goal here is plain: it's to build the project. And so the process is oriented
toward construction of consensus, not around the public's direct involvement in
construction of its manifold futures. Teresa Tang is explicit about this: "[Public
participation]'s ultimate aim," she writes, "is to facilitate consensus building."[21]
John Gallo makes a similar point: "An underlying normative goal of PPGIS," he
writes, "is to . . . develop consensus for a better future." Such views construe the
public monolithically, as a people united about ends, if divided over means. But the
public is almost never, if ever, united about ends.[22]

John Krygier and I used a hypothetical example to consider map design in
contexts like these in our book, *Making Maps: A Visual Guide to Map Design for Geo-
graphical Information Systems* (Figure 6.2).[23] In the first map we imagined, a County
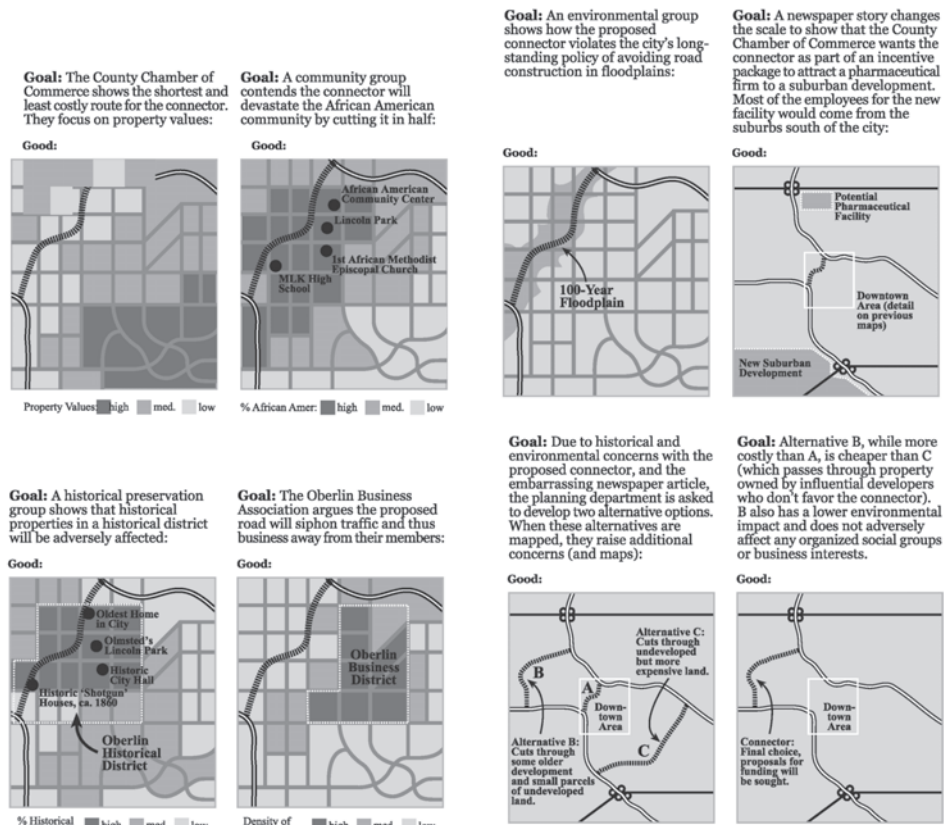
FIGURE 6.2. Divided over ends. Eight hypothetical maps illustrating potential, but highly
likely, divisions over ends in a community considering the construction of a new highway.
(*Source:* John Krygier and Denis Wood's *Making Maps*)

Chamber of Commerce has selected the shortest and least costly route for a proposed connector road. At least ostensibly the Chamber's values are classically intrumental, those of minimizing cost. In a counter-map, an African American community responds by showing how the proposed connector devastates its neighborhood by cutting it in half. The community's values are humanistic, in support of human social bonds. A third group produces a counter-map that shows how buildings in an existing historical district will be adversely affected. This group's values too are humanistic, but they're more abstract, concerned with the contributions to a sense of place made by structures created in the past. A fourth group, the Oberlin Business Association, argues in its map that the proposed connector will siphon traffic and thus business from its members. Its values too are instrumental—maintaining income flow—but they also have humanistic components related to both a sense of community and a sense of place. An environmental group highlights the impact the connector will have on a floodplain. This group's values are a complex melange of the instrumental (flooding), the humanistic (human/environment relations), and the religious (eco-ideological).

A newspaper story about the connector's role in a Chamber-promoted initiative to lure to a suburban office park a pharmaceutical firm, most of whose employees would come from the suburbs south of town, changes the scale of the debate. The newspaper's values, too, are a complicated melange, but they certainly contain, at least ostensibly, strong ethical components. Under multiple pressures, the planning department floats two new proposals, both substantially less efficient and more expensive. The fundamental values at play here are a mix of the political and the professional. Finally, the proposal with the fewest opponents is advanced to the next stage in the process. The map published by the weekly counterculture giveaway—one that posts the pharmaceutical firm's worldwide holdings, its history of chemical spills, and its questionable personnel practices—plays little role in the outcome, at least at the moment, but the map does point to the existence of ends-considerations other than those immediately at play in the debate. The bicycling fanatics who believe no more roads should ever be built, period—they don't even bother to speak up: no one listens. To construe such actors as people united about ends, if divided over means, is laughable. It's also demeaning.

At the root of many of these problems is a notion of participation dictated by the needs of states, counties, and municipalities to provide public-needs justifications for their actions: "We do this because it benefits the public." As the "benefit" term reduces discussion to analyses of dollar costs, the "public" term motivates the drive for numbers distibuted across representative classes of age, gender, and race. Togther they drain every semblance of life from the process and any vitality from the product. But just as there can be more to geographic information systems than lot lines, property values, and streets, "public" doesn't have to mean calculated fractions of the entire population either, nor "participation" sitting through public hearings, playing with markers at a "charette," or using computers to "access" a geodatabase. It doesn't need to involve a geodatabase at all, which its most brilliant exponent describes in the following terms:

> A geodatabase can contain four representations of geographic data:
>
> - Vector data for representing features
> - Raster data for representing images, gridded thematic data, and surfaces

- Triangulated irregular networks (TINs) for representing surfaces
- Addresses and locations for finding a geogaphic position

A geodatabase stores all of these representations of geogaphic data in a commerical relational database. This means that geographic data can be administered centrally by information technology professionals and ArcInfo can take advantage of developments in database technology.[24]

The question isn't where is Monty Python when you need them, but where is Franz Kafka? Do we *really* want our "geographic data" "centrally administered" by "information technology professionals"? *Isn't it bad enough already?*

Yeah, it is—and it's probably worse than I imagine—and I for one am made as anxious by what geodatabase managers might think *geographic data* is as I am with it being central administered by "IT" professionals.

The Reframing of Public Discourse

What is most threatening about this, and especially insidious, is the shift encouraged by PPGIS in the way attitudes and arguments are framed. Earlier I said something to the effect that most PPGIS seems to be about providing websites where people can look stuff up. One of the things that has to be acknowledged is how little stuff this is. Frequently, it amounts to no more than a city's cadaster, the record that since at least Babylonian times—it *is* humanity's oldest geodatabase—has registered information on the value, extent, and ownership of land for the purposes of control and taxation. Even when databases are maintained by nonprofit, community-based intermediaries, the databases rarely contain much that has not been obtained from local government, that is, data originally collected to facilitate the control and authority of the municipality, county, or state. Why? Because the cost of collecting and organizing data about the environment is insane, and very few have the means to do so, even for small areas.

The cadastral map, Kain and Baigent remind us, "is an instrument of control which both reflects and consolidates the power of those who commission it."[25] One way it does this is by circumscribing political discourse to terms of exclusively instrumental significane, to lot lines, that is, lot lines, lot sizes, zoning, value, ownership, condition. When PPGIS advocates such as David Sawicki and Patrick Burke speak of citizens being enabled by PPGIS "to speak in such a way that the message [can] be heard by those responsible for taking action," what they really mean is that the message has been reframed into the language of regulation.[26] This is a language that throughout America has reduced the idea of the home to that of an investment, and the neighborhood to that of a machine for the destruction, maintenance, or enhancement of value. Everywhere, discourse about home and community has become indistinguishable from discourse about stocks and bonds, these long since divorced from any consideration of what *good* the product or service might be to what *profit* it might be induced to yield.[27]

When PPGIS advocates such as Cheryl Parker and Amelita Pascual say about people who have made use of PPGIS that, "Rather than reacting emotionally, people could present intelligent and well-informed fact-based economic arguments," this is *all* they mean.[28] The context here is Parker and Pascual's claim that "some

people did not understand the complexities of a local economy. They just understood that they did not want to be displaced," but . . . *what's wrong with not wanting to be displaced?* What Parker and Pascual are saying is that we live in a market economy, and we had better get used to it. The reality, of course, is that we *make* the market economy through our acquiescence to it and saying "that's just the way things are" is literally . . . *selling out,* and it's hard to miss the way GIS reframes our public discourse exactly the same way that Indigenous mapping reframes the Indigenous worldview.

When Parker and Pascual contrast "fact-based" with "grounded in emotion," they make it sound as though emotion were something to be shunned in talking about things like home and community.[29] *I* can't imagine where emotion could be *more* relevant, and I agree with Paul Goodman that

> emotions do not necessarily hinder knowing. They may help it by brightening the figure against the background and by leading to relevant exploring. . . . [Emotions] say something about the environment in relation to the self: that it contains an obstacle, that it threatens physical safety or moral dignity, that it suits ones appetite, maybe that it has an empty spot and one will have to resign oneself to doing without. . . . Normally, feeling, knowing and action go together and reinforce one another, so that a language free to express and arouse feeling should indicate a people intelligent for their practical happiness, whereas an affectless language should indicate a stupid culture.[30]

It's precisely this sort of "affectless language" that Liza Casey and Tom Pederson were complaining about when they wrote that cadaster-based neighborhood maps produced in Philadelphia had no way "to convey the beautiful old stone buildings that are such a part of Philadelphia's Germantown neighborhood . . . [or the] famous family-owned barbecued chicken place on the corner which is a social gathering place for the neighborhood." Listen to the emotion-laden language they use: "Similarly, there is no ability to communicate the shocking degree of abandonment and dissipation in some of the neighborhoods. Crumbled buildings, burned out abandoned cars, trash strewn lots and streets, broken glass and graffiti are in evidence everywhere but not on the maps."[31]

The question begged by so much of this is what makes a fact a fact? Without being pulled into the Marianas trench of epistemology—though perhaps that's where the *whole* GIS discussion needs to go—and without more than glancing at the parlous ontological status of lot lines—on which all the rest of the cadaster depends—it's important to observe how much of the data on the typical cadaster is rooted in what can only be called feelings. Assessments of condition, for example, are opinions pure and simple, but so is zoning. Zoning's a feeling about what *should* be, and it exists in a constant state of reevaluation.[32] Yet unlike Casey and Pederson's "beautiful," "famous," and "shocking," R-20 and O/I somehow manage to pass . . . as facts.

I'm reminded of Gwendolyn Warren's discovery that being bitten by rats, which growing up in Detroit she'd always assumed to be a fact of the *environment* like Casey and Pederson's abandoned lots, burned out cars, and broken glass, turned into facts of *child abuse and neglect* in the registers of the hospitals where they were recorded.[33] "They're covering up what's actually happening," she complained, "And so, what we are going to do is go down and pull all the information that they have

on child abuse. We figure if we could get any of the files from Detroit General Hospital, we could map what happens to these children."

The Detroit Geographical Expedition and Institute

In the last chapter I described the way Warren and her colleagues transformed the map of "Children's Pedestrian Deaths and Injuries by Automobiles" into the inflammatory but infinitely more accurate and vastly more powerful map of "Where Commuters Run over Black Children on the Pointes-Downtown Track." It's an example I return to here, first, because it illustrates how, led to relevant exploration by emotion, what had seemed to be one kind of fact (accidental traffic deaths) was revealed to be another (at the very least a structural kind of death, in fact, the murder of one class and race by another).

But I also raise this example because it emerged in the context of an exemplary case of public participation, one that was taken over by the public toward which it was initially directed. The story of the Bill Bunge-inspired Detroit Geographical Expedition and Institute requires a book of its own, but you have to read a couple of salient paragraphs from a report of the Association of American Geographers:

> In 1968, under the guidance of Bill Bunge, a group of ghetto residents began to explore and map the geography of the city. They combined geographic concepts and methods with personal hypotheses and definitions of problems. The result was a series of innovative studies of health hazards, income flows, traffic flows, death rates, and other variables of concern to the students. Faculty from the University of Michigan geography department participated; college credit was arranged.
>
> The initial efforts led to a need for cartographic instruction so that the maps from the first studies could be refined for publication. Hence, a second credit course was organized, in cartography, through Michigan State University. . . . The educational enterprise appears to have become a kind of experimental community college, in which geography is one component. . . .
>
> Meanwhile, Detroit Geographical Expedition and Institute members, with guidance from professional geographers, produced a study of the school redistricting problem in Detroit. The findings and recommendations of this study appear to have had intellectual and political impact, and it is an important geographic work for 1) its substance, 2) its method, and 3) its use as an instrument to train citizens to research their community problems and to use research findings to stimulate and guide community action.[34]

This work then, almost 40 years old, was a *public* one, was extraordinarily *participatory,* was genuinely *geographic* (that is, not just georeferenced), generated real *information,* and was thoroughly *systematic.* It was, in fact, a *true* PPGIS, if one that scarcely involved the computer at all.[35]

One of the things that most strikes me about this example is that unlike so many encountered in the PPGIS literature, it has *nothing* to do with the public participation model developed and deployed by professional planners. Bunge's model was that of . . . *geographic exploration,* but exploration carried out by the natives instead of the explorers.

Bunge's ideas about public participation weren't about building consensus.

Instead they were about building the public's ability to construct its own facts, facts that Bunge was convinced would be more relevant to their situation than the city's facts could ever be. Bunge asked: "What does a geographer mean by the statement that a portion of the earth's surface has been explored?"

> Does he mean that the easy-to-map features for some harried early traveler such as rivers and mountains are accurately placed on a map? If so the earth is certainly explored. Humans are of great significance to geographers but are extremely difficult, even dangerous, to map. If the features of the earth's surface of interest to mankind include the human condition, then vast stretches of the map are in fact as "unexplored" as Antarctica in 1850 and should appear under that label and in the traditional intriguing chalk white color.[36]

But then Bunge knew that "geographic data" wasn't a kind of God-given knowledge that existed independently of human interests, and so also that no map—or geodatabase—could be innocent with respect to what it chose to post. And not only *what* it chose to post, but *how* it chose to post it.

"Geography," Bunge continued, "is often defined as the study of the earth's surface as the home of man. But the view from which men's home? The perception from the homes of people that live in those particular places on the earth's surface, or rather from the homes of men in distant Buckingham Palaces or New York book publishers?" For Bunge, point of view determined *every* aspect of the map, none escaped its grasp. Scale, for instance, could determine—all by itself—just what could be seen and what couldn't, and Bunge noted the way that at small scales kids just . . . *disappeared,* got swallowed up in the worlds of their parents. "Accusingly," he wrote:

> There seems to be no geography of children, that is, the earth's surface as the home of children. What is their perception of their space? What is the "market area" of a tot lot? What is the average rate of travel of a kindergarten child? We seem to have ample statistics on the speed of trucks and giraffes. What is the traffic flow pattern of children across crowded streets including normally "illegal" children who jay walk and do other childish and disorderly things?[37]

How do you answer these questions? Not by going to the library and certainly not by sitting behind a desk.

Happy thought: *explore.* And since explorers were sent into the field by societies set up for the purpose, Bunge got others to join him in founding a Society for Human Exploration:

> To implement a truly human exploration of the earth's surface, the academic geographers, folk geographers, urban planners, and others intrigued with such an effort, have founded the Society for Human Exploration. The functions of the Society are to assist exploration especially through the mounting of expeditions. The first of the planned series is the "Detroit Geographical Expedition, I" covering the entire urban conglomeration centered on Detroit. Its advance scouts are now in the field and completion date is projected for the fall of 1970.[38]

I love the way this picks up on the characteristic features of storybook explorers being sent out by Such-and-Such a Society with their advance scouts and native

guides. And while the Detroit Geographical Expedition *would* publish its field notes in serried ranks, a monograph, and even a popular account, it never denigrated local geographers to the rank of "native guides" and simply appropriated their maps of the Known World. Rather the locals ran the expeditions, whose goal was the creation of *oughtness maps.* "After all," Bunge insisted, "it is not the function of geographers to merely map the earth, but to change it."[39]

As he originally envisioned it, the Society had three branches: the Expedition itself, publications, and class work. While class work involved the creation of new courses (Regions of Detroit, for instance, and Non-Anglo-America), its major thrust was "to provide scholarship money to train folk geographers in the professional aspects of geography and through increasing their skills also enrich our own profession"; though just as importantly, it contemplated new ways of getting kids into college classes—black kids from Detroit's streets, folk geographers—as well as getting blacks onto university faculties, blacks and other knowledgeable folk (American Indians, cab drivers). Bunge had just been fired from his position at Wayne State University, so this classroom branch took on an ad hoc character that probably benefited it, and as we've seen the Association of American Geographers characterized it as "a kind of experimental community college."[40]

At the same time the Society launched *Field Notes: A Series Dedicated to the Human Exploration of Our Planet.* The first of these was Bunge's own, *The First Years of the Detroit Geographical Expedition: A Personal Report* (1969), but the second was *A Report to the Parents of Detroit on School Desegregation* (1970) and had 10 coauthors, while the third, *The Geography of the Children of Detroit* (1971) contained a dozen articles written by various Expedition members. That was also the year Bunge published *Fitzgerald: Geography of a Revolution,* a heavily illustrated, 250-page book about the Detroit community in which Bunge lived (this was the popular account).[41] Four years later, with Ronald Bordessa, Bunge published *The Canadian Alternative: Survival, Expeditions, and Urban Change,* summarizing the results of the Detroit and the Toronto Expeditions (this was the monograph).[42] All of these were loaded with maps, maps of the Continents and Islands of Mankind (Figure 6.3), of the Region of Rat-Bitten Babies (Figure 6.4), of the Direction of Money Transfer in Metropolitan Detroit, of Where Children Play, of the Fire Damage from Riots, July 1967, of the Native Plan for Toronto, of the Homes of Those Who Attempted Suicide, of the Grassless Space—The Karst, of Dustfall, of the Fly-Covered Baby Regions, of the Human Landscape. The envisioned international *Journal of Human Exploration* was never realized, nor was the projected *Atlas of Love and Hate.*

The Expedition itself consisted of a "cutting edge" of full-time field workers (dedicated and fanatical explorers) with a base of students, recruits, and folk geographers (the last, it was hoped, turning gradually into the first).[43] Every full-time Expedition member was expected to get "unlost," to move into and start studying a region of Detroit, and to initiate a study of his or her own. Getting "unlost" was a kind of three-day where-is-it immersion, the first day devoted to memorizing maps, the second to learning landmarks (less points of interest than intruders into the horizon, radio towers and the like), and the third to using handmade maps to find one's way on the ground. Once "found," an Expedition member could tackle a Detroit region. Finally, he or she could study something of particular interest, which is how Bunge developed his interest in children. To make a living, "founds" might drive cabs (as cabdrivers they could keep working on their mental maps) or do substitute teaching.

THE CONTINENTS AND ISLANDS OF MANKIND
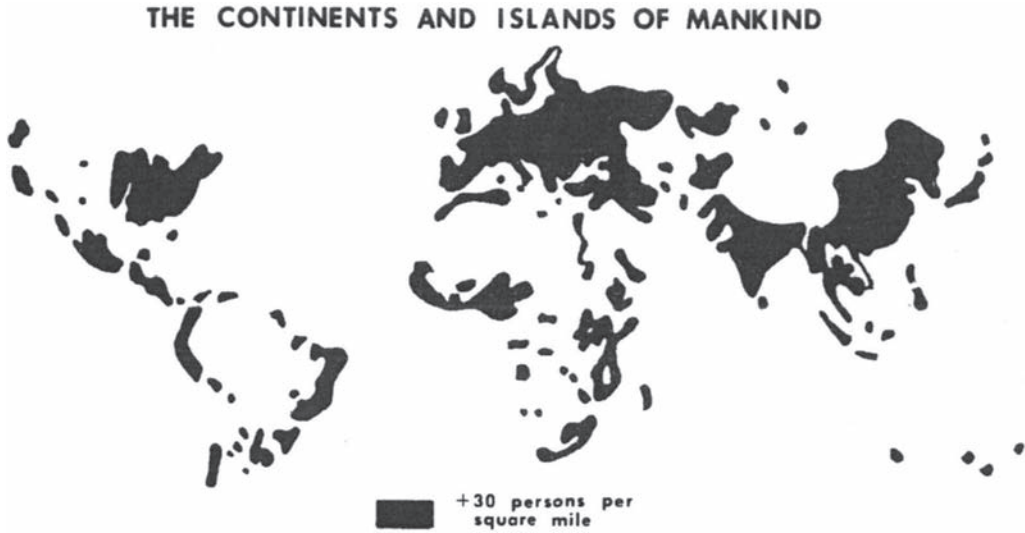
+30 persons per
square mile

FIGURE 6.3. This increasingly well-known map of places with more than 30 people per square mile underscores Bunge's commitment to the study of . . . the *human* condition. It graced the cover of the Expedition's *Field Notes* series. (*Source:* Detroit Geographical Expedition and Institute)
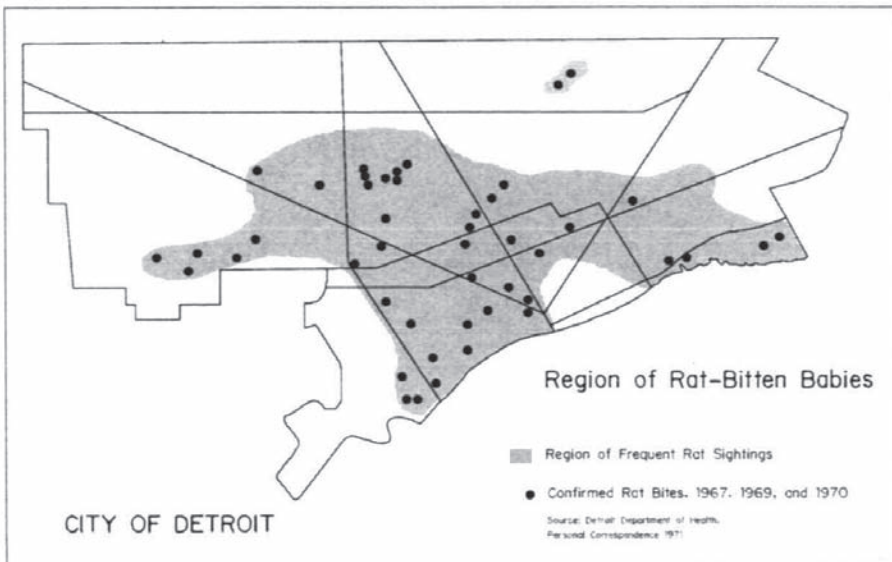
Region of Rat-Bitten Babies

Region of Frequent Rat Sightings

● Confirmed Rat Bites. 1967. 1969. and 1970

Source: Detroit Department of Health.
Personal Correspondence 1971

CITY OF DETROIT

FIGURE 6.4. Region of rat-bitten babies. This is redrawn from the Toronto Expedition's *Canadian Alternative: Survival, Expedition, and Urban Change.* It illustrates a section headed "Some Things Toronto Does Not Have but Detroit Does," where the text reads, "Toronto lacks many of Detroit features. It lacks a comparable rat region . . . Detroit lives in fear of rats, at least significant sections of Detroit do."

Bunge did both, though during the years the Detroit Expedition was in the field, he also lectured widely, both to raise money and to spread the gospel.

The work inspired many and in varying ways. Bunge's "first call" for people to join the Society for Human Exploration was very widely distributed in American geography departments where it had a slightly seismic impact. This was still the 1960s, and graduate students—to say nothing of faculty—felt their inutility as everywhere around them others were taking to the streets, protesting, doing . . . *something.* The Expedition offered, at the very least, a new way of imagining being a geographer, and new kinds of problems to be addressed in new kinds of ways.[44] Other Expeditions were sent into the field, in the Bay Area, in Vancouver, in Sydney. The most important of these was the one in Toronto, 1972–1975, though the later Canadian-American Geographical Expedition, centered on the Detroit-Windsor border, published a *Field Notes* series too (*The North American Working Class, The Canadian-American Geographical Expedition, Second Call: The Society for Human Exploration,* all 1977). Bunge describes the "crushing" of the Detroit Expedition in his essay "From 'Fun' to 'Necessity.'" While the Expedition was undoubtedly caught up in the broader crushing of dissent in Detroit generally, it's important to acknowledge that without the revolutionary energy Detroit radiated in the late 1960s and early 1970s, there never would have been an Expedition in the first place.[45]

Expeditions are hard work. They suck up as much energy and as many resources as people can throw at them. There are high expectations to fulfill and no days off. I have a feeling they're place and time specific and have to be led by people like Bunge and Warren, a white university professor (at least at the start) and a black high school student (at least at the start), male and female, angry at different things in different ways, capable of learning from each other, and sparking each other and others into actions neither would, or could have undertaken alone. In their preface to *The Canadian Alternative,* Bunge and Bordessa would later write:

> Gwendolyn Warren, Director of the Detroit Geographical expedition and Institute, raised several basic research topics. Her perception of hunger-filled children standing in slum ghetto windows and pressing their faces to the window when the ice cream vendor went down the street; and her recognition of this as a torture that would not be tolerated if we were dealing with animals, defined the "city of death." . . . The theme of children and machines, central to [*The Canadian Alternative*], grew out of her appreciation of the problem of children mechanically tumbling down the steps in front of the homes on Brush St. and falling into the arterial commuter traffic.[46]

But it took a geographer with a strong theoretical bent like Bunge's—when he began the Expedition he was best known for the book, *Theoretical Geography*[47]—to show Warren how these insights could be transformed into powerful generalizations.

And so when the Detroit School Board's decentralization office adopted a redistricting plan required by Michigan law, the Expedition not only came up with an alternative, they came up with lots of them, not just for the sake of having alternatives, but because that's what you come up with when you try to understand all the relationships constituted by the interplay of the data. Here, let them describe it:

> In response to your request for technical assistance in the implementation of Senate Bill No. 635, we hand you herewith a copy of a report entitled "A Report to the Parents of Detroit on School Decentralization."

The report is interesting in that it required some of the latest programming techniques in the most advanced languages available on the continent. Five or six university mathematical and geography departments have worked on the high school and grade school based region problems. We would like to draw special attention to the work of Dr. John Shepard, the geographer from the London School of Economics who this year is fortunately on leave to Queen's University in Kingston, Ontario, and who threw himself and colleagues into the task literally night and day to meet the deadlines set by men of more practical day to day affairs. Thank you for the opportunity to turn abstract science to good use.[48]

Among the 35 maps published ("Grade schools more than fifty percent filled with black children are shown in black," "Racial tension: each dot indicates an incidence of housing discrimination as reported to the Michigan Civil Rights Commission, 1968–1969," "Residences of school board members") were 14 redistricting plans as well as pages of computer printout of possible high school combinations ("Proposed Solution from the University of Washington," "Computer Evaluation of All Decentralization Possibilities").

No fewer than 7,367 maps were found that satisfied the initial constraints. Given these constraints, the report's authors observed:

It is much easier to keep white children under white control than it is to protect black children from white racists. At the most, the black community can protect only 91.4% of its children, whereas the white community can retain control of 99.9% of theirs. At worst, the white community can lose control over only 45% of the white school children, although the black students can fall 75% under white control. . . . Simply knowing how good or bad the final outcome can possibly be is a definite advantage in realistic discussions. We hope the city will utilize the research presented here to its fullest scientific extent.[49]

By developing—and exposing—the full range of solutions to the redistricting problem, the Expedition pushed beyond advocacy into a kind of genuine professionalism, not the false kind consumed with techniques (the kind implied by the usual use of the term *professional cartographer*), but the kind implied by Jacque Bertin's dictum, "A graphic is not only a drawing; it is a responsibility, sometimes a weighty one, in decision-making."[50]

This is even more true of a PPGIS. Or it should be. In the case of the Detroit Geographical Expedition and Institute it certainly was, which is yet another reason, and far from the least, for taking one more look at this exemplary public participation geographic information system.

The Situationist International

As the Detroit Geographical Expedition rewrote its facts over those of Detroit's municipal agencies, the Expedition established itself as an exemplary counter-mapping enterprise. Yet as an Expedition directed by a former student of Arthur Robinson's, at the time very much the dominant architect of official, status-quo cartography, the Expedition's ideas about *how facts were constructed* were ultimately not that different from those of the city itself. But the city of positivist facts was never

the only city, and other cities, *hidden cities,* those, as Walter Benjamin put it, "supple and staccato enough to adapt to the lyrical stirrings of the soul, the undulations of dreams, and the sudden leaps of consciousness," can be mapped as well.[51] Mappers of this other city have often thought about themselves as artists, and it is easy to think about the maps they make as map art, that is, as *art* made *as, with,* or *about* maps. But by no means all the mappers of the city of dreams have thought about themselves as artists however we choose to think about them today, and here the history of Situationist mapmaking is exemplary.

The Situationists were a shifting group of artist–intellectual–activists—who would have rejected this description—that theorized, wrote, agitated, and made things in various European countries, as well as Algeria, between 1957 and 1972. The group's immediate predecessor had been the First World Congress of Free Artists, a creation of the Letterist International, based in Paris, and the International Movement for an Imaginist Bauhaus, based in Abisola and Alba. The Imaginist Bauhaus had evolved out of the COBRA group, originally based in COpenhagen, BRussels, and Amsterdam; as the Letterist International had evolved out of the Parisian Letterist group. Both the Letterists and COBRA had arisen in a dispersion of Surrealist energy in the aftermath of World War II.[52]

The best known Letterists—Letterism was never well known in the States—were Isidore Isou and Maurice Lemaître.[53] Among COBRA participants were the much better-known Karel Appel, Pierre Alechinsky, George Constant, and Asger Jorn.[54] COBRA-member Jorn founded the Imaginist Bauhaus, as breakaway Letterist, Guy-Ernest Debord, founded the Letterist International. In 1957 Jorn and Debord came together—with Constant and others—to found the Situationist International. Situationists thought of what they were doing as "a revolutionary program . . . to confront the ideological totality of the Western world."[55] While doubtless true, in their efforts to intervene in the redevelopment of Paris, the Situationists more resembled a contemporary, nonprofit, community-based intermediary, one that was systematically attempting to map the *psycho*geography of the city. That is, the Situationists created a public participation *psycho*geographic information system.

Debord, who would turn out to be the Situationist International's theorist *en chef,* introduced the idea of psychogeography, along with the word itself, in his 1955 paper, "Introduction to a Critique of Urban Geography," to refer to "some provisional terrains of observation, including the observation of certain processes of chance and predictability in the streets."[56] Debord argued that "psychogeography could set for itself the study of the precise laws and specific effects of the geographical environment, consciously organized or not, on the emotions and behavior of individuals."[57] To achieve this, psychogeographers would try to pay attention to their inner voices, and so open themselves to the city as a *terrain of passion.* Their commitment responded to official proposals for the redevelopment of Paris, proposals threatening to be far more extensive and devastating than those of Haussmann during the Second Empire, especially devastating to parts of the city of particular interest to the Situationists. Situationist psychogeography would be an effort to simultaneously embrace subjective and objective ways of knowing the city; that is, while taking for granted that it is the *self* that knows the city, acknowledging that this knowing had somehow to *transcend* the self to be useful in any collective rethinking of the city.[58]

The essential psychogeographic method was that of the *dérive,* which Debord

described in his "Theory of the Dérive" as a "playful-constructive" movement through the city—a drift—by a small group of people alert to "the attractions of the terrain and the encounters they find there," and who *as a group* could agree on distinct, spontaneous preferences for routes through the city.[59] Debord was convinced the dérive's attention to psychogeographic effects would distinguish it "from the classical notions of the journey and the stroll," though the dérive's antecedents, which were unhesitatingly acknowledged, included Thomas De Quincey's meanderings and André Breton's Surrealist romances, *Nadja* and *L'Amour fou.* Here's a taste of De Quincey: "I used often, on Saturday nights, after I had taken opium, to wander forth, without much regarding the direction or the distance"; of *Nadja*: "I don't know why it should be precisely here that my feet take me, here that I almost invariably go without specific purpose, without anything to induce me but this obscure clue: namely that it (?) will happen here;" and of *L'Amour fou*: "Who goes with me in this hour in Paris without leading me and whom, moreover, I am not leading?"[60]

The Situationists claimed to have little time for Surrealism: "Everyone is the son of many fathers," the Situationist Michèle Bernstein once said. "There was the father we hated, which was surrealism. And there was the father we loved, which was dada. We were the children of both."[61] Yet Surrealist "expeditions" could hardly have failed to provide precedents for the dérive, especially the expeditions the Surrealists made in the name of Dada, the famous night-long walk of early June 1919, for example, that led Breton and Philippe Soupault to write *Les Champs Magnétiques*; or that of April 14, 1921, actually promoted as a Dada Excursion and Visit, to the church of St. Julien-le-Pauvre in the heart of old Paris, the first of a projected series of trips to places "which have no real reason to exist."[62] By 1923 the Surrealists often wandered around Paris at night. Marcel Noll recalled that "I wandered all night with Éluard, Péret, and Desnos from Les Halles to Montmartre, from the Porte Saint-Denis to Belleville. On the night of Thursday to Friday, Desnos and I left Breton's at 11 on our way home. But what's the night for? We went to the Bois de Boulogne, into gloomy corners, along paths we didn't know, until four in the morning."[63] It was Noll and Breton who accompanied Louis Aragon on that midnight tour of the Parc des Buttes-Chaumont that forms the climax of Aragon's *Le Paysan de Paris,* a book that could be considered the description of a single long dérive, with its dream-like passage through the Passage de l'Opera just before its demolition for an extension of the Boulevard Haussmann, a passage that would inspire Walter Benjamin's Arcade Project.[64] Breton even describes mapping an approximation of what the Situationists would later call *pentes psychogéographiques,* the psychogeographic forces that cities exert on drifters. Breton wrote:

> If one pays attention while walking along a single street that is moderately long and presents sufficient variety along the way (the rue de Richelieu, for instance), one will discover between two spots that could be pinpointed alternating zones of well-being and discomfort. A map that would probably be quite revealing should be drawn for *every individual*: the places he haunts could be shown in white, the ones he avoids in black, and the rest in various shades of gray according to the degree of attraction or repulsion. This classification should be ruled by a measure of objectivity, and there is no doubt that, in this as in other matters, the "privileged structures" prevail in the choices that are made.[65]

The father they hated? Perhaps. But also one the Situationists could never get out of their heads.

Unlike the walks taken by De Quincey, but like most taken by the Surrealists, the dérive was usually done in small groups: "One can dérive alone," Debord acknowledged, "but all indications are that the most fruitful numerical arrangement consists of several small groups of two or three people who have reached the same awakening of consciousness, since the cross-checking of these different groups' impressions makes it possible to arrive at objective conclusions." For a limited time—the average duration of a dérive was a day—the members of these groups were to drop "their usual motives for movement and action, their relations, their work and leisure activities, and let themselves be drawn by attractions of the terrain." There was, of course, absolutely nothing random about a dérive: "From the dérive point of view cities have psychogeographical relief, with constant currents, fixed points and vortexes which strongly discourage entry into or exit from certain zones."[66]

By letting themselves be drawn through the city *by the city,* the Situationists felt they could discover its *unités d'ambiance*—unities of ambiance—parts of the city with an especially powerful urban atmosphere:

> The unities of ambiance were constituted by many things, especially the "soft," mutable elements of the city scene: the play of presence and absence, of light and sound, of human activity, even of time and the association of ideas. The "hard" elements, like the shape, size, and placement of masonry, gently articulated the softnesses in between.[67]

Some unities of ambiance functioned as psychogeographic switching stations from which one could be pulled by the city in many different directions. The Situationists thought about these as *plaques tournantes.*[68] The old market at Les Halles was a plaque tournante. So was the old Plateau Beaubourg. Psychogeographic "slopes"—the natural psychogeographic forces that the city exerted on drifters—the Situationists called *pentes psychogéographiques,* and they posted them on psychogeographic maps as arrows. Only the *unités d'ambiance* and the *pentes psychogéographiques* were posted on psychogeographic maps. Everything else was ignored.

Debord and Asger Jorn made two maps of Paris: the *Guide Psychogéographique de Paris: Discours sur les passion de l'amour* and *The Naked City.*[69] These maps explicitly "originated in reaction against city-planning schemes for the modernization of Paris that threatened the old Bohemian areas on the Left bank."[70] Abdelhafid Khatib's psychogeographic maps of Les Halles were "meant in part as a riposte to redevelopment plans that had been hanging over the area for a number of years."[71] Debord referred to these maps as a "renovated cartography" and used them in generally futile efforts to intervene in the redevelopment.[72] "To some extent," Simon Sadler writes, "Debord and Jorn's Situationist maps served as guides to areas of central Paris threatened by redevelopment, retaining those parts that were still worth visiting and disposing of all those bits that they felt had been spoiled by capitalism and bureaucracy."[73] But in effect Situationist maps produced an alternative social geography, one that the Situationists held up against the maps produced by the Paris city planners with their official social geography of the city.

While Debord's maps countered official *maps,* they also countered official ideas about what counted as map *data.* It can be doubted that psychogeographic accounts of pedestrian circulation made any sense at all to the city planners whose efforts the Situationists were attempting to combat, but Debord insisted—and I agree with him—that his maps charted social and cultural forces that were every bit as "real" as

those charted by the planners. It's hard to assess the outcome of this battle of the maps. Much that the Situationists loved was destroyed in the name of progress, but the Situationists did contribute to the changes that have allowed some of what they loved to be preserved, and if Debord was outgunned at the time, lately his psychogeographic heirs have been increasingly active.

Indeed, psychogeography today seems inescapable. The academic interest is the least of it. I mean, "psychogeography" is the name of a regular column Will Self writes for the *Independent,* which is illustrated by . . . *Ralph Steadman . . .* for crissake, a collection of which was published in 2007 as *Psychogeography: Disentangling the Modern Conundrum of Psyche and Place.*[74] Nor is Self alone. 2007 was also the year Pocket Essentials brought out Merlin Coverley's *Psychogeography,*[75] and the year *I* toured Scotland as part of the Shadowed Spaces Tour: "There are places in our towns and cities that are created not by design, but by circumstance. Shadowed Spaces is a tour of overlooked, bypassed and unconsidered nooks and crannies with 3 improvising musicians and 1 psychogeographer," which is to say, with Sean Meehan, Tamio Shiraishi, Ikuro Takahashi, and me. And if in Aberdeen I tried to talk about the shadowed spaces, by Dundee I was talking about psychogeography, which is what everyone who came to hear us seemed to want to hear me talk about.[76] A year earlier Penguin had published Rebecca Solnit's *Wanderlust: A History of Walking,* at the same time that Viking came out with her *Field Guide to Getting Lost.*[77] Meanwhile, the godfather of contemporary English psychogeography, Iain Sinclair, has been churning out, among others, *Rodinsky's Room* (1999), *London Oribital* (2002), and his edited *London: City of Disappearances* (2007).[78]

The London Psychogeographical Association may or may not be functioning at present (it's been reincarnated at least once), and the Nottingham Psychogeographical Unit and Manchester Area Psychogeographic certainly no longer are, but the Loiterers Resistance Movement, the Bored in the City Collective, and the Materialist Psychogeographic Affiliation are all active. So are the BART Psychogeographical Association, Glowlab, iKatum, the Institute for Infinitely Small Things, the Pittsburgh Psychogeographical Society, the Providence Initiative for Psychogeographical Studies, the Toronto Psychogeography Society, Urban Squares Initiative, and so on.[79] The stuff's all over the place. Almost no country in North America, South America, or Europe is without its affiliation, its collaborative, its collective, its *grupo,* its initiative, often more than one; and there are active psychogeographic cells in Japan, China, Australia, and elsewhere in Asia. Some of these sponsor regular gatherings, often called confluxes. The Conflux that Glowlab organizes in New York may be the best known, but ProvFlux, which the Providence Initiative puts on, attracts participants from all over too (both have been held annually for the past 5 or 6 years).[80]

Maps play roles in much of this. Exemplary here is the Institute for Infinitely Small Things' *The City Formerly Known as Cambridge* (see Figure 6.5):

> The City Formerly Known as Cambridge is a hypothetical (but entirely possible!) map of Cambridge, Massachusetts. During 2006–2007, the Institute for Infinitely Small Things invited residents and visitors to the city (you) to rename any public place in Cambridge. This was a big experiment to see what the city would look like if the people that live and work here renamed it, right now. We collected over 330 new names along with reasons that ranged from vanity to politics to silliness to forgotten histories to the contested present.[81]
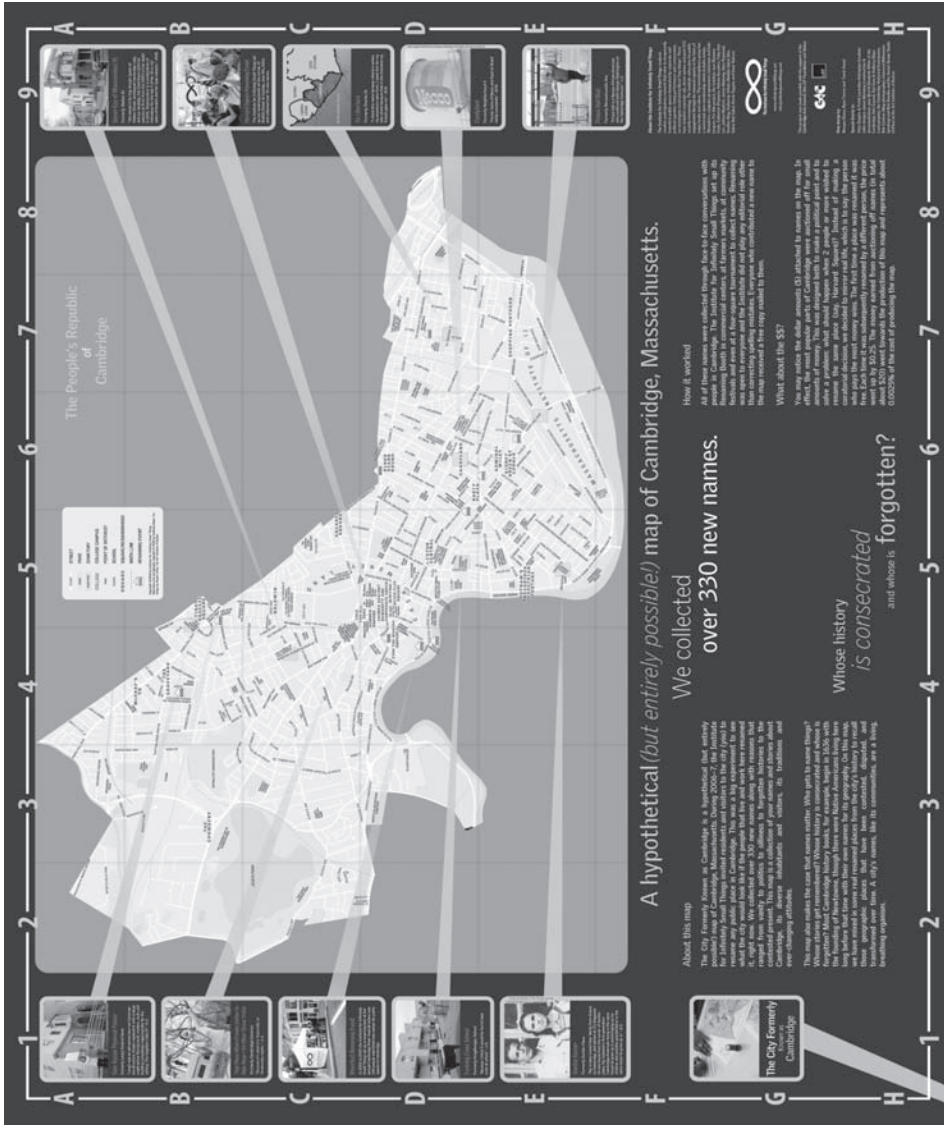
FIGURE 6.5. The city formerly known as Cambridge. During 2006–2007, the Institute for Infinitely Small Things invited residents and others to rename public parts of Cambridge, uncovering and releasing an alternative city. (*Source:* The Institute for Infinitely Small Things)

The map presents itself as an ordinary street map, a neat 4 inches by 9 inches that unfolds to 27 inches by 32 inches, but a street map that asks a question, "Whose history is consecrated and whose is forgotten?" By asking this question, the map makes the case that names matter:

> Who gets to name things? Whose stories get remembered? Whose history is consecrated and whose is forgotten? Most Cambridge history books, for example, begin in 1636 with the founding of Newtowne, though there were Native Americans living here long before that time with their own names for its geography.

The renaming could have taken place in many different ways, but all the map's names were collected through face-to-face conversations in the Renaming Booth which the Institute set up at different locations throughout the city. Initial renamings were free, but one had to pay to rename a renamed place, an additional 25 cents for each subsequent renaming (the Institute collected $20 this way).

The City Formerly Known as Cambridge descends directly from the psychogeographic practices of Debord and his colleagues, and I raise Situationist psychogeography here not just because it was a PPGIS—which it patently was—but because it was a PPGIS that was nonconformable with either the professional planning model *or* with that of the Detroit Expedition. Detroit city planners and Detroit Expedition members might have disagreed over what data to collect, and argued about what it meant, but they would have had no difficulty recognizing each other's data . . . as data. Both would have had a hard time understanding exactly what unities of ambiance were, or what to make of *The City Formerly Known as Cambridge.* What this implies is that the public harbors a diversity of value *constructs* that is of a wholly different order than that contemplated by the practitioners of identity politics. Psychogeographers don't say "pay attention to *my* needs" or "respect *my* values." They say, "pay attention to the values of *your own inner voices,*" which they encourage you to do everything you can to hear.

Jake Barton's City of Memory

Debord had argued that for the sake of objectivity it was best to drift in small groups, 2, or 3, never more than 10 or 12. For an activity with pretensions of speaking objectively, even scientifically, about the collective city of dreams, these were small numbers. Jake Barton, a New York-based designer, creates systems that build collective urban memories with the participation of a comparatively vast number of people, and his work provides a third model for PPGIS, a Web-based one that really is participatory, that is public, that is genuinely geographic, that generates information, and that has all kinds of systematic potential.[82]

Exemplary here is Barton's City of Memory (Figure 6.6), a narrative map of New York that allows visitors to create a collective, online memory by submitting stories.[83] Curators also collect stories, and they link these and visitors' stories together into "tours" of narrative that then can be explored by others. Or visitors can just read—or listen to (or watch)—the stories that others have contributed.

Barton says that City of Memory makes the idea that "there are a million stories in the naked city" real, though "actually there are millions of *cities,*" he cautions,
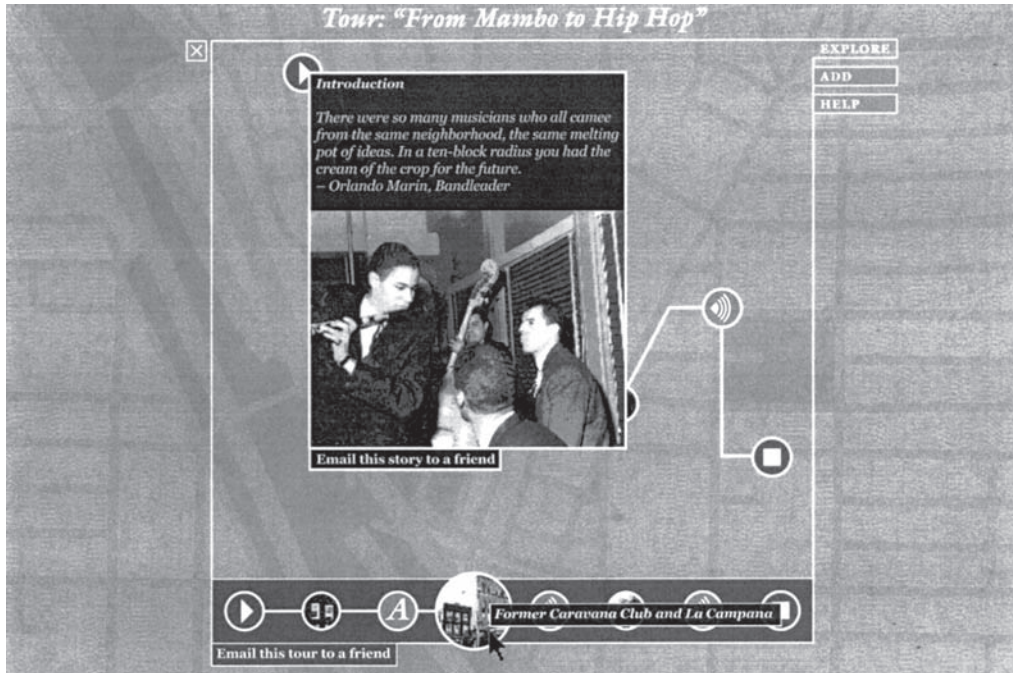
FIGURE 6.6. City of Memory. Jake Barton says that while there may be a million stories in the naked city, actually there are millions of cities, each inside an individual New Yorker. (*Source:* Jake Barton)

"each created inside of an individual New Yorker."[84] By sharing stories of these cities, "we can find out more about how similar and different we really are. City of Memory tries to collapse the distance that is between us by encouraging exploration in ways other than physical space."

That is, Barton's project aims to *connect* New Yorkers through a collective narrative of their city. The project site consists of a map of the city that is at once abstract and familiar. The cleanliness makes Barton's New York easy to navigate. Dots indicate rich clusters of stories, and these explode into individual stories as, exploiting the site's zoom function, you drop down anywhere in the city, which becomes correspondingly detailed. Touching a story icon opens a story panel where you can read, listen to, or watch the story being told. You can explore the stories of a given area or explore stories through thematic linkages. Of course you can submit a story of your own.

What this means is that City of Memory gets people to talk to and hear each other within an affective narrative space—which they create—that is tied to and accessed through a map of New York, a physical space "vibrating with the world's energies" and haunted—it too is Barton's word—by people's collective experience. It's this idea of space as a living memory that gives Barton's maps, which otherwise look like simpler versions of the maps you can buy at newsstands, their remarkable inner life. Touch them and they come alive, which is what Barton insists the space of the city is, alive. So: how do you make a map of a space that's alive, that's continuously morphing with affective resonance?

Like so many, Barton came to the map obliquely. Growing up in Brooklyn's Park Slope, Barton began his high school experience at Brooklyn Public High School but completed it at Phillips Andover. Someone Barton admired suggested he might want to check out Northwestern University's Performance Studies program. Based equally in theory and practice, Northwestern's program instilled in Barton a profound respect for narrative and an interest in polyvocality and the public. After graduating in 1994, Barton found himself back in New York working as an exhibition designer for Ralph Applebaum Associates. One project Barton worked on was the American Museum of Natural History's Hall of Biodiversity where his work won a number of awards. In the museum Barton found himself confronting both the innate conservatism of large institutions and the monolithic, top-down style of institutional curators. Both of these styles were at odds with his comparatively radical, populist instincts. In such a situation, Barton asked himself, how could one possibly deal with controversial content?

The Lower East Side Tenement Museum suggested a couple of answers to Barton's question. As its name implies, the Tenement Museum is a tenement building at 97 Orchard Street on Manhattan's Lower East Side.[85] 97 Orchard Street was operated as an immigrant tenement from 1863 to 1935, during which period over 7,000 people lived in it. The museum has carefully restored a number of apartments in this tenement to the periods when they were occupied by selected residents, the Gumpertz, the Baldizzi, the Levine, and the Rogarshevsky families. These apartments, and two unrestored apartments left to bear witness to the impact of the 19th-century reform movement's campaign for improved housing, can be experienced only on tours whose guides, standing in the actual kitchens, the actual bedrooms of the immigrants, interpret for visitors the experience of living at 97 Orchard Street. Providing further depth and context are the rich archives the museum maintains and the walking tours it offers of the Lower East Side.

The museum's *mission* also resonated with Barton. This was to use the presentations and interpretations of immigrant experiences to promote tolerance and historical perspective, and so to illuminate our present and promote humanitarian and democratic values. The embodiment of this mission in the very site of the museum's subject connected the Lower East Side Tenement Museum to museums elsewhere in the world equally determined to exploit the power of place for understanding the past and shedding light on the present. Organized as the International Coalition of Historic Site Museums of Conscience, these include, among others, the Workhouse in Southwell, England; the Maison des Esclaves outside Dakar, in Senegal; the Terezín Memorial in the Czech Republic; the Japanese American National Museum in Los Angeles; the Memoria Abierta in the old Navy Mechanics School in Buenos Aires; Bangladesh's Liberation War Memorial; the National Civil Rights Museum in Memphis, Tennessee; the Gulag Museum at Perm-36 in Russia; and the District Six Museum in Cape Town.[86]

Barton has commented on the particular significance of the District Six Museum to the evolution of his thinking. In 1966, South Africa's apartheid regime declared Cape Town's Sixth Municipal District—which since 1867 had been a mixed community of freed slaves, merchants, artisans, laborers, and immigrants—a "white area" under the Group Areas Act of 1950 and shortly thereafter began bulldozing the homes of 60,000 people, forcibly removing them to the barren, outlying area of Cape Flats. The museum, dedicated to telling stories of forced removals and to

assisting in the reconstruction of the District Six community, is built around a cache of 75 street signs that had been secretly saved from the bulldozers, together with a huge floor piece, the Map-Painting, across which sprawled-visitors annotate the sites that continue to live in their memories.[87] This simple re-creation of place stimulates *an outpouring of memories,* allowing people literally to write themselves back into the heart of Cape Town. As they do this, they also keep alive the memory of their forced removals and so against their reoccurrence, removals commemorated as well by the Maison des Esclaves, the Japanese American Museum, the Terezín Memorial, the Gulag Museum at Perm-36, and Bangladesh's Liberation War Memorial.

Here, then, was one answer to Barton's question. Attaching stories to spaces was evidently a powerful way to make the most controversial subjects come vibrantly to life. Confronted with the simple realities of District 6, the Gulag, a Japanese American internment center, a Lower East Side tenement, who could fail to be moved by the self-evident oppression and violation of human dignity. *You're standing in a room. The guide is telling you a story about a family that lived there. The story comes alive in this space.* There's no need to talk about oppression, about poverty. These subjects arise infallibly from the floors, seep out of the walls. Together the spaces and the stories speak for themselves: "It's natural," Barton says. "People attach memories to space."

Barton realized by using analogues for the rooms of the tenement, for its *spaces,* that he could do *at any scale* similar things to those being done by the Historic Site Museums: *the trick was to attach the stories to spaces.* Preeminent among analogues for space, Barton realized, was the map. With a map you could do what the Lower East Side Tenement Museum did for the Lower East Side . . . *for the entire city.* Sort of. In a way. Ultimately, for Barton, the map remains a ruse—it's his word—a ruse to lure people into the affective narrative space of the city itself. It's the resonant living *city* that Barton's interested in, not the map of it, which remains for him no more than a kind of locative, georeferencing automaton, churning out the *there*s that his storytellers infuse with the richness of their *this*es.

Because Barton is not much interested in the map per se, he has little interest in critiquing it. "No sidetracking on philosophical issues with maps," Barton has said and so, in the generally contestatory world of critical cartography, his work stands out, marked by its uncharacteristically positive, even sunny glow. Constructed as it is from the bottom up by the very people who use it, Barton's may be a radical, and perhaps radicalizing art, but it is so friendly and unthreatening, so well-intentioned and constructive, that it comes off as anything but.

Barton's first effort in this vein was as low-tech as those of Bunge and Debord, and as rich in outcomes. Memory Maps was mounted on the Washington Mall (Figure 6.7) where every June as many as a million visitors gather across a two-week period to participate in the Smithsonian's annual Folklife Festival. Each year the festival highlights the cultures of three different places, and in 2001 one of these was New York. Given the richness of New York's stew of different cultures, this was a serious challenge. Barton's solution was ingenuous.[88] Inside a structure intended to recall a subway car Barton mounted a system of enormous maps of the city. Here visitors were invited to share their stories of the city by writing them on slips of vellum, which they then pinned to the map where they'd occurred. Visitors reading the stories had their own memories stimulated and so were prodded to produce further stories. During the festival's two-week run, more than
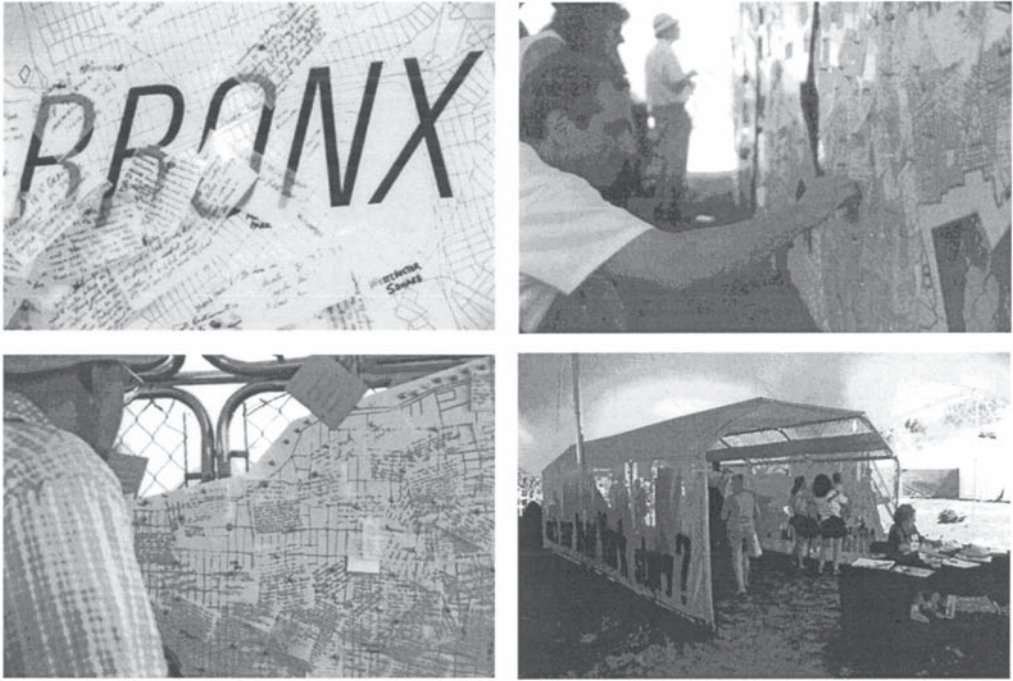
FIGURE 6.7. Four views of Memory Maps as mounted on the Mall in Washington. People love sharing stories. (*Source:* Jake Barton)

2,000 people festooned the map with their memories, creating rich portraits of the city's neighborhoods.

In the 1960s, city planners associated with Kevin Lynch had made maps like these. Lynch believed that people's images played significant roles in mediating their lives in cities, and indeed had explored the image of the city in ways analogous to those of the Situationists (and at the same time that the Situationists did during the 1950s).[89] Lynch believed it was important for planners to understand what these images were, and he advocated asking people about the cities they lived in, even in asking them to draw maps. The results of these inquiries were frequently mapped, sometimes directly. For instance, Lynch's colleague, Donald Appleyard, typed onto a map the responses he'd received to a survey about life on streets with different traffic densities (for example, "The street life doesn't intrude into the home . . . only happiness comes in from the street," on a street with little traffic).[90] More notably, the planning firm Arrowstreet made a map of Washington, D.C., out of comments it had collected about the city. The map is composed of nothing but words.[91] Lynch referred to these maps as "speaking landscapes," which he understood as "sketches with verbal comments appended directly to the locations where they were made, or about which they were made."[92] The recurrence in such different *milieus* of the idea of attaching commentary to maps says something about its potential, but the differences between the Lynchian "speaking landscapes" and Barton's Memory Maps are real and important.

For one thing, the planners' inquiries were comparatively narrow, were focused

on the built environment, and consisted largely of assessments, of evaluations. Even so, many planners regretted that these "data" were so "qualitative," and indeed it was out of efforts to "correlate the different insights for consistency" that the idea of displaying them on maps arose (and as we know this was an issue as well for early Indigenous mappers and the Situationists).[93] Finally, no matter the publicity received by these "speaking landscapes," in the end they were no more than a way for experts to collect facts from people. In contrast, Barton is not interested in facts, he's interested in stories. And he's not interested in collecting stories, he's interested in sharing them. Instead of funneling stories from people to a higher authority, Barton is interested in spreading people's stories around among other people. With Barton it's not people-to-experts but people-to-people, and so it's not about enabling experts but about nurturing community.

You can imagine the planners' "speaking landscapes" as a method for displaying the results of debriefing sessions that could have taken place in small conference rooms, planners debriefing citizens, where the fundamental problem for the planner is the extraction of intelligence. You can imagine the Washington Memory Maps as the debris left by people performing their stories on a stage in front of other people, all of whom are sooner or later going to be on stage themselves. The fundamental issues here are entirely performative, and in Memory Maps you can hear at work all the concepts that had galvanized Barton at Northwestern—narrative, polyvocality, and public—producing a map fluttering with the pinned memories of people happy to share them with others.

The limitations of Memory Maps were physical: you could pin only so many vellum strips to the map at any one point; the stories overlapped and obscured one another; you had to be physically present to read, or add, a story; and there was no index. Putting the map online as City of Memory was a way to overcome these limitations, and it took Barton three years to accomplish. While he was developing City of Memory, however, Barton was also thinking about other things he could do with maps.

Many of these ideas remain unrealized. There was the Sonic Map, for example. This would have consisted of a highly schematized map of lower Manhattan projected onto the floor of a gallery in the New Museum (Figure 6.8). Visitors stepping into a "lighted" square would have heard the "sound" of the mapped location coming from highly directional loudspeakers. Stepping into smaller circles of light would have triggered recordings of individual stories. As Barton described it:

> The visitor enters the room and sees a map made of rectangles of light on the floor, labeled Bowery, Prince Street, Spring Street, etc., with the New Museum's new location in the center. There is the hum of sound but specifics are inaudible. Small dim caches of light populate the map. As visitors walk into the rectangle labeled "Bowery" it's like walking into a column of sound—they hear all the ambient noises that evoke the Avenue, its industrial trucks, its chatter in Chinese. When they walk into the dim circle just north of the new museum, the light rises, and an audio clip about the Sunshine Hotel plays. The sadness of the voice mixes with the directional sounds of trucks and traffic to create a full audio image of place.
>
> These clips want to get close to the ephemeral "spirit" of locations, to what people refer to as its energy, how it feels haunted through people's collective experience. They will be collected, found, commissioned, or submitted. The wealth of audio material on the area, from existing radio documentaries from the Sunshine Hotel, to CityLore's
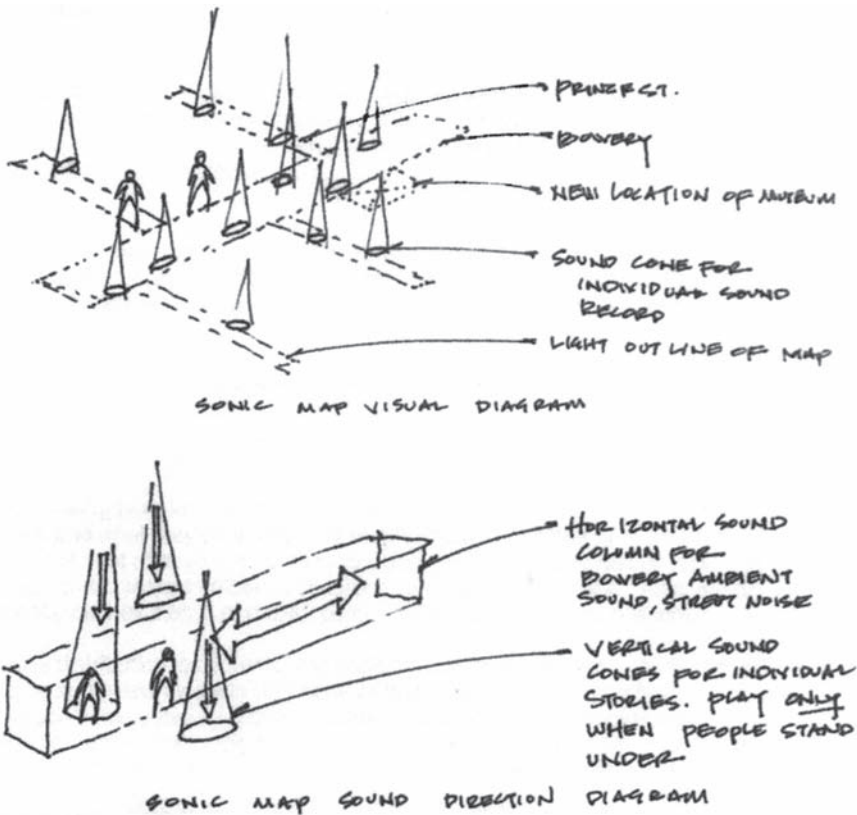
Figure labels (top diagram):
- PRINCE ST.
- BOWERY
- NEW LOCATION OF MUSEUM
- SOUND CONE FOR INDIVIDUAL SOUND RECORD
- LIGHT OUT LINE OF MAP

SONIC MAP VISUAL DIAGRAM

Figure labels (bottom diagram):
- HORIZONTAL SOUND COLUMN FOR BOWERY AMBIENT SOUND, STREET NOISE
- VERTICAL SOUND CONES FOR INDIVIDUAL STORIES. PLAY ONLY WHEN PEOPLE STAND UNDER.

SONIC MAP SOUND DIRECTION DIAGRAM

FIGURE 6.8. Ideas for an unrealized sound map of lower Manhattan for the floor of a gallery in the New Museum in New York. (*Source:* Jake Barton)

> "American Talkers" series, will be augmented by new oral histories on the sea-change now occurring on the Bowery, or about the generations of artists from the Lower East Side. Audio "found sounds" will evoke the neighborhood's daily rituals, from kids yelling outside the Catholic School on Prince Street in Nolita, to arguments in Chinese outside a restaurant supply store.

The media—light and sound—could scarcely be more different from the pins and paper of Memory Maps, or the computer graphics of City of Memory, but the idea of anchoring experiences to places remains the same, as does the concern with the haunting of space by the collective experience of the public. The sources of these experiences have gotten richer. Sonic Map would not only have been dependent on submissions, but would archive actively found, collected, and commissioned sounds as well. (A similar elaboration of sources also took place in the evolution of Memory Maps into City of Memory.)

Global/Local was another idea Barton had for the New Museum. This was a map to demonstrate the international ties made between the museum's neighborhood and the rest of the world by immigration, trade, and art-making. Barton's walkthrough for the proposal read:

> Seeing a group of posters on the Bowery, I approach to find a map of different Global/Local connections, a map of the ways in which the surrounding block vibrates with the world's energies. Three different maps show connections of trade, immigration, and artistic influences. A label lists the museum's website where I can go to look, and input my own country of origin, as well as the influence that South African Musicians has had on my painting. I'm amazed to find there are some South Africans from that same city living a block from me!

Although this city is less haunted by memories than it is vibrated by the world's energies, it is still one filled with a wildly diverse public, and here this public ties the place to other places in the world, comprising, in some way, a conduit for the world's energies, which Barton imagines gushing out onto the streets of lower Manhattan.

A third project for the New Museum, Emotional Map, would have reversed the inside/outside perspective of Global/Local to get "inside" the neighborhood's "emotional landmarks." As Barton tried to describe it,

> There would be two "views" of the digital map. The opening view would be a typical "neighborhood view" map, with different stories, photos, and anecdotes anchored to their locations. Filters could be applied to look at stories dealing with "love" or "sadness," or to create a map of "joy" for the area. The second, the "emotional view," would be from a first-person perspective, as if standing at street level "inside" the map. Story icons would rise up in front of the viewer, or recede to a distant horizon beyond. Instead of being arranged by location, the icons would be clustered by emotional content, bringing stories of love from Nolita right next to stories of love from the Lower East Side. This would create new groups of stories, new neighborhoods of emotion, that could be explored.

Aside from the "neighborhoods of narrative" idea that was to become a facet of City of Memory, what's interesting here is the new perspective on "here." In the earlier iterations, "here" was an irreducible place—almost a point—to which experiences, memories, sounds, and international relations could be attached; but in Emotional Map "here" becomes an Alice-in-Wonderland rabbit hole through which we can dive to look out onto a wholly new landscape.

Doubtless there were many reasons these projects were not realized—figuring out how emotions would rescale the "inside" view in Emotional Map was just one of them!—but two other projects suggest some of what was at stake in these proposals of Barton's. The first of these projects was PDPal, in which New York artists Scott Peterson, Marina Zurkow, and Jason Bleecker successfully grappled with the comparatively simple problem of collecting certain aspects of the public's subjective reading of places online.[94] The second was Barton's own Worldview in which he struggled with the problem of "emotionally rescaling" a projection of the world.

In an interesting way, PDPal falls somewhere between a Lynchian "speaking landscape" and the radically affective space of Emotional Map. PDPal is definitely a site where you can deposit traces of your personal city and share it with others by making maps of it, but only by limiting yourself to the choices offered by the site. Actually, there are several of these sites—one of the garden at the Walker Art Center, another of Minneapolis-St. Paul, and a third of Times Square. Each offers you a map and dialogue boxes with pull-down menus. They let you identify a place

on the map with a "rubberstamp" that you choose from a palette, and then they let you describe it by giving it a name, a rating, and an attribute (both chosen from pull-down menus), and annotating it. You can do much the same for routes that you can trace with your mouse. Guiding you through the process is a cool but excitable Urban Park Ranger. On the palette of rubberstamps a jet takes off next to a crib, a Taj Mahal and a triumphal arch rub shoulders with tents and a teepee, unisex couples mix it up with the birds and the bees, with martinis, stoplights, baseballs, and test tubes, with guns, dice, candles, and clouds. It's like a pictographic definition of heterogeneity, yet it's presented in a numbered and lettered grid: the automatic rifle's at F-10, the scooter's at R-2.

The ratings you're allowed—*prudishly, tamely, lustily; faintly, visibly, boldly*—are not those of the telephone pollster, and they're not those of planners, architects, or psychologists either. The attributes include *bright, dark, crowded,* and *comfortable,* but also *lawless, delicious, soggy,* and *haywire.* It's *sort* of like a survey, but a survey administered in a dream. Prompts ask: *What is closer, past or future? Map the place you miss, the places you imagine. What is noisier, Godzilla or a garbage truck? Map the beasts that roam your landscape. What is bigger, your cubicle or your cranium? Map your taste for consumption.*

You can install PDPal on a Palm PDA and use it to map places while you're actually at them. Later you can download these annotations to the maps you've made on the Web. There's no limit to what you can record on your map as you transform it dynamically into a "city you write." At the website you can share your maps with others, and this does achieve Barton's goal of sharing our personal cities with each other.

If PDPal somehow managed to get some aspect of the affective onto the map, Barton's Worldview tried to do the same with Emotional Map's idea of rescaling (Figure 6.9). Online between November 2002 and October 2003, Worldview was a "creative cartography" tool that attempted to "remap" the world from the user's "emotional point of view":

> Through a series of questions, you mark locations of personal importance on a world map, which is then run through a "fish-eye" algorithm, distorting or exaggerating the globe to fit the user's "perspective." The user is then immediately invited to compare his or her map with the "most different" person in the database for comparison. Drawing inspiration from centuries of maps that were inaccurate, incorrect, or simply what was imagined to be true, Worldview takes the current accepted image of the world map, and makes it emotionally precise for each individual user.

Worldview makes numerous assumptions about the relationship between emotions and space, including the one that we would all use the same algorithm for "projecting" our world. Yet the very different worlds thrown up by the user and his or her "most different" mapper *do* make graphically apparent *some* kind of difference, and this at the very least provokes an awareness of what it might mean to say that we each inhabit our own individual worlds.

Emotional Map, PDPal, and Worldview have in common an interest in dissolving the "objective" city—or world—in the solvent of human affectivity, even as they commit themselves to sharing the "solutes" with others, which has the effect, in some sense, of "reobjectifying" them. The resulting personal yet public images obligate us to think about what we mean by "objective" and "subjective," as well as what
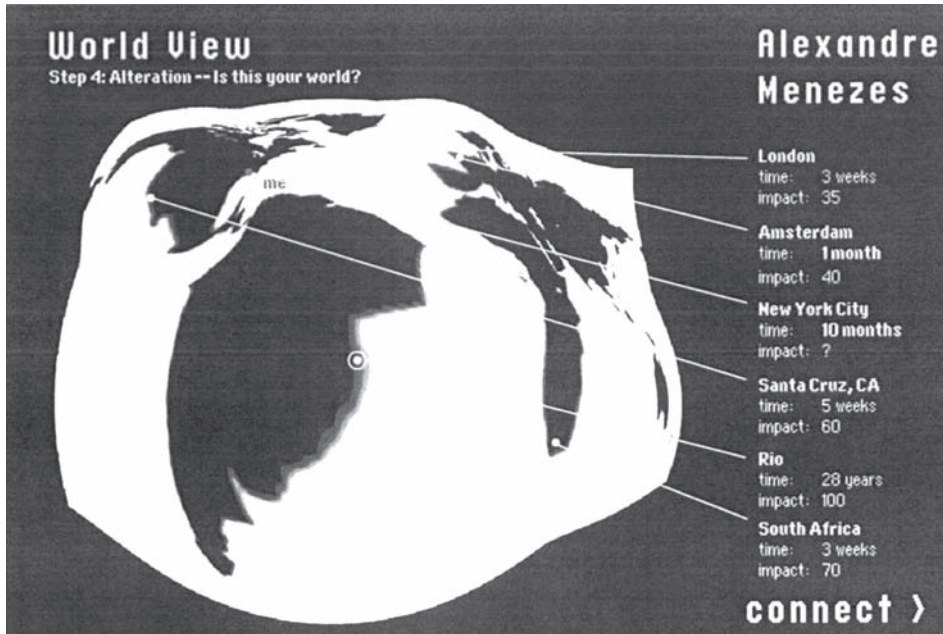
FIGURE 6.9. Worldview. This online map attempted to remap the world from the user's "emotional point of view." (*Source:* Jake Barton)

we mean by "place" and even by "experience." The ultimate effect of Memory Maps, Global/Local, City of Memory, Sonic Map, Emotional Map, PDPal, and Worldview is to destabilize fixed social and spatial categories, pushing us toward an extremely fluid and highly social view of existence. This is either very scary or highly liberating.

Barton's more recent projects are more conservative than Emotional Map, Worldview, or even Global/Local, but then they're for large institutional clients. Timescapes and City of Memory are both being developed for the Museum of the City of New York, while The Chronoscope was the concluding feature of the Times Square Centennial Exhibit—a movie version of it played on the Jumbotron for the Centennial New Years Eve in 2004—and it is permanently installed at the Times Square Visitors Center. The Chronoscope is more or less a sophisticated, "three-dimensional" locator map. Visitors "fly" through an abstracted "now" that is peppered with dated circles. Each of these circles frames a view that when selected is transformed into an historic photo of the past. The fleeting moment caught by the photo is then brought to life with sound and camera movement that turns it into a mini-documentary. (For example, selecting 1945 brings up Alfred Eisenstaedt's famous shot of the sailor kissing a girl at Broadway and 43rd on V-J Day.) The Chronoscope does deal with many of Barton's obsessions. Its Times Square is clearly haunted by people's collective memories and is vibrant with the world's energies. The map *is* alive, and The Chronoscope *is* located at the site of its subject. At the same time the project lacks the polyvocal public that pushes so much of Barton's work over the top.

The same might be said of Timescapes, which Barton co-created for the Museum of the City of New York with writer James Sanders. This three-screen production, narrated by Stanley Tucci, is a 25-minute linear history of New York that uses maps to examine how geography has shaped the city's development. It features an aerial view of New York that evolves with the city, displaying patterns of urban development that are explored in other ways on the flanking screens. Timescapes is elegant and instructive, the map is lively, and the project is concerned with urban memory, but again it lacks the polyvocal public, or indeed anything at all of the subjective.

But City of Memory pulls it all together in a triumphant synthesis of the personal, the institutional, and the public. As we've already seen, Barton brought to City of Memory his long-standing interests in narrative, polyvocality, and the public; while the public brought to City of Memory the stories that constitute its collective memory. What the Museum of the City of New York provided was the wherewithal, the institutional support that translates into a space where the public can flood Barton's animated maps with its unique and wildly multiple life. Or rather space*s,* for though there may be only one website, it is accessed at a physical installation in the museum, at street fairs, as well as online. The Museum also provides the cachet that has encouraged the participation of "cultural partners"—CityLore and Place Matters, among others—which together with the Museum have contributed "place-based content" that supplements the stories contributed by the public, stories that, it must be noted, are only added to the site after passing through curatorial filters. The contributions of the institutional partners and the curation do make of City of Memory something less than a collective unconscious, and this may make some people unhappy. But they also mean that the site has a deeper sense of history than it otherwise would, and a focus on the history of the city that permits its support by the Museum of the City of New York. What's ultimately interesting is the way Barton has combined a psychogeographic sensibility toward the city with a map of the city's physical space in a publicly accessible GIS—key I think to rethinking PPGIS into the place it has wanted to be from the beginning.

Public Participation Geographic Information Systems

What marks the PPGISes of Bunge, Debord, and Barton are their organizing assumptions. The Detroit Expedition and Institute was modeled on geography as an exploratory and educational enterprise. Situationist psychogeography was modeled on the revolutionary art practice created by the Surrealists in the period between the wars. City of Memory is modeled on the idea of the museum and its curatorial practices. When I say that these PPGISes are modeled on these structures, I don't mean to say that a GIS has been *introduced* into such structures, or that these structures *exploit* a GIS as a tool, which is how most of those involved with PPGIS would approach them. Rather, I mean that the function and structure of the GIS . . . *has been shaped by them.* "Geographic" for Bunge meant infinitely more than knowing where things were. "Information" for Debord arose from subjects and their actions in an objective world. "Systems" for Barton are dynamic ways of relating curators and the public from which a new collective city can emerge. There's a wonderful freedom from instrumental thinking—about people, about the uses of the city, and about their interaction—in all of these, and each points a way to the liberation of the map in revisioning the future of the spaces we mutually inhabit.

Bunge, Debord, and Barton suggest to me that PPGIS need not remain locked in the professional planning model that has dominated its development to date. Bunge, Debord, and Barton suggest to me that PPGIS need not limit its vocabulary to that of the First Age of Participatory Planning. Bunge, Debord, and Barton suggest to me that PPGIS need not think of the public either as a test to be passed or as a body to be served, but as an actual partner, if not the principal, in the task of imagining—and mapping—a genuinely human tomorrow.

Map Art: Stripping the Mask from the Map

City of Memory, The Naked City, "The Region of Babies Bitten by Rats," Conrad Atkinson's *Cleator Moor,* an Innuit map of traplines in Nunavut—to one degree or another each of these wants, if in very different ways, to maintain its foothold in . . . the world of maps.

Well, maybe not Conrad Atkinson's *Cleator Moor* so much, but if not then largely because Conrad Atkinson's an artist, and among counter-mapping strategies none mounts the assault on the prerogatives of professional mapmakers that map art does, art, as I said in the last chapter, made *as, with,* or *about* maps.

Joyce Kozloff

As a genre, map art's kind of new. Though made off and on during much of the last century, it's only in the past 20 or so years that there's been enough of it to draw attention to itself as a body of work. But when I can open Raleigh's daily newspaper as I did a few years ago to find map art splashed across the front of its Life section, I think we can say that map art's . . . *arrived.* On the front page was a color detail from one of Joyce Kozloff's then recent collage maps, a headline ("Charting worlds of ideas"), a subhead ("Joyce Kozloff aims to map the contours of perception"), and a story about an exhibition of her *Boys' Art* drawings and the talk she was giving about them. Inside was a large color reproduction of the full drawing and a photograph of the artist.[1]

I was familiar with the drawings. I'd seen an advertisement in the November 2003 issue of *Art in America* for their inaugural exhibition at DC Moore, Kozloff's New York gallery, and had called to see if there was a catalogue. There was, and they'd be glad to send me one. It was $125 and arrived in a large box.[2] Despite the price I was delighted, for the drawings were beautiful and lavishly reproduced. Across lovely, pencil renderings of military maps—from the Han dynasty through

the second half of the 20th century—Kozloff had collaged figures drawn by Posada, by Hergé, by her young son Nik, all of men or of superheroes attacking or being attacked with knives, swords, spears, guns, and other weapons, *boys' art,* as Kozloff saw it, like that her brother Bruce had drawn when he and she were growing up, and she had watched her son draw as he was growing up (Figure 7.1).[3]

Kozloff had begun these drawings shortly after 9/11, but she'd been working this vein for a while. "Kozloff's themes have ranged from pornography to folklore to crafts," Lucy Lippard has commented, "and then, in the early 1990s, came to rest with maps—celestial and terrestrial, often military—as metaphors for power, culture, and conquest."[4] Kozloff's *Knowledge* series, for example, which toured the country in 1999, consisted of small frescoes—redrawings of maps like *Boys' Art,* though mostly from the Age of Discovery—in which Kozloff explored issues of power and knowledge.[5] She'd also made globes. Some of them were shown in an exhibition of map art at Skidmore College's Tang Teaching Museum in 2001 where Kozloff also showed *Targets* (2000), and I spoke and showed some maps from my neighborhood atlas project. *Targets* is a walk-in globe that surrounds the viewer with repainted sections of U.S. military maps of places the United States has bombed since World War II. Standing inside the globe was devastating. It forced me to confront how much of the world the United States has bombed during my lifetime, with my tax dollars, and so with my tacit support. It made me feel like *crawling* out of it.[6]

Boys' Art came in 2003, and then in 2007 Kozloff showed *Voyages* and *American History. Voyages* explored Western expansion from the Age of Discovery into the present, and the way Carnival spread around the globe: Kozloff repainted antique maps of distant islands onto Venetian paper-mâché masks; she layered banners with motifs from the Americas, Asia, and the Near East; and she scarred paintings of star charts with satellite paths. *American History* consisted of map collages probing myths about heroic explorers, noble savages, European immigrants, slavery, and war. Her most recent work, *Tondi* (2007–2008), turns to the stars. Drawing on 16th- and 17th-century cosmological and astrological charts, this gorgeous body of work concerns itself with the effects of our naming the stars, telling stories about them, and fixing them into constellations.[7]

Long active in various women's movements, Kozloff's a peace activist, a member of the New York-based collective, Artists Against the War, and a founding member of the Heresies publishing collective. Overtly political, she stumbled—her word—into map art in the days when she was still mostly making public art. The first thing clients would send her were site maps. "The maps I was sent," she's said, "were a kind of structure to put my content into, and in the early 1990s I realized I could do that in my private art."[8]

A Little History: Dada and Surrealism

Every artist tells a different story, but since the early 1990s more and more artists have had to explain to interviewers how it was they began making art with maps. This wasn't something artists used to have to explain, and it's not like they could point to a long string of precedents. There *was* earlier map art, in the precise sense I'm using the term here, but not much of it. In fact, map art emerged with Dada and Surrealism. Except for the pre-Surrealist Giorgio de Chirico's *The Melancholy of Departure* (1916), Hannah Höch's *Cut with Cake-Knife,* c. 1919–1920—in a fuller
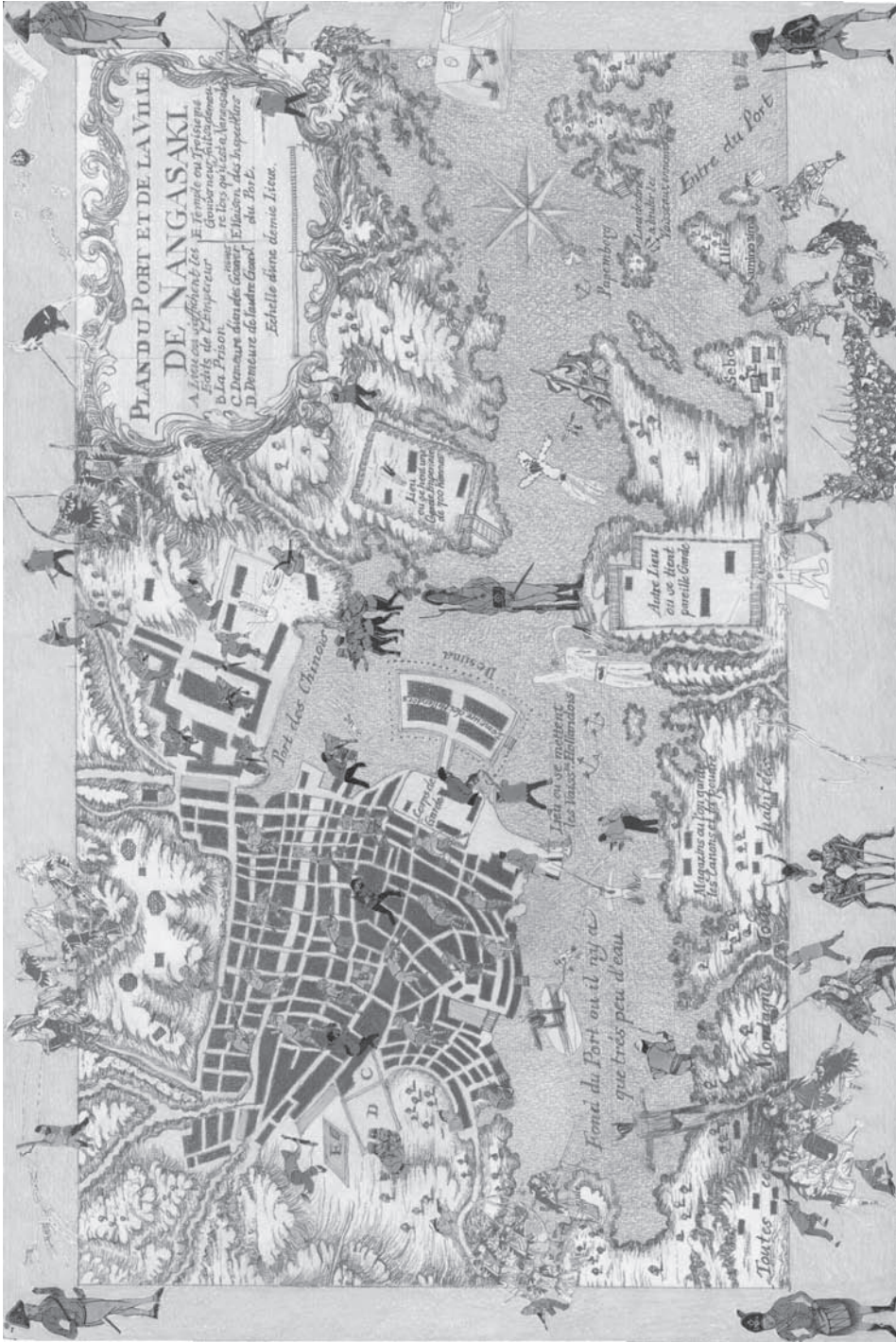
FIGURE 7.1a. Joyce Kozloff, *Boys' Art #2 Nagasaki* (mixed media on paper, 2003). Kozloff's rendering of an 18th-century French map of Nagasaki with collaged drawings. (*Source:* Courtesy DC Moore Gallery, New York)

FIGURE 7.1b. The classic boys' art imagery created by her son Nik, the Belgian comic book artist Hergé, and others is easier to appreciate in this detail.

rendering, *Cut with the Kitchen Knife Dada through the Last Epoch of Weimar Beer-Belly Culture of Germany* (Figure 7.2)—is the earliest exampl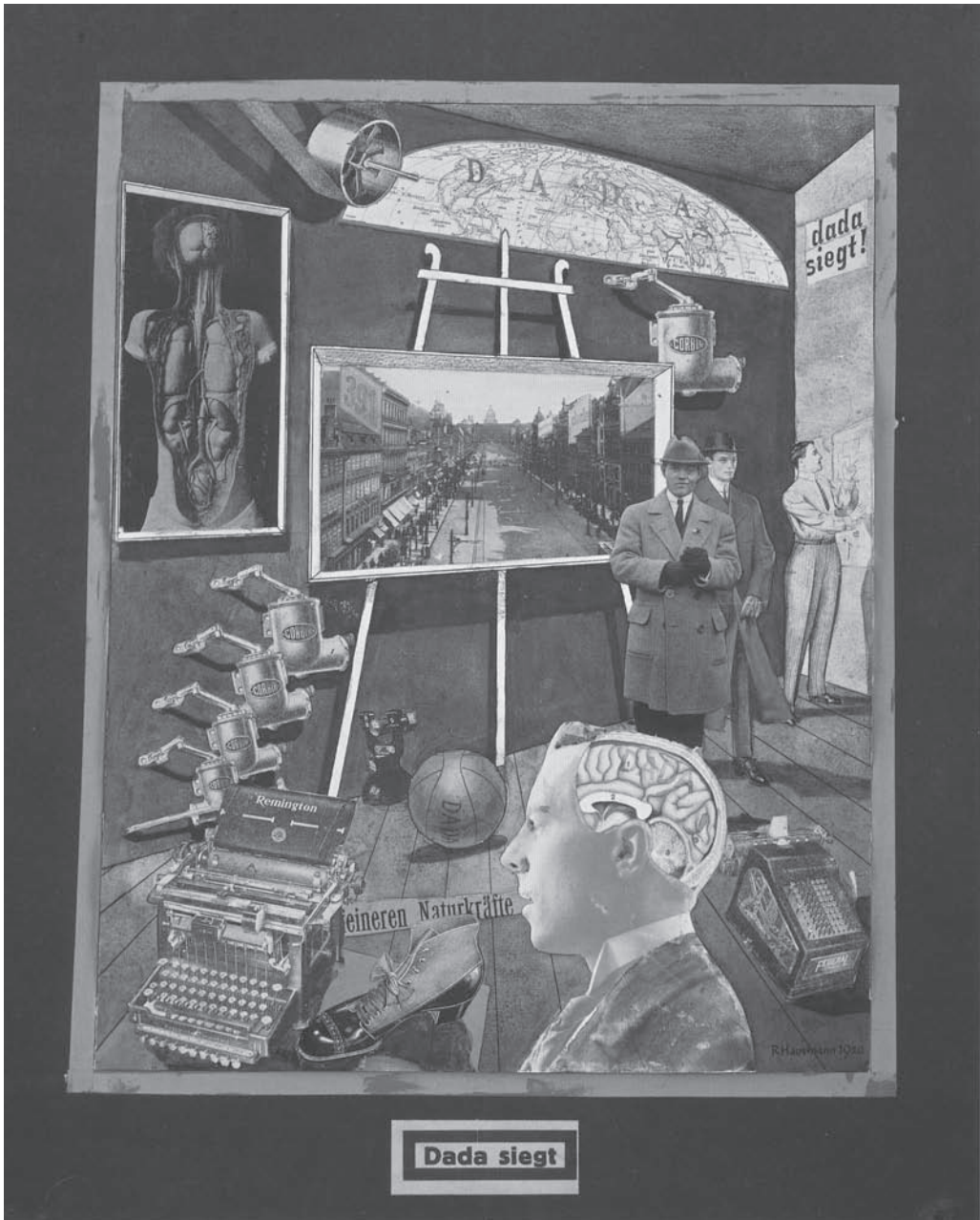e I've been able to find.[9] Uncertainty about the date might mean that Raoul Hausmann's *A Bourgeois Precision Brain Incites World Movement* (also known as *Dada Triumphs!* or *Dada Conquers,* 1920) or his *Tatlin at Home* (1920) could be earlier, but this wouldn't much matter since Höch and Hausmann were lovers and worked together. Their work during this period is as entwined as Braque's and Picasso's had been a few years earlier when Braque and Picasso were inventing Cubism and pioneering the *collage* techniques—*collage* and *papier collé*—that a few years later Höch and Hausmann would wrench into . . . *photomontage.*

Unless it was George Grosz and John Heartfield who invented photomontage. There's a priority dispute here.[10] All four acknowledge a precedent in a popular German "collage" tradition of sentimental-military lithographs and oleographs dating to the late 19th century, as well as in Cubist collage and *papier collé* dating from 1912; but Grosz dates his and Heartfield's invention of photomontage per se either to 1915 or 1916 (to work which survives in neither case), while Höch and Hausmann date theirs to a vacation they took to a village on an island off the Pomeranian coast in 1918. Since Grosz and Heartfield's earliest *surviving* photomontages date to 1919 (as distinguished from their earlier collages of type and printer's dingbats, or *typocollages,* which *do* survive),[11] it's clear that all four Berliner Dadas were experimenting with the technique at the same time, equally turning their backs on *papier collé* (as Tristan Tzara said, "We've had enough of the Cubist and Futurist academies") while doing their damnedest to alienate bourgeois photography.[12]

There's a 1920 photo of Höch and Hausmann at the International Dada Fair in Berlin. The two of them are standing in front of *Cut, Precision Brain,* and *Tatlin. Cut* is far and away the largest—it's more than twice the size of the other two taken

FIGURE 7.2a. Hannah Höch's *Cut with the Kitchen Knife Dada through the Last Epoch of Weimar Beer-Belly Culture of Germany.* This is one of the earliest pieces of map art ever made. The map itself, and Höch's photo of herself, are in the very lower right corner of Höch's photocollage (see Figure 7.2b).

FIGURE 7.2b. Detail of Hannah Höch's *Cut with the Kitchen Knife . . .*

together—and its welter of crowds and gears, words, and mechanized heads must have been astonishing.[13] Today the newsprint's yellowed and the glue's puckered the paper, but its point's as fresh as ever: it's Dadas—us—against the generals, against the exploiters.[14] A feminist subtext is apparent too, not only in the prominence given strong, independent women like Käthe Kollwitz, but with the question of rights raised by the map that Höch's glued into the lower right-hand corner. This posts, in white, the countries in Europe where women were able to vote. To a corner of this map Höch has glued a tiny photo of her face.

Hausmann glued a much larger photo of himself into *Precision Brain* (Figure 7.3). He's got himself right of center, behind an even larger photo of Richard Huelsenbeck's head with its precison brain exposed. It was Huelsenbeck who had brought Dada from Zürich to Berlin, and Huelsenbeck who published *Dada Siegt,* a phrase that Hausmann has glued into the upper right of his montage as well as to its lower border: *Dada triumphs! Dada conquers! Dada wins!*[15] It's *Precision Brain*'s point, in further evidence of which Hausmann has propped up on the easel behind him a photograph of Prague's Wenzelplatz where flags proclaim "Dada" and "391" (*391* was a Dada periodical), and the letters D A D A have been painted down the middle of the street. [16] Into a lunette above the easel Hausmann has glued a map of the Northern Hemisphere across which he's stenciled: *D A D A.* He hardly needs to add . . . *has conquered the world!*

There's a map in *Tatlin at Home* too, of Pomerania (with a route marked ending at the island village where Höch and Hausmann invented photomontage),[17] and there are several map fragments in Hausmann's *ABCD* (1923–1924).[18] The expatriate New Yorker, Man Ray, pasted a map into his photomontage *Transatlantique* (1921),[19] and in Hanover, Kurt Schwitters glued a map into his collage *The Holy*

FIGURE 7.3a. Raoul Hausmann's *A Bourgeois Precision Brain Incites World Movement* (also known as *Dada Triumphs!* or *Dada Conquers,* 1920). This was very likely made around the same time Höch made her *Cut with the Kitchen Knife* (see detail of the lunette in Figure 7.3b).

FIGURE 7.3b. Detail of Raoul Hausmann's *A Bourgeois Precision Brain . . .*

Saddlers' Portfolio (1922).[20] Dada-influenced adherents of Czech Poetism, especially those in the Prague Devětsil Group, glued maps into photomontages too. Karel Teige, for example, memorably combined photograph, postcard, painting, map, and text in his lovely *Pozdrav z cesty* (1923) where a map of northern Italy "sets the scene," as it does in Jindřich Štyrský's *Souvenir* (1924), which is built around a map of the Gulf of Genoa.[21] And . . . is that it? Höch, Hausmann, Ray, Schwitters, Teige, and Štyrský? Maybe, maybe not. Others in the Dada orbit may well have used maps in photomontages—no doubt people will write me about them—but even if there prove to be no more, these seven certainly beg the question: what happens to art that between 1919 and 1924 at least six Europeans and one expatriate New Yorker are suddenly impelled to start pasting maps into collages, photomontages, and picture poems?[22]

The answer, of course, is that art changed. Which is to say that people who made art started doing radically different things. Some of this was without question just another step on the path European painting had been on for a hundred or so years that probed the limits of illusionistic representationalism: Courbet, Manet, Impressionism, Post-Impressionism, Fauvism, Cubism . . . With Cubism there's a pronounced change in direction, and with Picasso and Braque's experiments with collage, with *papier collé,* maybe a fork, some kind of split. I mean, pasting pieces of the world *onto* the canvas is kissing representationalism goodbye in a very big way, and it had all sorts of unforeseen repercussions.

Trying to tell these kinds of stories from a purely art-historical perspective is hard because while what happens at this point *does* draw on the Cubist invention of collage, it's far more profoundly affected, shaped, driven by . . . *World War I* and the enduring anger its slaughter provoked. For some, especially those who'd been reading the early Nietzsche, World War I called into question—*trompled into the mud of the trenches*—every claim Europeans made to rationality and along with it the entire edifice of Western rationalism, including representationalism *in every medium.* By entire edifice I mean they rejected not only, say, representational painting, but the very idea of painting, of art, of museums, the whole culture machine. In writing about the Situationists in the last chapter, I said that the Situationists thought about what they were doing less as art-making than as "a revolutionary program . . . to

confront the ideological totality of the Western world," and in a footnote I added "as, of course, did Letterism, and before either, Surrealism." Well, before Surrealism was Dada.

Dada is born *during* the war, in 1916, in Zürich, in neutral Switzerland, in the Cabaret Voltaire. Dadas have had it. One of the founders was Hugo Ball.[23] In 1916 he writes, "The ideals of culture and of art as a programme for a variety show—that is our kind of *Candide* against the times. People act as if nothing has happened. The slaughter increases, and they cling to the prestige of European glory. They are trying to make the impossible possible and to pass off the betrayal of human beings, the exploitation of the body and soul of people, all this civilized carnage, as a triumph of European intelligence."[24] Hans Arp, another founder, said his attempt to destroy existing modes of art production were to counteract "the trumpets, the flags and money, through which repeatedly killings of millions were organized on the field of honor."[25] There had to be a countervoice to that of the mass media that ceaselessly promoted the war.

Because Ball, Arp, and the others saw "reason" as underpinning the slaughter, they wanted Dada "art" and "poetry" to *undo* reason. Again, the *whole thing* had to go. Anything could be art, everyone could make it. "Art needs an operation," Tzara declared. "Dada has never claimed to have anything to do with art," Max Ernst said. George Grosz and John Heartfield put it even more simply: "ART IS DEAD."[26] They were serious, so trying to come at what they were doing from an art-historical perpsective is vacuous. To understand how maps get pasted into collages, photomontages, and picture poems you need to come at it . . . politically. This was perfectly clear to Walter Benjamin even when he was responding to no more than the seizure of the world of art by the capitalist mode of production. Here he is in a famous paragraph that is especially relevant to our concern with photomontage:

> An analysis of art in the age of mechanical reproduction must do justice to these relationships, for they lead us to an all-important insight: for the first time in world history, mechanical reproduction emancipates the work of art from its parasitical dependence on ritual. To an ever greater degree the work of art reproduced becomes the work of art designed for reproducibility. From a photographic negative, for example, one can make any number of prints; to ask for the "authentic" print makes no sense. But the instant the criterion of authenticity ceases to be applicable to artistic production, the total function of art is reversed. Instead of being based on ritual, it begins to be based on another practice—politics.[27]

What makes this so relevant is the bit of German history that includes the abdication of the Kaiser at the end of the war; the German Revolution of 1918–1919 that pitted the nationalists, republicans, and communists against each another; the triumph of the Social Democrats and their consolidation of the Weimer Republic; and . . . *the parallel rise of a new lithography-driven photojournalism.* As Rudolf Kuenzli puts it: "The new photojournalism in illustrated magazines, with circulations of up to two million copies, greatly shaped social reality in Germany just after the war: it served the interests of the ruling classes by never questionning the new republic's continuation of pre-war values and ideals," that is to say, the very values that had led to the war.[28]

Following their instincts for intervention in mass media, the Dadas seized on this photojournalism, and, inspired by the examples of the popular oleographs and

Cubist *papier collé,* Höch and Hausmann cut photos from these new magazines and glued them up with hunks of type and paint—well, there weren't any rules—into . . . photomontages. Most of Höch's *Cut* came from the cover pages of the illustrated weekly, *Berliner Illustierte Zeitung.* Of course the magazines didn't just run photographs, they also ran maps and, *voila!* map art.

In any case we know of little earlier map art,[29] and we have every reason to believe that *the* central motivation was a renunciation of *everything* that had made World War I possible—reason, logic, the state system, the maps that sustained it. The Surrealist poet Paul Éluard recalled that he and his friend Max Ernst had been "at Verdun together and used to shoot at each other," and their subsequent lifelong friendship powerfully informed their renunciation of a system that in the name of the state had encouraged them to kill each other.[30] Both had been Dadas—in fact when they first met Ernst was still Dadamax—and both became leading Surrealists, as Surrealism absorbed much of what formerly had been Dada. Both also proceeded to make map art, Éluard the 1929 Surrealist map of the world and Ernst the 1933 end-of-the-world allegory, *Europe after the Rain I.*

The 1929 Surrealist map of the world—*Le monde au temps des Surréalists* (Figure 7.4)—is without much question the single best-known piece of map art.[31] People know it, they wear it on T-shirts, who have no idea what it is. No authorship has ever been claimed for it, or assigned, but it is actually not unreasonable to hazard the guess that it was Éluard.[32] Éluard at the time was the managing editor of *Le Surréalisme au Service de la Révolution* for whose pages the map had been originally intended, the map and all the rest of the contents of what instead turned into a special issue of the Belgian journal, *Variétés,* which Éluard also edited.[33] Circumnavigating the

FIGURE 7.4. The surrealist map of the world (1929), the world reprojected according to a Surrealist algorithm. (*Source: Variétés*)

globe in 1924, Éluard had spent time in Southeast Asia and the East Indies where he had been angered by the horrors of Dutch and French colonialism.[34] Éluard had recorded his route on a map, *Les Cinq Parties du Monde, Planisphère, Comprenant toutes les Possessions Coloniales,* a classic of the era that displayed, on a Mercator projection, English colonial possessions in yellow, French in pink, Dutch in orange, Italian in mauve, and so on.[35] The map must have presented an irresistible target to the increasingly anticolonial Éluard, who in 1929 proceeded to trace over the *Cinq Parties* and its *toutes les Possessions Coloniales* to create a vibrantly anticolonial map. His map not only erased the United States and most of Europe (of France only Paris survives), but wildly exaggerated the size of the South Sea islands that Éluard believed most capable of disrupting the rationalist hegemony of Europe. (The Mercator Éluard traced already exaggerated the Inuit regions where the Surrealists also saw promise.) Éluard also replaced the old equator with a new one that greatly resembled the route of his circumnavigation.

Exactly as Hausmann had claimed the world for Dada in *Precision Brain,* here in *Le monde au temps des Surréalists* Éluard claims the world for Surrealism. Werner Spies writes of the map that

> areas of special interest stand out, in particular Asia, a region of untapped energy that could destabilize the status quo. Also apparent is a taste for the "barbaric," one the [Surrealists] often associated with Asia and evident in the group's declarations, especially in those inspired by Artaud and issued in colaboration with such journals as *Clarté, Philosophies,* and *Correspondance.* One such reads: "We must be Barbarians because we are repelled by civilizations of a particular kind. . . . We are attracted to Asia because we reject the Law, because we believe in a new underground *counter culture* that will disrupt History and break the ludicrous grip of Fact. . . . Europe's stereotyping of gestures, actions, lies has fulfilled the cycle of disgust. It is now the Mongolians' turn to pitch their tents in our place."[36]

This counterculture demanded a counter-map: is *Le monde au temps des Surréalists* the first map constructed *as such*? That is, not simply appropriated and recontextualized, but *made against* another map? It's the first I know of.

Ernst's relief, *Europe after the Rain I,* was another counter-map, one Ernst made in response to Hitler's seizure of power in 1933.[37] Robert Storr has called it "an end-of-the-world allegory," and the map presaged a Europe laid waste all over again.[38] The coming cataclysm, however, was not only going to obliterate every trace of the civilization the Surrealists detested, but reshape the very land and waters: the Mediterranean—if that's what it is (that is, it's blue, flat, long, and sort of in the right place)—has been cut off from the Atlantic, the North Sea and Baltic have shifted, an acidulous chromic orange discolors . . .

Well, it's a nightmare vision.

In 1930 Ernst had been recruited by Luis Buñuel to play the leader of a band of landless laborers—vagabonds? brigands?—in Buñuel's film, *L'Âge d'Or.* The sequence opens in a shack, and "when the bandit set was struck [Ernst] pounced on the scrimmed plywood walls and painted three pictures on them, including *Europe After the Rain.*"[39] It's the mock stucco of these walls that gives "this historical painting of the end of history a blistered appearance and allow[s] us to literally feel the desolation, the dried scum of a vanished epoch," as Spies has put it;[40] and it also accounts for the topography.[41] It's possible that all Ernst did was to add the

colors we so unhesitatingly read as Alps, Baltic, and Mediterranean, including what could be sea routes marked in red.[42] James Joyce is said to have found a play on words when he saw the map, one that acts as a verbal equivalent: "Europe—Purée—Pyorrhée," except that in Ernst's imagination the fire would be succeeded by a virulent growth that would bury the decomposing landscape (*Europe after the Rain II,* 1940–1942).[43]

Ernst made other maps too—for example, *Le Jardin de la France* (1962)—and glued map fragments into collage drawings like *Configuration No. 16* (1974),[44] nor was he the only Surrealist to do so. As early as 1925 Salvador Dalí had made a collage that incorporated map fragments,[45] and in 1939 he painted his *Baby Map of the World,* a baby's head transformed into a student globe, Europe blooming like a rash across its forehead, Africa down its cheek.[46] By then Gerald Murphy had painted a globe into his painting, *Bibliothèque* (1926–1927),[47] and Joseph Cornell had begun incorporating maps into his boxes. Never a member of the Surrealist group per se, Cornell had nonetheless been profoundly affected by Ernst's collage novels and was an intimate of Marcel Duchamp. Cornell's glass-fronted boxes were often papered with maps of the moon (*Soap Bubble Set,* 1936), the South Seas (*Solomon Islands,* 1940–1942), and European cities (*Medici Slot Machine (Object),* 1942), and later he'd use world maps (*Trade Winds No. 2,* c. 1956–1958), diagrams of the solar system (*Untitled (Solar Set),* c. 1956–1958), and star charts (*Observatory Colomba Carrousel,* c. 1953), usually to summon a sense of loss, of a time, a place, or a person unspecified but hinted at.[48] Meanwhile, Joan Miró had put an engraved map into his *Poetic Object* (1936); Surrealist-influenced Arshile Gorky had painted a map of the United States into a mural for the Newark Airport (*Aerial Map,* 1936–1937); the English Surrealist, Roland Penrose, had incorporated a map fragment into his *Elephant Bird* postcard collage (1938); and Duchamp had made his *Allégorie de genre* (1943). Duchamp's work was a visual pun that fused the head of George Washington with the shape of the United States. *Vogue* had commissioned it for a cover, but reading the iodine Duchamp had used to suggest the red stripes of the American flag as blood, the magazine rejected it. A collage of gauze, nails, iodine, and gilt stars on cardboard, *Allégorie de genre* essentially plays the gauze for Washington's wig but, given the iodine, it's easy to read it as a bandage as well, and this reading is confirmed by Duchamp's titling an alternate version, *Allegory of Death.*[49] 1943 is also the year Joaquín Torres-García made his south-up map for La Escuela del Sur.[50]

A Little More History: Letterism, Situationism, Pop, and Fluxus

De Chirico, Höch, Hausmann, Ray, Schwitters, Teige, Štyrský, Éluard, Ernst, Dalí, Murphy, Cornell, Miró, Gorky, Penrose, Duchamp, Torres-García: without doubt it's a stream, and one springing from a number of sources—Ferrara, Berlin, Prague, Paris, New York, London, Montevideo—but by the time the 1940s close, there's not a lot of water in it. By the end of the 1950s, however, it's possible to see the beginning of what will soon become a river. The 1950s is a period of transition. For one thing, New York replaced Paris as the center of the "art world" (though God knows *that's* a parochial construction), as Parisian Surrealism was dispersed into Letterism, COBRA, Situationism, and other streams.

Letterism drew directly on Dada as well as on Surrealism, in particular push-

ing "the Dadaist decomposition of word and image further, both in poems that broke language down to the letter and in collages that mixed verbal and visual fragments."[51] Letterists called these collage-mixes *metagraphics* (later *hypergraphics*), and in 1950 the Letterist Maurice Lemaître published the 10-page "metagraphic," *Riffraff,* which included a sequence that zoomed from the solar system through a drawing of the earth to maps of Europe, France, Paris, and Saint Germain de Près.[52] As we saw in the last chapter, breakaway Letterist, Guy Debord, would go on to found the Letterist International and with Jorn, Constant, and others, the Situationist International, publishing his and Jorn's psychogeographic maps in 1956 and 1957. But by that time map art was beginning to pop up . . . here and there.

For example, Robert Rauschenberg was also making map art in 1956 in New York. Rauschenberg was pivotal in the 1950s transition from Abstract Expressionism to Neo-Dada, Pop, Assemblage, Happenings, and Fluxus; and pivotal in his own work was *Small Rebus* (1956), a combine painting that reflected on Rauschenberg's friendship with Cy Twombley and Jasper Johns, and their complicated relationship with European and American art traditions. At the heart of *Small Rebus* are two collaged maps that Thomas Crow takes as a key to the oscillation between European and American references in much of Rauschenberg's early work:

> [Rauschenberg] fashioned its central motif, a virtual hinge between its two halves, from pieces of cut and collaged maps. Their arrangement is such that the eastern part of Europe, including the peninsula of Greece, adjoins the American Midwest: the Baltic Sea, as a result, flows into the northern Great Lakes, and the Adriatic approaches the Mississippi, in sum establishing a new mythical continent as a setting for the enegetic action of the piece.[53]

Then, in 1960, Rauschenberg brought Johns the outline map of the United States that led to Johns's crucial map paintings.[54]

In the later 1950s Rauschenberg and Johns occupied adjacent studios in a building on Pearl Street in lower Manhattan, where in many respects their relationship resembled that of Höch and Hausmann. Johns came to early fame in 1958 when New York's Museum of Modern Art bought four paintings from his first solo exhibition.[55] His combination of a painterly surface with flat, popular subject matter—he made paintings of flags, targets, letters, and numbers—opened all sorts of possibilities for younger artists. Indeed, it was midwife to the birth of Pop. Johns made his first map painting directly on the mimeographed map that Rauschenberg had brought him (*Map,* 1960),[56] but the following year he made a huge, colorful *Map* (1961), then a small *Map* in oil on paper and a very large, all gray *Map* (both 1962), an equally large, gray with color *Map* (1963), a *Map, Double White Map,* and *Two Maps* (all 1965, *Two Maps* destroyed by fire in 1966), and the prints *Two Maps I* and *II* (1966). Johns was at the height of his notoriety, and the *Map* works were both widely exhibited and often reproduced. His largest map painting, over 15 by 33 feet, was made as a mural for Montreal's Expo `67, *Map (Based on Buckminster Fuller's Dymaxion Air Ocean World)* (1967–1971). This attracted widespread international attention, and suddenly map art was all over the place.[57]

The work of Rauschenberg and Johns led the generation of artists grappling with the legacy of Abstract Expressionism in a number of different directions, one of which, Pop, catapulted those in its orbit to immediate notoriety. Among these at least Claes Oldenburg, Öyvind Fahlström, Andy Warhol, and Ed Ruscha would

make map art. Oldenburg had made his first maps as a kid when he and his younger brother developed the fantasy world they called Neubern; but then in 1963 he put on a happening in Chicago called *Gayety: A Map of the City,* where he structured the layout according to landmarks on a "Chicagoland" map published by the *Tribune.* At the same time Oldenburg made a drawing, *Map of Chicago Stuffed with Soft Numbers* (1963), that in turn led to his well-known stuffed maps, *Soft Manhattan No. 1–Postal Zones* (1966) and *Soft Manhattan No. 2–Tactile Form of the New York Subway Map* (1966), and to the lithograph, *Chicago Stuffed with Numbers* (1977).[58] These map pieces of Oldenburg's were also widely exhibited and reproduced.

Fahlström had arrived in New York in 1961, moving into a studio that Rauschenberg had vacated. Fahlström's interest in narrative and the comics gradually transformed his work into "variable" or "game paintings" that encouraged viewers to rearrange the magnetic elements in simulations of 1960s geopolitics, like Monopoly, but "played on a worldwide scale—and for real and keeps," as Storr has put it. Many were built around maps: *World Map* (1972) is characteristic, but so is *Garden (A World Model)* and *Sketch for World Map* (both 1973).[59] Though Warhol isn't often thought of as a map artist, he made a number of map pieces, an early street map of a part of Manhattan (c. 1949) and a *U.S.Weather Map/G.E.* and the increasingly well-known *Map of Eastern U.S.S.R. Missile Bases* (both c. 1985–1986).[60] Though unique in Warhol's work, *Map* nails Crow's reading of Warhol as politically engaged, as well as Hal Foster's paradoxical reflection that Warhol was "both referential and simulacral, connected and disconnected, affective and affectless, critical and complacent."[61] Despite a career-long interest in the documentation of location—though perhaps the documentation of things that can be seen from a car would be more to the point (*Twentysix Gas Stations,* 1963, *Every Building on the Sunset Strip,* 1966)—Ruscha came to maps per se only in the late 1990s when he began producing a series of paintings of extremely simplified map elements, the name and shape of a couple of streets, often intersecting, *nothing* else (*Vermont and Franklin,* 1998, *Sunset/P.C.H.,* 1998, *Pico and Sepulveda,* 1999). Inescapably implied is the *Thomas Guide to Los Angeles County,* the book of street maps found in every Angelino car, and this makes the car once again Ruscha's unseen but implicit subject, encouraging the view of these paintings as map-analogues of Ruscha's early book work.[62]

Less and more than a movement or a style, what Pop had was a subject and an attitude toward it. It was, in Mark Francis's words, "an art of attention to the world at hand, in particular to the apparently trivial, insignificant, and overlooked," and this attention pulled into Pop's orbit artists whose practices were more broadly aligned elsewhere.[63] Among these, Fluxus artists were especially prominent. Fluxus was no more a movement or style than Pop was—and Fluxus is still very much alive—but as distinguished from Pop, Fluxus had a profound interest in experience, encouraged a do-it-yourself aesthetic, and put a high value on simplicity.[64] It grew out of the experiences shared by George Brecht, Al Hansen, Dick Higgins, Allan Kaprow, Jackson Mac Low, and others who had attended John Cage's 1958–1959 Experimental Composition class at the New School for Social Research, though Fluxus was given shape by George Maciunas, who organized the inaugural Fluxus event in New York in 1961.

Key to Fluxus practice was Brecht's "event score," which came straight from the Cage class and was used by practically every Fluxus artist. Event scores frame ordinary everyday actions as performances, sometimes as imaginary, even impossible

experiments. An early Brecht score, *Drip Music (Drip Event)* (1959), reads, "A source of dripping water and an empty vessel are arranged so that the water falls into the vessel." Event scores were subsequently typeset and issued as Fluxus editions. Yoko Ono used an event score to create *Map Piece* (1962):

> Draw an imaginary map. Put a goal mark on the map where you want to go. Go walking on an actual street according to your map. If there is no street where it should be according to the map, make one by putting the obstacles aside. When you reach the goal, ask the name of the city and give flowers to the first person you meet. The map must be followed exactly, or the event has to be dropped altogether. Ask your friends to write maps. Give your friends maps.[65]

The distance between Pop and Fluxus is immediately evident.

Chieko Shiomi (after 1967 Mieko Shiomi) used maps to make *A Series of Spatial Poems,* for which she took the entire earth as her stage.[66] The poems were realized as nine mail-art events between 1965 and 1975. The score for *No. 1* (1965) reads: "Write a word (or words) on the enclosed card and place it somewhere. Let me know your word and place so that I can make a distribution chart of them on a world map, which will be sent to every participant."[67] Shiomi printed the responses on small flags that she posted with pins to a map mounted on foam core, calling these "object poems."[68] *Spatial Poem No. 2 (Direction Event)*—charting what participants were doing and the direction they were facing at 10 PM (Greenwich time) on October 15, 1965—was realized as a foldout map of the world. *Spatial Poem No. 3 (Falling Event)* similarly documented falling events, as *No. 4* charted shadow events. *No. 5 (Open Event)* instructed participants to describe what happened when they opened something that was closed; *No. 7* charted sound events; and so on. Beyond documenting the events, charting them on maps of the world helped transform many disparate *actions* into a coherent global *event,* as mailing the maps back to the participants manifested a global dynamic of social exchange. In 1976 Shiomi published the nine events together as *Spatial Poem,* a Fluxus *livre d'artiste.*

Among other Fluxus artists to exploit the power of the map were Wolf Vostell, who used a loosely painted map of Cologne in his 1961 *Cityrama* event, and a Paris bus map for his 1962 *Petite ceinture* happening;[69] and Nam June Paik, who drew a map of *FLUXU.S. Island in Décollage OCEAN* (1963) and years later made *Electronic Superhighway* (1995).[70] The latter—a large neon outline map of U.S. states mounted in front of an elaborate armature housing hundreds of television sets playing related videos (those within the outline of Kansas, for example, playing the *Wizard of Oz*)—had more in common with Pop than with Fluxus, though, again, both were more attitudes toward the world than they were movements or styles.

A Little More History Yet: Conceptual Art, Earth Art

Doubtless this could be said about Conceptual art as well, which also emerged in the 1960s, and much of which could be executed by anyone following simple sets of instructions that greatly resembled Fluxus event scores. Certainly this was true of the work of Sol LeWitt, who offered this early definition of Conceptual art: "In conceptual art the idea or concept is the most important aspect of the work. When an artist uses a conceptual form of art, it means that all of the planning and decisions

are made beforehand and the execution is a perfunctory affair. The idea becomes a machine that makes the art."[71] Most often, though, it was the artists themselves who followed the instructions, and to the very letter, for as Ono had insisted in *Map Piece,* "The map must be followed exactly, or the event has to be dropped altogether."

No one is more slavish in obedience to his own rules than On Kawara, who has been working on his *Today Series* since 1966. Of varying sizes, these "date paintings" consist of no more than the date on which the painting was executed, in white, against a background of resonant colors, from red to blue to gray and black. If Kawara fails to complete the painting by midnight—and it's an elaborate process— he immediately destroys it.[72] Other series included *I Read* (clippings from newspapers read on a given day), *I Got Up* (postcards sent every day to two different people with the time Kawara got up rubber-stamped along with the words I GOT UP AT, the date, and the names and addresses of both artist and recipient), *I Met* (typed and date-stamped lists of people he met), and a map art piece, *I Went.*[73] For 12 years, from June 1, 1968, to September 17, 1979, Kawara traced his daily movements in red ink on photocopied maps of wherever he happened to be. The completed series comprises some 4,500 maps stored in plastic sleaves in loose-leaf binders or, as more recently published, 4,740 pages in 12 bound volumes, slipcased.[74]

This publication foregrounds aspects of *I Went* that are hard to see in the usual reproductions of one or two of the maps: at first its character as an *atlas,* as it were, of a life; and then its profound *temporal* dimension, the pages on top of pages obligating us, finally, to feel the temporal dimension in even individual maps. What at first seems the excess of conceptual obsessiveness—12 volumes! over 4,000 maps!— comes to seem the necessary caution required to seriously attend to so ordinary, and therefore so readily overlooked, a reality as our daily motion in space-time.

Richard Long is another artist who records walks on maps, beginning in 1967 with the intention of making sculpture out of walking.[75] Where Long's earliest pieces, like his 1964 drawing made with a snowball on snow-covered grass, were often *wholly* evanescent, he began documenting the walks, first with photographs but soon adding maps and text. Long made the first walking work, *A Line Made by Walking* (1967), by walking back and forth across a grass field until he'd flattened the grass enough to "draw" the line,[76] but it soon occurred to him that with more documentation he could create monuments and still "leave only footprints."[77]

Long's first map piece was *Ben Nevins Hitch-Hike* (originally *Untitled,* 1967), based on a journey he made that April, walking and hitch-hiking from London to the summit of Ben Nevis and back. At 11:00 AM on each of the six days he took two photographs, one straight up and one straight down. The piece consisted of the journey, a map with his route marked on it, and the photographs.[78] These documents have simplified over the years and become elegant: the words "start" and "end" linked by meandering dots and the text, "urinating places line/a continuous walk of 96 miles in 30 hours from dawlish to bristol/sunlit windless starlit/england 1993," the actual map suppressed here; a piece of an Ordnance Survey map with five concentric circles drawn on it and the text, "concentric days/each day a meandring walk somewhere within and to the edge of each circle/scotland 1996;" a ring of 12 "middays" and the text, "a circle of middays/walking 360 miles around a circle/a clockwise and meandering walk of 12 days/intersecting each day at midday/with an imaginary circle 63 miles wide/gloucestershire wiltshire hampshire dorset devon somerset/england 1997."[79] More than just aspects of Long's docu-

mentation process, maps have become trusted friends. In "Notes on Maps" he's written:

> A map can be used to make a walk, a map can be used to make a work of art.
> Maps have layers of information; they show history, geography, the naming of places.
> A map is an artistic and poetic combination of image and language.
> For me, a map is a potent alternative to a photograph, it has a different function.
> It can show the idea of a whole work, not a moment.
> A map can show time and space in a work of art.
> Distance, the days of walking, the campsites, the shape of the walking, can be shown in one concise but rich image.
> In some of my works, I find the best places to realize particular ideas by first looking at a map.
> A map can decide place and idea, either or both.
> Maps can be read in many different ways, they are a standard and universal language.
> I like to think my work on a map exists equally with all the other infomration on it.
> On a long walk a map becomes a familiar, trusted object, something to look at endlessly, without boredom.
> I can look at the planned future and the completed past.
> A map is light.
> A map could save my life.[80]

Not all Conceptual art, however, has been made by the artists themselves. Here Alighiero Boetti (after 1973, Alighiero e Boetti) stands out dramatically. His most famous work, *Mappa* (1971–1994)—a series of large, embroidered maps of the world with the countries filled in with their flags—was actually made by Afghani artisans, initially in Kabul, later in refugee camps in Peshawar, Pakistan.[81] Boetti began working with maps in 1967, the year Long did, but their work could hardly be more different. Beginning with the 1967 Arab-Israeli War, Boetti occasionally traced the outlines of places impacted by war, concluding the series in 1971 with the Bangladeshi war for independence. He engraved these tracings on copper as *Twelve Forms from 10 June 1967* (1967–1971),[82] turning the first tracing in the series, a map of the Occupied Territories (the Sinai, West Bank, and Golan Heights), into his first embroidered work, the *Occupied Territories* (1969).[83] 1969 was also the year he made *Political Planisphere* out of a school map of the world by using markers to color each country with its flag.[84]

In 1971 Boetti merged the embroidery of *Occupied Territories* with the richly colored world map of *Political Planisphere* to create *Mappa.* That was the year Boetti began traveling to Afghanistan, soon to become his second home (ultimately he opened a hotel in Kabul). On his second visit he brought a 5-by-7-foot "cartoon" of the first *Mappa,* which would occupy four embroiderers for the next year. Over the following 23 years Boetti commissioned more than 150 of the enormous wall hangings, all titled *Mappa.* The commissions were interrupted by the Soviet invasion, and in 1984 the embroidery moved to Peshawar. Since Boetti scattered the work among families in different locations, the precise number of maps he commissioned is unknown (his estate has records for some 150), nor are all of them the same. Borders were often invented by the artisans who also made "mistakes." Usually these were welcomed by Boetti, and they endow the work as a whole with a genuinely lifelike flexibility. While each individual *Mappa* is a pleasure to behold,

it's the project as a whole that's so staggering a piece of map art and a masterwork however you look at it.

Altogether different again were the map pieces of Douglas Huebler. Huebler began working with maps in 1968, the year Kawara did; and arguing that "the world is full of objects, more or less interesting; I do not wish to add any more," he limited his (early) practice, "simply, to stat[ing] the existence of things in terms of time and/or place."[85] His *Site Sculpture Projects* are exemplary. These denominate particular geographical sites, marked on maps, as pieces of sculpture. Works consisted of Huebler's statement, the map, ancillary documentation, and the site. Or sites: in the case of the *42° Parallel Piece* (1968), these were 14 U.S. cities. In the case of *Location Piece No. 14, Global Proposal* (1969), these were "twenty-four geographical locations that exist as a series of points 15 longitudinal degrees apart along the 45° Parallel North of the Equator."[86] The piece exists solely as a set of instructions, very much like an event score. The potential buyer "will assume the responsibility for fulfilling every aspect of its physical execution." This would entail taking a photograph of a point directly overhead at noon, beginning at 0° longitude near Coutras, France, and thence every 15° around the globe, *within a single 24-hour period.* The concluding instruction reads: "The twenty-four photographs, a map of the world, and this statement will join together to constitute the form of this piece."[87]

For some of the pieces Huebler himself carried out the instructions, as in *Site Sculpture Project, Windham College Pentagon, Putney, Vermont* (1968). During a day at Windham, Huebler drew a campus-centered pentagon on a map and collected dirt from the locations corresponding to the pentagon's vertices. Setting the samples in epoxy, he exhibited them together with a photograph taken at each of the vertices and two maps marked with the location of the pentagon, after which the samples of dirt were reburied on the campus. As shown by the Tate, which now owns it, *Windham College Pentagon* consists of the typed instructions, the two maps with their pentagons (one a USGS topo quad, the other a very large-scale map of the Putney countryside), and the five photographs all mounted on board; but in fact the piece in some sense also includes the site and the dirt samples, in whatever state they may currently exist.[88] In the case of the *42° Parallel Piece,* for which Huebler drew a line on a map of the northern United States through 14 cities stretched more or less equidistant along the 42° parallel, the locations were marked by an exchange of postal receipts.[89] Huebler's *Location Piece No. 1* (1969) consisted of an American Airlines system map, photographs he took more or less straight out the window of the plane while flying between New York and Los Angeles, and of course the trip.[90]

But this is hopeless! What artist with an interest in Conceptual art *wasn't* making art with maps? Stanley Brouwn had been among the earliest, collecting maps from passersby in Amsterdam and stamping them *This Way Brouwn* (1961–1962); Terry Atkinson and Michael Baldwin (later Art and Language) had made their notorious *Map not to indicate: Canada, James Bay . . . ,* their *Map of the Sahara Desert after Lewis Carroll,* and their *Map of a Thirty-six Square Mile Surface Area of the Pacific Ocean West of Oahu* (all 1967); Marcel Broodthaers had made his *Carte du Monde Utopique* and *Carte du Monde Poétique* (both 1968); John Baldessari had carried out the wonderful *California Map Project, Part I: CALIFORNIA* (1969); Jan Dibbets was working with maps and sound (e.g., *Afsluitdijk* and *The Sound of 25 Km., Holland,* both 1969); Dennis Oppenheim had executed *Negative Board* (1968) and *Gallery Transplant* (1969)

among others; Helen Mayer Harrison and Newton Harrison had begun *The Lagoon Cycle* (1972–1982); Gordon Matta-Clark had carried out his *Reality Positions: Fake Estates* (1973); Adrian Piper, Sol LeWitt, and Hans Haacke had made map art; and indeed as Roberta Smith pointed out, "At a certain point around 1973, it was probably difficult to find an artist working in the Conceptualist or Earthwork mode who had not used a map at least once in some way."[91]

Earthwork, Land, and Environmental artists were the most map-besotted of all.[92] Earthwork artists including Robert Smithson, Walter De Maria, Dennis Oppenheim, Christo and the late Jeanne-Claude, Nancy Holt, James Turrell, and others began working with maps to plan, execute, and document their work.[93] Christo and Jeanne-Claude—who died in 2009—could never have constructed their landscape pieces, from *Valley Curtain* (1970–1972) through *The Gates* (1979–2005), without maps: first, as an almost ubiquitous presence in the drawings that Christo sells to capitalize their projects; then as planning, approval, and construction documents (the Environmental Impact Statement for *Running Fence,* 1972–1976, for example, ran to over 450 pages, many of them maps); and finally as aids to the appreciation of the work. In 2005, thousands and thousands of *The Gates Map* were sold to help visitors negotiate the piece in Central Park.[94] Similar remarks could be made about the work of Michael Heizer, Walter De Maria, Nancy Holt, James Turrel, and others.

Smithson, probably best known for his *Spiral Jetty* (1970), worked with maps in all these ways, but he was also a student of maps. At the time of his premature death (in a plane crash), Smithson owned copies of Leo Bagrow's *History of Cartography,* Lloyd Brown's *The Story of Maps,* and David Greenhood's *Mapping,* along with numerous geology texts, atlases, and even David Lowenthal's *Environmental Perception and Behavior* (with the excerpt from Kevin Lynch's *View from the Road* and its unusual maps).[95] Smithson drew on this reading for "Mapscapes or Cartographic Sites" where he ran a line from the "*Theatrum Orbis Terrarum* of Ortelius (1570) to the 'paint'-clogged maps of Jasper Johns," and compared Lewis Carroll's maps to those of Carl Andre, Sol LeWitt, Jo Baer, Ruth Vollmer, and R. Buckminster Fuller.[96]

Maps pervaded Smithson's thinking to an unusual degree. He seemed incapable of looking at even a page of text without seeing maps: "If you read this square magazine long enough, you will soon find a circularity that spreads into a map devoid of destinations, but with land masses of print (called criticism) and little oceans with right angles (called photographs)," and goes on to find maps in the photographs themselves:

> Look at any black and white photograph on these pages separated from its title or caption and it becomes a *map* with tangled longitudes and dislocated latitudes. Oceanic depths in these maps submerge the continents of prose. Equators spill onto shores of misplaced thought. Where do these maps start? No place. Distances are measured in degrees of disorder.

He concludes with the observation that "here maps have no direction because they are scattered from cover to cover. Maps within maps are seen where no maps are supposed to be."[97]

This complicated way of thinking about maps is fully embodied in Smithson's map work, which ranges from something as straightforward as *World Ocean Map*

(1967), a collage made with an equal-area projection centered on the South Pole; through *Untitled (Antarktis Circular Map)* (1967), a map of Antarctica cut into concentric circles and glued up like a sort of wedding cake; *Map Fragment* (1967), with its fragment of a Ptolemaic map of India collaged onto a fragment of the USGS Brookville (New Jersey) quadrangle; to his better-known map-collage proposals for site pieces like *Map of Clear Broken Glass (Atlantis)* (many versions, 1969–1970) and *The Hypothetical Continent of Lemuria* (1969), both of which were realized, the first as *Hypothetical Continent-Map of Broken Glass: Atlantis* (Loveladies, New Jersey, July 11–31, 1969), the second as *Hypothetical Continent in Shells: Lemuria* (Sanibel Island, Florida, April 1969).[98]

The most complex use of maps was in Smithson's "nonsite" projects. Gary Shapiro says:

> The nonsites have a gallery or museum component, consisting usually of a container or set of containers that hold rocks, soil, or some other material from a specific place or "site." However, the site from which the material is taken is also a part of the work, and the effect of the work as a whole is to defeat any sense of simple location and to set up what Smithson calls a dialectic between the site and the nonsite. The point is to avoid the temptation to be a mere sightseer and to become a "site-seer" with a transformative vision of what it is to be in (and out of) a site. The nonsite is both a nonplace (it is not the place from which the material was taken) and a "non-sight," because in seeing it one is *not* seeing the site/sight to which it refers.[99]

This "referring" was usually performed by a map, often augmented by photographs, as in *Nonsite "Line of Wreckage," Bayonne, New Jersey* (1969), *Nonsite (Oberhausen, Germany)* (1968), and *Mono Lake Nonsite (Cinders Near Black Point)* (1968).[100]

Smithson observed of the last that if you look at a map of Mono Lake, "you'll see it is in the shape of a margin—it has no center. It's a frame, actually"—which is generally the way lakes are posted on maps, as marginal lines around an undifferentiated blue—and Smithson embodied this "empty center" by constructing *Mono Lake Nonsite* as a square channel (containing pumice and cinders from the shore of the lake) that frames . . . nothing but the floor of the gallery it sits on. Above it an identical channel (containing strips of a map of the lake) frames . . . nothing but the gallery wall. Beyond the obvious dialetic of noncenter and edge, the piece is trying to get at something else. "Maps are very elusive things," Smithson said:

> This map of Mono Lake is a map that tells you how to get nowhere. . . . One might even say that the place has absconded or been lost. This is a map that will take you somewhere, but when you get there you won't really know where you are . . . As I look around the margin of this map, I see a ranch, a place called the sulphur pond; falls, and a water tank; the word pumice. But it's all very elusive. The shoreline tells you nothing about the cinders on the shore. You're always caught between two worlds, one that is and one that isn't.[101]

Shapiro feels that for Smithson the map lay between (and somehow mediated) our language and the world, and concluded that "if Smithson the artist is to be discovered in his art, it will not be in the form of a story he tells us about himself but in the signature with which his works are marked, a signature that sometimes approximates a map."[102]

Map Art Exhibitions: A Tedious but Necessary Section

As the 1970s dawned, all sorts of other artists joined Long, Huebler, Kawara, Boetti, Smithson, and the rest, to begin working with maps. Among others, Nancy Graves started making maps; perhaps best known is her suite, *Lithographs Based on Geologic Maps of Lunar Orbiter and Apollo Landing Sites* (1972);[103] Susan Hiller began performing and drawing dream maps, like her *Composite Group Dream Map, Night of 23/24 August* (1974);[104] and Agnes Denes started mapping the world onto doughnuts, cubes, pyramids, even snails, as in her *Isometric Systems in Isotropic Space–Map Projection: The Snail* (1974).[105] Map art was *all over the place.* In 1974, *artscanada* devoted a special double-issue to the phenomenon, *On Maps and Mapping,* remarkable not only for its quality but its prescience, devoting articles to the map art of Vera Frenkel, Graves, Michael Snow, Claude Breeze (his *Canadian Atlas* series), William Wiley, and a host of other artists more briefly touched on in a long article by Joe Bodolai.[106]

Inevitably, map art came to the attention of curators, and the exhibitions they mounted contributed to a flood of map art in the 1990s. The easiest way to document this is to look at the growth in the number of map art exhibitions, that is, of group shows. The earliest I've been able to find were two held in 1977: *Maps,* at the Art Lending Services Gallery of the Museum of Modern Art, and *Artists' Maps,* at the Philadelphia College of Art; and one the following year at New York's Nobe Gallery.[107] Then, in short order, Terri Lonier organized *cARTography* in 1980 for the John Michael Kohler Arts Center in Sheboygan, showing the work of 45 artists;[108] and the next year Roberta Smith curated *four artists and the map* for the Spencer Art Museum in Lawrence, Kansas,[109] while Peter Frank curated *Mapped Art* for Independent Curators International. Touring for two years, *Mapped Art* exhibited the work of 67 artists.[110] Unsurprisingly, all three exhibits included Johns, whose work continued to haunt map art, and Graves, then at the height of her fame; but the Memory Maps of Roger Welch are less well known today. Of the other 109 artists, I've only mentioned 14 of them so far, which means there were already another 95 map artists at work.[111]

I've identified no other shows from the 1980s (people will write to fill me in), but in 1991 Ihor Holubizky curated an innovative show he called *Atlas* with a bright emphasis on Conceptual art for the Art Gallery of Hamilton, Ontario;[112] and in 1994 when Storr organized his exhibition, *Mapping,* for New York's Museum of Modern Art, he had to observe that unbeknownst to him Frances Colpitt had simultaneously been organizing a *Mapping* exhibition to tour Texas. Storr's show, at the most important modern art museum in the world, was an undeniable milestone, showcasing the work of 30 important artists, accompanied by a catalogue that remains irreplaceable;[113] but Colpitt's *Mapping* was also a hell of a show, with its 14 artists (only one of whom, Kim Dingle, also played New York) and its catalogue scarcely less valuable.[114] Apparently unknown to either Storr *or* Colpitt was the show, *Art on the Map,* that Gregory Knight organized that year for the Chicago Cultural Center. This was the first map art show to fold its catalogue up like a map but far from the last.[115] Knight showed 24 artists, including the first Julian Schnabel to be shown in this context, an amazing John Cage (*A Dip in the Lake,* 1978), and the first map-art armchair.[116]

In 1995 Peter Fend curated *Mapping: A Response to MOMA* at American Fine

Arts in New York, and the year after that Kathryn Charles put on *Mapping Lessons* at the William King Regional Arts Center in Abingdon, Virginia, while Jo Stockman and Deborah Levy curated *Maps Elsewhere* for Beaconsfield in London.[117]

The following year, 1997, Žielimir Koščević curated the massive *Cartographers* for the Contemporary Art Museum in Zagreb, showing the work of 68 artists from 28 different countries from every continent. The show traveled and was accompanied by a 160-page full-color catalogue that is just as important as Storr's, to which it paid the double tribute of giving *Mapping* a place on its timeline of 20th-century cartographic benchmarks and getting Storr to write an essay. There are nine other essays that among other things tracked the map in modern Italian art, Conceptual art, and critical cartography.[118] In 1998 the OK Center for Contemporary Art coproduced *Atlas Mapping* for the Kunsthaus in Bregenz, Austria. This no less important but more selective international exhibition was also accompanied by a fully illustrated, 240-page catalogue with essays from a number of contributors.[119]

Then in 1999 Robert Silberman curated *world views: Maps and Art* for the Frederick R. Weisman Art Museum at the University of Minnesota, with its full-color, 80-page catalogue, and an essay by Yi-Fu Tuan,[120] while in 2000 Naomi Miller and Karen Hass coordinated *Mapping Cities* for the Boston University Art Gallery, with its lovely 92-page catalogue.[121] In 2001 Jane England curated *The Map Is Not the Territory i* for England & Co. in London,[122] and Susan Bender and Ian Berry curated *The World according to the Newest and Most Exact Observations: Mapping Art + Science* for the Tang Teaching Museum at Skidmore College. This was accompanied by a lavish, full-color, hardbound catalogue mixing essays about maps and mapping with two-page spreads on the artists, these ranging from Kozloff, Long, and Ruscha to . . . Denis Wood.[123] I know of three shows from 2002: Lize Mogel and Chris Kahle's *Genius Loci* at SCI-Arc in Los Angeles;[124] Jane England's massive *The Map Is Not the Territory ii* for England & Co. in London;[125] and Mel Watkin's *Terra Incognita: Contemporary Artists' Maps and Other Visual Organizing System*s for the Contemporary Art Museum in St. Louis.[126]

In 2003 Linda Brady Tesner mounted *Artists and Maps: Cartography as a Means of Knowing* for the Gallery of Contemporary Art at Lewis and Clark College in Portland, Oregon, which showed the work of 23 artists ranging from Fahlström to William Kentridge and came with a thoughtful, full-color catalogue,[127] while in *From Here to There: Maps as Muse,* the New York gallery, Hirschl and Adler, hung 50 maps in a mix of antique maps and modern map art;[128] and England and Co. took their *The Map Is Not the Territory ii* and expanded it into *The Map Is Not the Territory iii.*[129] In 2004 the Julie Saul Gallery in Manhattan hung *Uncharted Territory: Subjective Mapping by Artists and Cartographers* showing the work of 20 artists, CitySpace organized *Urban Legends: The City in Maps* at Oaklanidsh Gallery (in Oakland), while Karen Moss curated *Topographies* for the San Francisco Art Insitute.[130] In 2005 Elli Crocker curated *Mapping* for the Schiltkamp Gallery at Clark University, showing the work of 15 New England-area map artists,[131] and Christopher Johnson hung *Cartography 101* at his Johnsonese Gallery in Chicago.[132]

In 2006 Elena Sorokina mounted *Mapquest* for the ps122 Gallery on the Lower East Side, Richard Klein curated *Global* for the Westport Art Center, and Joanna Lindenbaum put on *Personal Geographies: Contemporary Artists Make Maps* for the Times Square Gallery of Hunter College. *Mapquest* brought together 12 committed artists, activists, writers, and organizers in a display of deeply critical, indeed dis-

sident mapmaking.[133] For *Global,* Klein distributed 12-inch Replogle globes to 20 artists to use in "some manner as one of the raw materials of a work of art." It was a lovely show but despite the theme comparatively all over the place. It came with a gorgeous catalogue.[134] *Personal Geographies* was a large show of 20 artists concerned, as its title suggests, with mapping the flow of emotional and personal information. It too came with a catalogue.[135] Elsewhere that year Soo Kim and Jessica Silverman curated the fabulous *International Waters* for Steven Wolf Fine Arts in San Francisco, Jacqueline Doughty hung *Terra Incognita* at the Gertrude Contemporary Art Spaces in Melbourne, and the North House Gallery in Manningtree, Essex, put on *On the Map: Artists Inspired by Maps.*[136] These six shows sketched something of the *range* of map art at the beginning of the millennium, as well as something of the form's gathering momentum.

There were at least nine map shows in 2007. I say "at least" because the growing numbers makes them harder to track, and I'm betting there were shows I didn't hear about. Carrie Scott curated *Charting Maps: The Topography of Contemporary Art* for the Hedreen Gallery of the Lee Center for the Arts in Seattle; Doug Beube and Sherry Frumkin put on *Zoom +/–* at Arena 1 of the Santa Monica Art Studios in Santa Monica; Tricia Van Eck curated *Mapping the Self* for Chicago's Museum of Contemporary Art; Gwen Mayers curated *The Map Show: Charted and Uncharted Territory* for the Spencertown Academy Arts Center; Lize Mogel and Alexis Bhagat organized the traveling show, *An Atlas of Radical Cartography* (Figure 7.5), which opened at Firehouse 13 in Providence; Paul Coors put on *Local Color* at Publico in Cincinnati; Courtney Gilbert mounted *Lines in the Earth: Maps, Power and the Imagination* for the Sun Valley Center for the Arts; and New York's New Museum published *Get Lost.* I say "published" *Get Lost* because beginning early in June the

FIGURE 7.5. A few map art catalogues. From left, the Overgaden catalogue, sort of a newspaper (2008); the front of the *Atlas of Radical Cartography*'s box (2007); the big catalogue for the Zagreb show (1997); that for the Beaconsfield show, *Maps Elsewhere* (1996); and that for the Sun Valley show (2007). (*Source:* Author's collection)

museum distributed—through outlets it described as "markers of the downtown scene and cultural organizations"—free copies of a 28-page tabloid "atlas" of maps of downtown New York drawn by 21 international artists (ranging from the 16beaver group, through Julie Mehretu and Aleksandra Mir, to Lawrence Weiner and Franics Alÿs).[137] More conventionally *(C)artography: Map Making as Art Form,* at the Crawford Gallery in Cork, Ireland, once again contrasted antique maps with contemporary map art, as did *The Map Show,* the older maps in *Charted Territory: Antiques and Vintage Maps,* the map art, of five map artists, in *Uncharted Territory: Art Informed by Maps and Mapmaking.*[138] Despite the essentially critical tone of the work in *The Map Show* (Joyce Kozloff's *Boys' Art* drawings, for instance), the *Atlas of Radical Cartography* could hardly have been more different. The maps here were explicitly intended to promote social change, and while many were by people who think of themselves as artists, the work "cuts across the boundaries of art, geography, and activism." By the end of 2008 the show had hung in 11 different sites, all over the country and in Canada and Sweden, usually, though by no means always, in art centers with more scheduled for 2009. The "catalogue" consists of 10 individual maps, printed 17 inches by 22 inches but folded, and 10 attendent essays in a 160-page book, the whole thing slipcased. I'll have more to say about it later.[139] In dramatic contrast *Local Color* was a small show of five artists concerned with the local, maps represented largely by the hanging of the entirety of my *Boylan Heights Atlas* project (at least all the maps that have been completed).[140] *Lines in the Earth* represented the more or less mainstream map art show, seven carefully chosen artists running a gamut of possibilities, a really rich events package (including a community mapping project carried out by Lize Mogel), and a lovely brochure.[141]

I hope you've noticed the continuous growth in the number of shows: 2 in 2005, 6 in 2006, 9 in 2007, and . . . *14* in 2008! At least 14. I'll bet there were more:

1. In conjunction with an international symposium, Art and Cartography—Cartography and Art, *zoomandscale,* in Vienna's Academy of Fine Arts and the Kunsthalle Wien project space, featured the work of 14 artists.[142]

2. Gregory Knight and Sofia Zutautas curated *HereThereEverywhere* at the Chicago Cultural Center, 19 artists, reprising none of the artists from Knight's 1994 show. Again the catalogue folded up like a map.[143]

3. Also in Chicago, the Carrie Secrist Gallery put on *Legends Altered: Map as Method and Medium.*

4. Vandana Jain curated *The Map Show* for Rockland Centers for the Arts, eight artists, and a neat threefold brochure.[144]

5. Rhoda Rosen organized *Imaginary Coordinates* for Chicago's Spertus Museum. This extraordinary show, timed to coincide with Chicago's Festival of the Map and Israel's 60th anniversary, juxtaposed antique, modern, and contemporary maps of the Holy Land with the works of contemporary Israeli- and Palestinian-born women artists. It was accompanied by a beautiful hardbound book, "more manifesto than a description of or pendant to an exhibition." In fact, it was "a proposal for what an exhibition in a Jewish museum in a postethnic world might look like." I'll have more to say about this in the next chapter.[145]

6. Wendy Ferguson curated the nearly as extraordinary *L(A)ttitudes* for the Ann Loeb Brofman Gallery in Washington. This, too, was a reflection on

Israel in its 60th year, and again focused on both Israel and Palestine with work by 10 artists from five different countries.[146]

     7. Clare Norwood curated *Uncoordinated: Mapping Cartography in Contemporary Art* for the Contemporary Arts Center in Cincinnati. This showed 36 pieces (counting 30 of elin O'hara slavick's maps as a single piece) by 14 artists.[147]

     8. Inger Tully curated *Mapped* at the Contemporary Museum at First Hawaiian Center in Honolulu, showing 44 pieces by nine artists, all, except for Jinja Kim and the nearly ubiquitous Joyce Kozloff, with Hawaiian connections.[148]

     9. Johanne Løgstrup curated *The World Is Flat* for the Institute of Contemporary Art in Overgaden, Copenhagen. Løgstrup invited 10 artists from seven different countries to work within a given format (one of whom was Lize Mogel).[149]

     10. Jan-Erik Lundström and Johan Sjöström curated *Being Here: Mapping the Contemporary* for the Bucharest Biennale 3 in Bucharest, mixing contemporary atlases, map artists, and related locative work, later remounting it as *The Map: Navigating the Present* for the Bildmuseet, Umeå University, Umeå, Sweden.[150]

     11. Laura Kruger (a map artist in her own right) curated *Envisioning Maps* for the Hebrew Union College–Jewish Institute of Religion Museum. While not explicitly a reflection on Israel in its 60th year, the show of 48 pieces by 33 artists had a strong emphasis on Israel and related Jewish themes.[151]

     12. Jeanne Gerrity curated *Creative Cartographies* for the Brooklyn Arts Council Gallery, showcasing the work of 12 Brooklyn-based map artists.[152]

     13. Nato Thompson curated the extraordinary (I know I've already used the word in this list more than once) *Experimental Geography: Radical Approaches to Landscape, Cartography, and Urbanism* for Independent Curators International, another traveling show that opened at the Richard E. Peeler Art Center at DePauw University in Greencastle, Indiana. As important as the show, and with probably greater impact, will be the eponymous 170-page, full-color catalogue/book, with its essays by Thompson, Jeffrey Kastner, and Trevor Paglen, and contributions by others. This takes us back to *An Atlas of Radical Cartography* (with whom it shares Paglen, Mogel, and the Center for Urban Pedagogy), and into the previous chapter where we met kanarinka (though hidden there in the Institute for Infinitely Small Things), but enriched by another 14 artists, collectives, and collaborations.[153]

     14. And finally *no one* curated the anarchist NC Community Cartographies Convergence and Exhibit at Golden Belt Arts in Durham (and elsewhere in the area) with its self-hung show, parallel exhibition of the *Atlas of Radical Cartography,* guest lectures (Paglen, Mogel, Alexis Bhagat, me, John Krygier, Jeremy Crampton, Pedro Lasch, and others), panels, tours, and so on. *And so on.*[154]

And in 2009, already! as I wrap up this manuscript, *Photocartographies: Tattered Fragments of the Map* at the Los Angeles gallery g737, 12 artists, with a panel, Situationist-inspired ludic urban action, and accompanying book.[155] And this doesn't begin to touch it. I haven't mentioned a single one of the many, *many* one-person map art shows—the incredible work of Sayaka Akiyama, of Joshua Neustein, of

Greg Colson, the bizarre map paintings of Matthew Cusick, the powerful montages made by the architect/artist, Deborah Natsios, the map paintings of Peter Dykhuis, the ceramic work of Janet Williams, the interest in maps on the part of Slavs and Tatars[156]—or the anthologies, articles, and scholarly work that have been unfolding at the same time (see *Else/Where: Mapping,* see David Pinder's "Cartographies Unbound"[157]). Of signal importance for map art was Katharine Harmon's 2004 book, *You Are Here: Personal Geographies and Other Maps of the Imagination.* Along with other maps, this beautiful book included work by better than four dozen contemporary map artists. Following its publication, so many other map artists came to Harmon's attention that in 2009 she published the even more beautiful *The Map as Art: Contemporary Artists Explore Cartography,* with another *12 dozen* artists.[158] In 2006 I was able to list better than *200* contemporary artists in a catalogue for *Cartographic Perspectives*; three years later I could double the number.[159] At the same time map art has come to the attention of academics. David Woodward was among the first to pay attention, and the late Denis Cosgrove was among the most recent;[160] student work has ranged from the pioneering master's thesis Dalia Varanka wrote (under Jim Blaut)[161] to the doctoral dissertations recently completed by Marie Cieri (under Neil Smith) and James Ketchum (under Don Mitchell).[162] Cieri, in fact, came to geography as an arts professional, and her dissertation sketches possibilities for map art as yet unrealized. Map art sessions have been held at the annual meetings of the Association of American Geographers and the North American Cartographic Infromation Society, whose journal, *Cartographic Perspectives,* has not only featured map art on its cover, but devoted an entire issue to map art.[163]

What *Is* All This About?

Certainly one thing it's about is the growing ubiquity of maps.[164] The growth of map art is almost like a fever chart of the growth of the map industry itself. As I pointed out in the first chapter, almost all the paper maps ever made have been made in the past 100 years, and the preponderance of them in the past 50. There's nothing hard about this, but consider the following: these days, not counting Sundays, Raleigh's *News and Observer* prints close to 30 *million* maps a week.[165] Fifty years ago it may have printed 30 *thousand* a week. Fifty years before that it might not have printed any at all. The numbers of maps have always risen with wars, but what's really driven them up have been the changes in technology and the ever-increasing competition from more graphic media. The institution of map features, such as the weather page, has been a factor too. As a result, newspapers have become map factories: a middling paper like the *News and Observer* is printing over 1.5 *billion* maps a year.[166] Similar increases in map production can be seen in other graphic media, especially in news magazines, but also in textbooks, and this is to say nothing of television, which adores maps, or the Web.

During the 20th century entirely new map *genres* have also come into existence, some proliferating until they're as taken for granted as indoor plumbing. We've looked at the highway map, born with the 20th century, nursed by the car, and raised by oil, rubber, automotive, and other interests to flood glove compartments and overflow kitchen drawers. As we saw, state governments alone print millions and millions of highway maps a year. Another 20th-century innovation, field guides

to trees, birds, wildflowers, reptiles, and so on, feel pressed to map the range of every species. Popular field guides can have hundreds of maps in them. Millions of copies are printed.[167] I could go on.

The point, by no means trivial, is that insofar as artists deal with the world around them, during the past century maps have become an increasingly prominent part of it. Because our societies are more map-immersed than any that have previously existed, contemporary map artists have grown up bathed in maps to an unprecedented degree. It's true that they've grown up bathed in many things, not all of which have become compulsive subjects of art-making, but the unique properties of the map make it an exceptionally apt subject for an art that, as it has become less and less enamored of traditional forms of representation, has grown increasingly critical. Maps have numerous attractions. In the first place, like paintings, maps are graphic artifacts. There's substantial formal continuity, especially with the painting of the second half of the 20th century and its grab bag of commitments to abstraction, surface, flatness, pattern, and formal systems of sign-making. Then too, like paintings, maps are communicative, that is, they are constructs by which one human (or group of humans) affects the state or behavior of another (or others) in a communication situation.[168] That is, both maps *and* paintings are more or less permanent, more or less graphic artifacts intended to shape the behavior of others. As the energy of painting has been dispersed in the past half century through Pop, Fluxus, Conceptual art, Earth art, installation art, performance art, video art, cyber art, and so on, it has dispersed the map as a subject along with it.

As we know, the most important role of maps is to serve the descriptive function in human discourse that links behaviors through the territorial plane; to say it again, to link my living here with my ability to vote there. As we also know, maps achieve these linkages more effectively when people take maps to be descriptions of the territory rather than descriptions of the behaviors they conjoin, and we know that maps pass most easily as descriptions of the territory when they wear masks of impersonal authority. That is, as I've said before, maps pass as descriptions of the territory when they project a sense of being unauthored or, if authored, then by a machine-like medium through which the territory passes merely to effect a convenience, a change, say, in scale or focus. While this mask is *assumed* by most counter-maps, whose intention is merely to *replace* or *supplement* existing maps, this mask is the very *target* for artists.

We saw in Chapter 2 the way the map was constructed out of elementary propositions called postings; and then in Chapters 3 and 4 how these postings were transformed into "reality" through their appropriation by the second-order semiological system that put on the mask. We also saw that Barthes represented this relationship diagrammatically (Figure 3.5), succinctly capturing the way this "reality"—this wholly *mythical* "reality"—was cantilevered out from the simpler level of the postings. This two-tiered semiological system is adopted by all counter-maps whose intention is less to question, undo, or dissolve the authority of the map than to replace and/or supplement it, that is, by the counter-maps I discussed in Chapters 5 and 6. Unavoidably, this is the case for Indigenous maps whose straightforward intention is to reclaim land (that is, whose intention is to *replace* existing maps), but at some level it is also the case for Barton's *City of Memory* (supplement), Debord's *Naked City* (replace), and the Detroit Expedition's "Region of Babies Bitten by Rats" (supplement), to differing degrees, of course, and obviously in very different ways.

Like other maps, these counter-maps also want to leverage the map's power, that is, to exploit this machine whose function is to capture the meaning of postings in the service of a myth.

While no meaning can *resist* its capture by myth, Barthes did point out that the tables could be turned: "The best weapon against myth," Barthes advised, "is perhaps to mythify it in its turn, and so to produce an *artificial myth*: and this reconstituted myth will in fact be a mythology. Since myth robs language of something, why not rob myth? All that is needed is to use it as the departure point for a third semiological chain, to take its signification as the first term of a second myth."[169] By appropriating the myth *as myth,* mythologies rob myth of its claim to "objectivity," that is, of its claim to represent the world: mythology peels the mask off myth. This too can be represented diagrammatically (Figure 7.6). It is this *three-tiered* semiological system that is adopted by map artists whose intentions are rather explicitly, and more and more so, to question, undo, or dissolve the authority of the map. By appropriating the map whole—rather than as the map does, appropriating the postings—the map artist reveals the map for what it is: a myth.

And appropriate maps artists do, in the earliest examples, completely straightforwardly: Höch and Hausmann simply pasted maps into their 1919–1920 photomontages; Man Ray simply pasted a map into his 1921 photomontage; Schwitters simply glued a map into his 1922 collage; Dalí simply pasted pieces of maps into his 1925 collage; Cornell simply papered his boxes with maps (1936–1972). And this has remained characteristic of much map art into the present. Rauschenberg simply appropriated the maps for *Small Rebus* (1956). Kawara simply photocopied the maps for *I Went* (1968–1979). The only thing Hans Haacke did to the maps he appropriated for *Shapolsky et al. Manhattan Real Estate Holdings, a Real-Time Social System, as of May 1, 1971* (1971) was to circle Shapolsky properties.[170] In the late 1970s "appropriation" became a "formal strategy" adopted by "appropriation artists"—Sherrie Levine, Roberto Longo, Richard Prince—who by reproducing, say, Marlboro advertisements, "defanged pre-existing images by revealing their essential status as free-
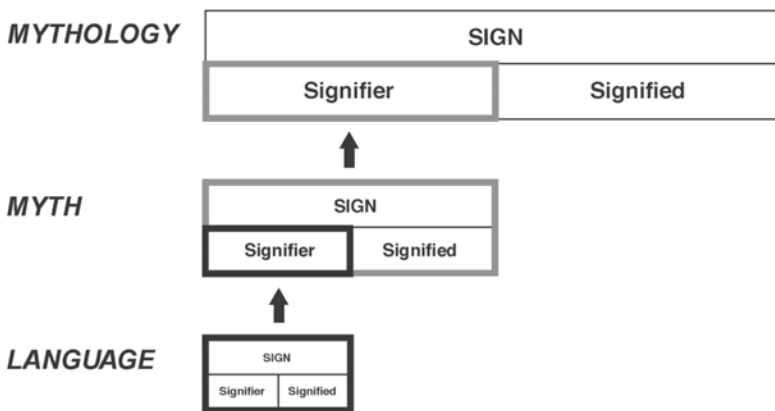
FIGURE 7.6. The structure of Barthean mythology. Signified and signifier are conjoined in the sign, the whole of which is seized by myth to be the signifier in its second-order semiological system. In turn, this is seized by a mythology to be the signifier in its third-order semiological system.

floating representations unmoored from any naïve notion of 'reality,'"[171] but this is exactly what map artists had already been doing for the previous 60 years. And . . . *still are,* as in kanarinka's appropriation of the *City of Boston Evacuation Routes* map in her *It Takes 154,000 Breaths to Evacuate Boston* (2007).[172]

More often, however, map artists *attacked* the maps they appropriated, as if it weren't enough to just defang them. Rauschenberg may simply have appropriated maps, but Johns took the map that Rauschenberg had given him . . . and slathered it with paint: "Johns first painted directly on the mimeographed map—a small crusty grisalle image resulted," Smith says about *Map* (1960).[173] "Crusty" . . . *I love it!* Of course, Johns was working in encaustic so it *was* crusty, but can you imagine that outline map of the United States your teacher handed out in the seventh or eighth grade for learning the states—and okay, maybe it was printed instead of being mimeographed—being slathered with enough wax and pigment to make it *crusty*?[174] Johns probably had little investment in maps. He had previously worked with flags, targets, letters, and numbers and had famously said, "Take an object, do something with it, and then do something else with it." But he certainly didn't want anyone to confuse his *map paintings* with *maps*:

> When I finished [*Map (Based on Buckminster Fuller's Dymaxion Air Ocean World* (1967–1971)], I sent it up to Montreal. Then I went to the fair to look at it. It was the first time I had seen the painting put together. I didn't like it. It just looked like map to me. When I got the painting back—by then I had moved into a large space down on Houston Street . . .—I could look at it altogether and look at it as one thing. I completely repainted it.[175]

David Shapiro quotes Johns, after speaking of Fuller's intentions for the *Dymaxion Air Ocean World,* as saying, "I like to cast doubt on everything," and he points out the way Johns's replacement of Fuller's discursive color code with a random one, and his displacement of geographic names, emphasized the disjunction between model and world. Storr says that what Johns did was to "gesturally unlock and loosen the integrated map conceived by Fuller," in keeping with the "mesmerizing instability" of Johns's other map paintings, where "what balanced design or clear delineation does in the prototype, repeated or abbreviated brushstrokes *undo* in Johns' versions."[176]

Whatever else, Johns's maps are *not* wearing masks of impersonal authority!

When map art *does* assume the mask of impersonal authority, it's only to dress the stage for worse loosenings and unlockings. Nothing could have a more measured or greater mechanical uniformity than Terry Atkinson and Michael Baldwin's *Map not to indicate: Canada, James Bay . . .* (1967), with its clean outlines of Iowa and Kentucky nested within their rectangle, the titular names in caps set flush left. Far from being part of the title the elipsis serves to escape the rest of it, for the title goes on to enumerate another . . . *fifty-five* places the map is not to indicate, including Akimiski Island, the eastern borders of North and South Dakota, and the Gulf of Mexico. Published the very year Johns painted the original version of the Fuller map, *Map not to indicate* could scarcely appear less related, yet it's hard not to notice that coming from their markedly different positions, both manage despite unrelated agendas to skewer the pomposity and pretension of the map . . . with equal élan.

No aspect of the signage the map deploys to establish its authority will escape

seizure by the mythologies of the artists. Every code will be exploited. Does a map of the world attempt to pass as definitive and certain? Then Mona Hatoum will construct her *Map* (1999) by strewing 3,300 pounds of clear glass marbles across the floor of a gallery at the Museum of Contemporary Art in Los Angeles. From a distance the floor seems simply to shiver like the air above a radiator; up close the continents shape-shift with every change of light and threaten to send tumbling any who would dare put their weight on them. Hatoum has rendered the opaque transparent, the rigid unstable, and all that is solid threatens . . . to roll away, especially every pretense of institutional stability, the establishment of which is the essential goal of every national mapping agency.[177]

Surrealist, Pop artist, Fluxus member, Conceptual artist, Earth artist—it doesn't seem to matter. Each will take the map and destabilize it, highlight the myth in some way, attack its surety, its certainty, its utility, its reality, its relevance. Duchamp will pun a map of the United States with the head of George Washington; Oldenburg will stuff a map of Manhattan with kapok; Ono will draw an imaginary map . . . and walk it; Paik will build a map out of TV sets; Boetti will paint it with flags and embroider it; John Baldessari will visit the locations of the C, the A, the L, the I, the F, the O, the R, the N, the other I, and the other A that he finds on a map of California and photograph the letters in situ;[178] Smithson will cut the heart out of a map and display the edges; Hiller will ask people to sleep inside mushroom fairy rings and map their visits to fairy land; David Wojnarowicz will collage maps on a manequin of a young boy and set it on fire;[179] Nina Katchadourian will cut the land and water from a subway map of New York and photograph the jumbled skein in the palm of her hand.[180]

Here there is no interest whatsoever in maintaining any kind of footing in the world of maps. The map is being picked up and shaken to see what falls out, and though no piece of map art fails to do this, this is not to say that map artists don't do other things with maps. They do. Map artists are people, after all, who use subway maps to get around and atlases to understand the news and weather maps when making plans. They may even use maps in multiple ways in their art—Christo and Jeanne-Claude are a perfect example—but after being shaken and cut up and stuffed and punned and embroidered and set on fire, no map can ever again wield the authority it claims: its mask has been taken off and though the map may put it back on, we've all seen the face it's hiding.

Through the scrim of map art the complexion of other counter-maps comes to seem more complicated; their interest in staying in the world of maps less certain, more ambiguous; their critique of the map more akin to a mythology and less that of a supplement or replacement myth. This is especially true for those artists whose practice includes the making of other kinds of counter-maps as well.

Lize Mogel

Lize Mogel is an artist who makes counter-maps; she's a counter-mapper who's an artist. Take her *Mappa Mundi* (2008), a map mash-up making connections, improbable on a globe, between the North Pole, the 1915 San Francisco World's Fair (The Panama–Pacific International Exposition), the Panama Canal, the Northwest Passage, the San Francisco mothball fleet, and ship breaking sites in Pakistan, India,

Bangladesh, and China (Figure 7.7). Playing with location, scale, figure-ground relationships, and color, Mogel's *Mappa Mundi* is part of her ongoing exploration of the relationship between world maps and World Fairs. This is also the subject of *From South to North* (2006), a mash-up that's in the *Atlas of Radical Cartography* Mogel edited with Alexis Bhagat. *Area of Detail* (2008), which Mogel did for the Overgaden space in Copenhagen, zooms in on the small blue region at the heart of the United Nations emblem, that is, on the Arctic Circle, site of looming territorial disputes and what's soon going to be . . . a Northwest Passage. Yet at the same time Mogel's a counter-mapper. Her *Public Green* (2001) was a bilingual poster-map of publicly accessible green space in Los Angeles that drew attention to how public green space was acquired, created, and maintained. The map—it's huge—hung in city buses and transit shelters throughout Los Angeles and spun off the 2002 SCI-Arc map art show that Mogel curated with Chris Kahle. Mogel's *Privatization of War* (2006) can be thought about as a counter-map too, though it's far less straightforward than *Public Green. Migration Routes of the Wood River Valley* (2007) really straddles the line between counter-map and map art, though it's as easy to imagine it occupying the space *between* them. This is the community mapping project I mentioned in

FIGURE 7.7. Lize Mogel's *Mappa Mundi* (2008). The large white shape, center right, is San Francisco, site of the 1915 Panama–Pacific International Exposition. The black shape below it is Panama. As it says on so many maps these days, scale varies in these views. (*Source:* Lize Mogel)

connection with the map art show at the Sun Valley Center for the Arts, in which Wood River Valley residents, workers, visitors, and others mapped the migration of Native Americans, mining and railroad industries, sheepherders, domestic workers, second-home owners, and wild animals. With its productive mix of curatorial and editorial activity, counter-mapping, and map art, Mogel's practice is one paradigm for an exciting future.

kanarinka

kanarinka (Catherine d'Ignazio) is another artist pushing the boundaries of a whole range of established practices with the added attraction of a powerful performance dimension. Like Mogel, kanarinka is deeply committed to collective and collaborative action, especially within the framework of iKatun, an artist-run organization kanarinka directs with Savic Rasovic.[181] iKatun is engaged in a range of activities only some of which involve maps (e.g., it co-curated the 2006 psychogeography Conflux in Brooklyn). Among map art projects, iKatun has supported kanarinka bot's *42 or 363 Definitions of Cartography* (2004), a book containing kanarinka's "Limits of Cartography" and J. H. Andrews's "Definitions of the Word 'Map,' 1649–1996." You can order the book online or download it for free (at *Lulu.com*).[182] iKatun also supports the Institute for Infinitely Small Things whose *The City Formerly Known as Cambridge* (2008) I discussed in Chapter 6 as an example of a genuine public participation geographic information system. A few pages ago I referred to kanarinka's *It Takes 154,000 Breaths to Evacuate Boston* (2007) as a map art piece, and while kanarinka did appropriate the *City of Boston Evacuation Routes* map, she also ran the entire system, capturing the sound of her breathing (which is also part of the piece) and so measuring the system's length in human breaths. Another map project was *12 Inches of Weather* (2007), a series of drawings in which kanarinka mapped the movement of perspiration across her body (Figure 7.8). kanarinka also writes about map art. Her "Map-recipes and Body-Ovens: Entries for a Psychogeographic Dictionary" appeared in *Cartographic Perspectives.* Her "Art & Cartography" is forthcoming in Elsevier's *Encyclopedia of Human Geography*.[183] This mix of critical writing, performance, map art, publishing, collaboration, counter-mapping, arts administration, and so on, is another model for practice.

3Cs

Both Mogel and kanarinka have participated in the activities of the 3Cs, the Counter-Cartographies Collective associated with the University of North Carolina at Chapel Hill. The 3Cs is a social movement, mapping group, and research project carried out by John Pickles and some students from a number of disciplines. I had originally intended to write about the 3Cs in Chapter 5, after the Parish Maps Project, because the 3Cs are really committed to counter-mapping; but there's something so right about slotting them here among the map artists because their *disOrientation* (Figure 7.9) is really a great piece of map art.[184] Created by Tim Stallmann, Craig Dalton, Sebastian Cobbarubias, Maribel Casas-Cortes, Liz Mason-Deese, Lauren
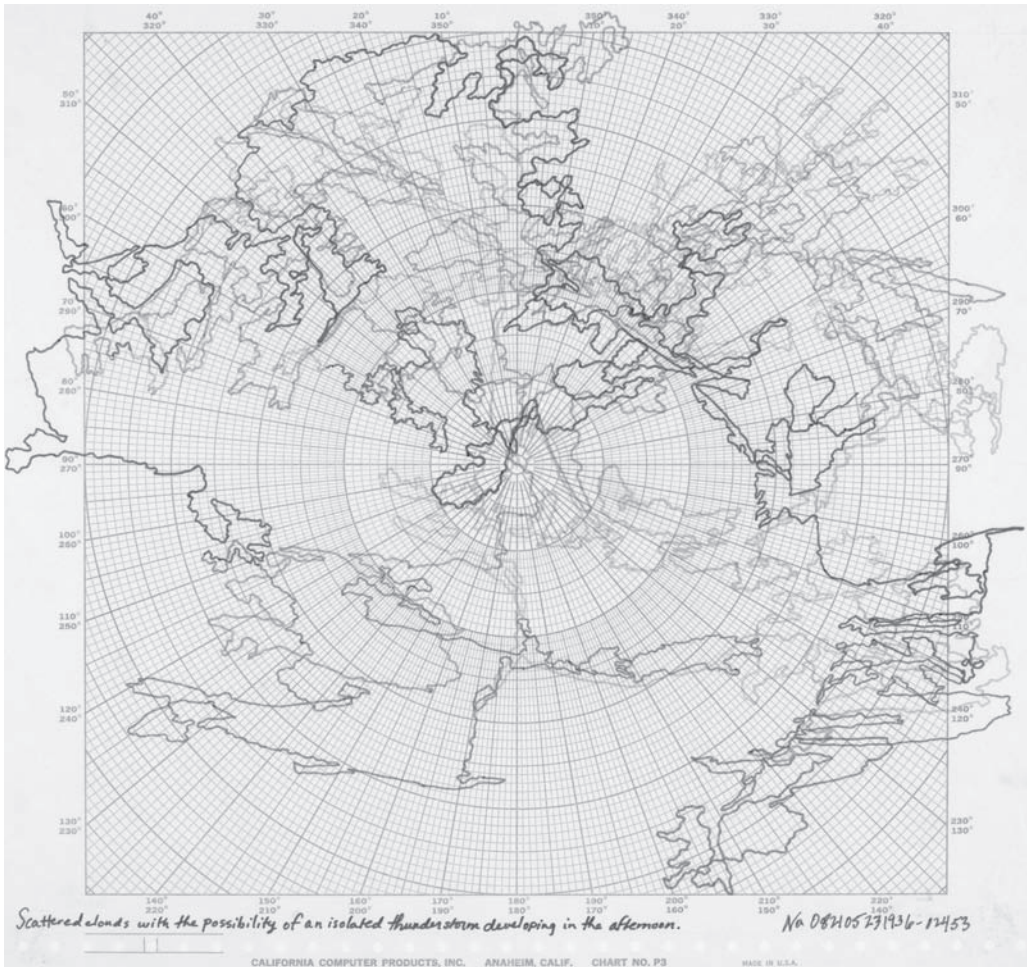
FIGURE 7.8. kanarinka's *Scattered clouds with the possibility of an isolated thunderstorm developing in the afternoon*, from kanarinka's *12 Inches of Weather* (2007), mapping the movement of perspiration across her body.

Rosenthal, and others, the map has a brilliantly effective design that makes the point better than pages of argument that design has to be driven by the motivation to *make meaning*, not just look good, even as it makes the point that maps packed with meaning can look great, even sexy. At the same time the mix of maps—ranging from an azimuthal equidistant projection centered on Chapel Hill's antipode, through a map of the area's knowledge factories (such as Glaxo Smith Kline, but including UNC, Duke, and NCSU), to a large-scale map of "Dangerous Places for Pedestrians"—critiques the idea of maps even as the maps embody it. Work at this level of complexity calls into question all the facile categories of map, counter-map, and map art. (A second, wholly revised edition of their map, was released as this book was going to press.)

FIGURE 7.9. The 3Cs' *disOrientation*. This radical improvement on the usual campus orientation map critiques the idea of maps even as its powerful mix of maps embodies it. (*Source:* 3Cs)

Lauren Rosenthal

Lauren Rosenthal may have worked on *disOrientation,* but she usually works in a significantly different register, for the past several years mostly with rivers. She might even think about herself as a river artist but, as distinguished from other river artists (Betsy Damon, Buster Simpson, Billy X Curmanow, Steven R Holloway), Rosenthal's work typically takes map form. In fact, she talks about herself using GIS "to create counter-mappings of possibility and critique," but she makes her counter-mappings out of mud, watercolor paper, pins. For *Haw River Drawing #1* (2005) Rosenthal collected and ground sedimentary rocks from the Haw watershed, mixed the resulting pigment with water from the Haw, and brushed it onto the gallery wall—the drawing's wall-sized (Figure 7.10)—where she used further water to erase/draw the entire Haw system: "This is how the river makes its mark on the landscape as well," Rosenthal writes, "cutting a line through the earth with its waters." *Point/Source #2* (2005) maps, at an equally large scale, the intersection of the river system and the highway

FIGURE 7.10. Lauren Rosenthal working on *Haw River Drawing #1* (2005). Having painted the gallery wall with pigment ground from Haw River rock, here Rosenthal uses Haw River water to erase/draw the Haw River System. (*Source:* Lauren Rosenthal)

network by sticking red map pins—Rosenthal thinks about the intersections as open wounds—directly into the gallery wall wherever a road crossed the river. These wall-sized pieces are knockouts, but her best thing so far is *Political/Hydrological* (2006), a large, limited-edition atlas—it opens to 24 inches by 38 inches—in which Rosenthal remaps U.S. states around watersheds in 51 gorgeous plates (Figure 7.11). In turn these spawned a series of prints. Recently, Rosenthal's been working with the Delaware, producing a large wall-hanging sculpture, *River Anatomy: Delaware* (2008), made of cut paper, and a series of smaller reliefs of parts of the watershed, also out of paper. Unapologetically siting herself in a fine art tradition, Rosenthal argues "that beauty can act as a convincing seductress" to capture the attention of an audience that might otherwise wander elsewhere, apparently a tactical orientation but one with profound strategic implications.[185]

elin O'Hara slavick and Susanne Slavick

elin O'Hara slavick is another map artist who has frequently referred to beauty as a lure, though where Rosenthal is attempting to seduce us into thinking about the role of rivers in our lives, slavick is trying to get us to deal with our complicity in the bombings the United States has perpetrated, *Bomb after Bomb,* as the title has it of her atlas of places the United States has dropped bombs on (Figure 7.12).[186] slav-

FIGURE 7.11. *Kansas/Republican, Smoky Hill, Kansas,* from Lauren Rosenthal's *Political/Hydrological* (2006). Here Rosenthal has remapped Kansas around the Kansas River watershed. (*Source:* Lauren Rosenthal)
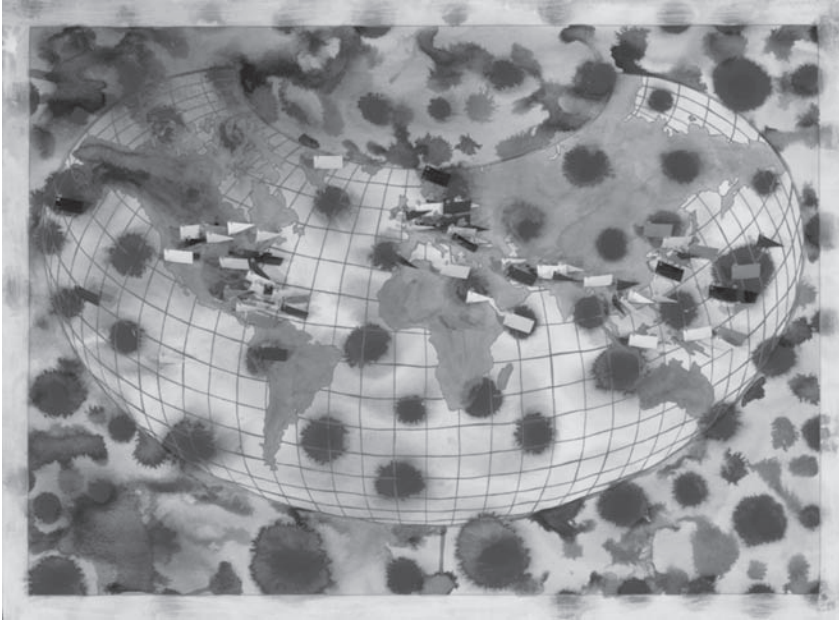
FIGURE 7.12. elin O'Hara slavick's *World Map, Protesting Cartography: Places the United States Has Bombed, 1854–Ongoing* (2000–2006). Flag pins mark the bombsites slavick has rendered in her drawing series. The map functions as a kind of index to her project, and so as an index to the United States' long-term mania for bombing.

ick has said she makes her drawings beautiful "to seduce and trap the potentially apathetic viewer, so that she will take a closer look, slow down, and contemplate the accompanying information that may implicate her," information slavick has amassed not only about the U.S. bombing of Pakistan, Afghanistan, Iraq, Vietnam, Cambodia, and Laos, of the Philippines, Japan, and Korea, of France, Poland, Austria, and Germany, not only about our bombing of Peru, Guatemala, Nicaragua, Haiti, and Grenada—among so many others—but our bombing of Utah, of New Mexico, of Nevada, of Alaska, of Puerto Rico, of . . . the house occupied by M.O.V.E. in . . . downtown Philadelphia.[187] slavick begins her maps by dropping ink or watercolor onto wet paper, "like bloodstains on damp clothing," she's said, though Carol Mavor has observed the way the dropping of the ink is "an echo of the senseless repetition of dropping bombs."[188] For slavick the bleeding is also about how bombs fail to confine themselves to their targets, the bleeding calling into question not only the presumption of targeting's "pinpoint accuracy," but the claims to *meaningful* accuracy of the entire cartographic project.[189] Yet the map per se is a contingent involvement for slavick, one inescapable given her sources and their generally aerial perspective; and while she *is* committed to "disengag[ing] these places from authority's clenched fist," ultimately slavick sees her maps as "antirecruitment posters; protests against bombing; a propaganda campaign against war; a blatant critique of U.S. foreign policy and activities."[190]

Best known as a photographer, slavick came to painting as a result of her ongoing struggle with the problematic nature of photography. slavick's sister, on the

other hand, Susanne Slavick, has long been known for her painting, which she has taught at Carnegie Mellon since 1984 and which has involved the map since 1980. Over the years her work has evolved from aerial views of invented topographies, through the manipulation of graticules popularized by 16th- and 17th-century mapmakers (Slavick is especially attracted to the cordiform maps of Mercator and Waldseemüller that enable her to allude to the body, and so to the world as body and the body as world), to work influenced by Gulf War battle plans. In the mid-1980s Slavick began to explore the political and ideological implications of maps, investigations crystallized in a series of brilliant drawings, *Discipline of Geography* (1988). In these drawings, grids hover over or float down toward evocatively rendered landscapes like smothering blankets or gigantic birds of prey, grids that on closer examination reveal themselves to be knit out of . . . chain-link fencing (Figure 7.13). In the early 1990s Slavick began to feminize the graticule, confronting the analytic-rational with the intuitive.[191] "Sinuous braids drift or languish over the barely visible grid" in *Sorority* (1993), while in *Teasing the Measure* (1995) "the world map assumes the shape of a feminine cloak with looping braids" entangling the grid's rectilinearity.[192] In *Pretty Lies* (1995) the braids that unravel from a pair of projections transform themselves into forked tongues that speak of "the falsity of the maps' presumed objectivity." Slavick has also worked with map gores and medieval mappaemundi. Reversing her sister's turn from photography to maps, recently
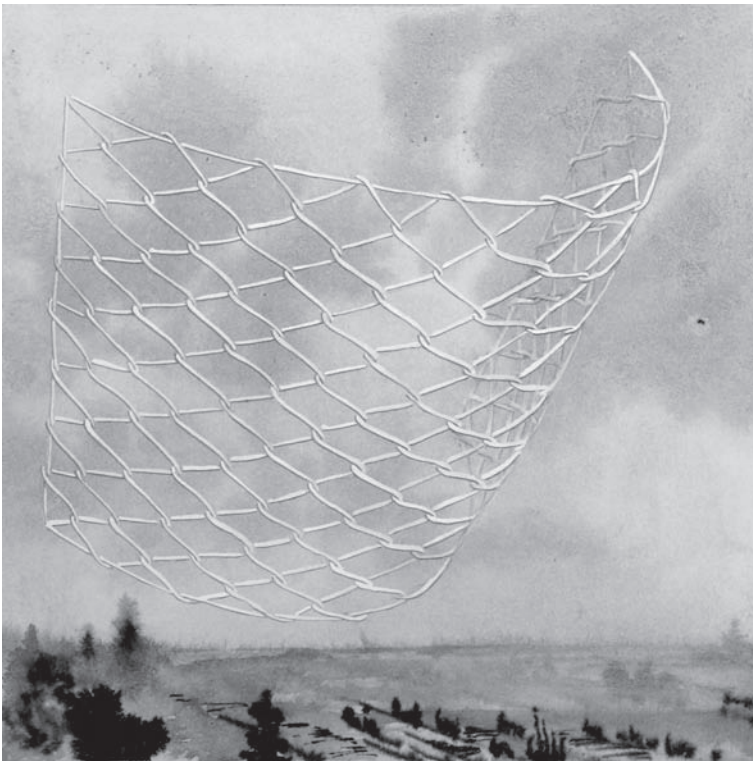
FIGURE 7.13. Susanne Slavick's *Discipline of Geography* (1988). Here, a geographic grid, hovering over the landscape like a smothering blanket, is seen to be knit from chain-link fencing. (*Source:* Susanne Slavick)

Slavick has turned from maps to war photography, which she "restores" in paintings such as *Reconstruction (Magenta Beirut Bridge)* (2008).

Lilla LoCurto and Bill Outcault

If Slavick uses cordiform projections to *suggest* connections between the body as world and the world as body, Lilla LoCurto and Bill Outcault have taken a dramatically more direct approach.[193] They project *themselves* . . . into the world (Figure 7.14). They do this by putting themselves, unclothed, into three-dimensional wholebody scanners, and then using map projections to transform the output into such chromogenic prints as *Bipolar Oblique BS1sph(8/6)7_98, Gall Stereographic L8sph(8/8)7_98, Kharchenko-Shabanova BS1sph(8/6)7_98,* and other . . . *maps? body-maps? images?* in the artists' series, *selfportrait.map* (all 1999).[194] The earth and the body have immemorially been taken as metaphors of each other, but here the comparison is not only unavoidable, *it's critical.* If LoCurto's and Outcault's bodies are unfolded and splayed out in projection, then this is *exactly what happens to the earth.* Their bodies' distortions bring us to a renewed awareness of the violence the map does to the globe, forcing us to keep in mind how cruelly the earth is *squashed* into a map. Subsequently, LoCurto and Outcault realized their body-maps as contours and then began to manipulate the horizontal layers individually as in *Essay of a Thousand Layers* (2003) and in their series *thinskinned* (2004). Here the layers have turned into ribbons of flesh, and the body has been dissolved into a handful of confetti. Finally these have resulted in multichannel animations like *scribble in the air* (2006) and the series *timeline* (2006). While with these images we may seem to have left any contact with the world of the map, in fact these remind us that the world of maps too is a multiperspectival one that splinters the world into . . . literally . . . billions of glittering shards.
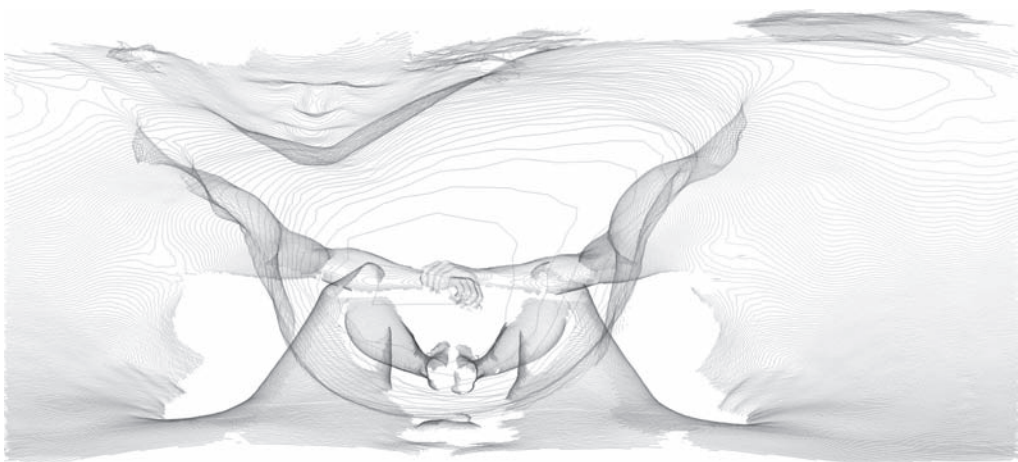
FIGURE 7.14. Lilla LoCurto and Bill Outcault's *topo_bs1* (2004). The distortion, here, of Bill's body brings us to a renewed awareness of the distortions done the globe in *any* projection . . . among many other things. (*Source:* Lilla Locurto and Bill Outcault)

Simon Elvins

While few of these artists limit their practice to mapmaking, making maps is an unusually small part of the practice of British artist Simon Elvins. But two of his maps, *Silent London* (2005) and *FM Radio Map* (2006), really draw attention to themselves. In *Silent London* Elvins used information the British government collected on noise levels to post London's quietest areas in a blind embossed etching. This inkless map of quiet havens reveals a side of the city that normally goes unnoticed, or unheard. You cannot believe how beautiful this map is.[195] Elvins's *FM Radio Map* (Figure 7.15), another in his series exploring the relationship of sound to print, plots the location of FM commercial and pirate radio stations within London, the pirate stations, since they move around to escape the law, as dots within interesting kidneyoid shapes. While the map is stunning in its stripped-down purity, what makes it remarkable is the tuning diagram etched in conducting ink on the map's backside (Figure 7.16). When connected to a modified radio with alligator clips, the map becomes an integral part of the radio's interface, in effect a geo-tuner: putting a metal pushpin onto a given station allows the map user to hear the sound broadcast live from that location, and this makes the map uniquely . . . *site specific*.[196] Elvins has also used details of the time and place of photographs he took to cre-

FIGURES 7.15 and 7.16. Simon Elvins's FM radio map. This site-specific map plots the location of FM commercial and pirate radio stations within London. Power lines are drawn in pencil on the back of the map which conduct the electricity from the "radio" to the front of the poster. Placing a metal pushpin onto each station then allows one to listen to the sound broadcast live from that location. It's realized as a screenprint in an edition of 20. (*Source:* Simon Elvins)

FIGURE 7.16

ate an intriguing map of his movements in New York in *Photo Document New York* (2008). Elvins's maps lay bare the surprising paucity of imagination with which the map's possibilities for art have been approached and suggest—how is it put at the end of a master's thesis?—directions for further research.

Steven R Holloway

Finally, perhaps an even rarer *rara avis,* a map artist who's a practicing mapmaker, Steven R Holloway. Holloway, like Rosenberg, is all about rivers, which he maps in ways various enough to make most mapmakers' eyes water (Figure 7.17), in a staggering number of prints, several of which have graced covers of *Cartographic Perspectives.*[197] Holloway is also a polemicist whose recent broadside, *Right MAP Making* (2007), "is intended to articulate the fundamental principles of ethical conduct in mapping and maps and to stimulate 'right action.' "[198] Invoked are "five ways to make maps for a future to be possible," which among other things call for reverence, generosity, commitment to the relationship to the place, and deep listening through direct contact. Unimpeachable calls, any one of them renders mapmaking as it's practiced today impossible. Reverence, for example, calls for mapping "in a manner non-harming, with reverence and respect"; generosity for only the "mapping of that which desires to be mapped, and shared, not taking into map form that which does not belong to us"; while commitment to the relationship to the place calls for resisting "the temptation to map places with which we have no intimate or committed relation." One wants to say, "but of course, how else?" and so sweep away, among so much other trash, the mapping of colonies, mapping for new super highways, zoning maps, the maps of developers, and maps of military targets.

Ethical mapmaking: *indeed!*
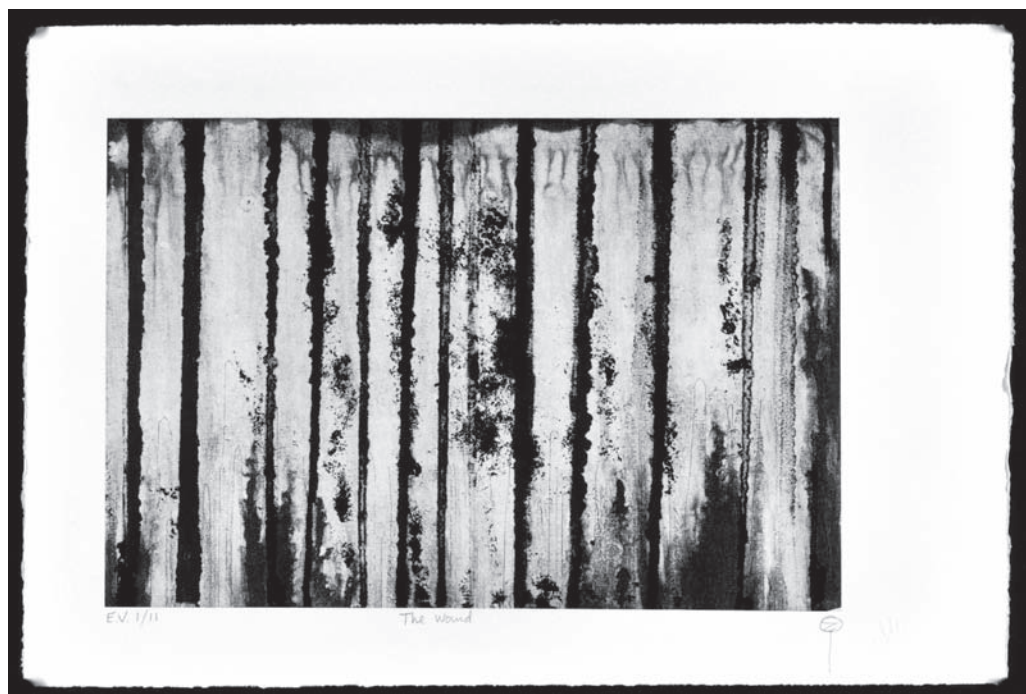
FIGURE 7.17. Steven R Holloway's *The Wound,* which maps a network of creeks between Berkeley and Oakland that flow southwest from the Oakland Hills into San Francisco Bay. Today, they're collectively known as the East Bay Municipal Utility District and are accessed by way of cylindrical cast-iron coverings except when their waters are running straight down the asphalt streets to the sea. Holloway's title refers to the bleeding of life from this once complex, dynamic system that begs to once again be day-lighted. (*Source:* Steven R Holloway)

Mapmaking, Counter-Mapping, and Map Art in the Mapping of Palestine

Mitch and I were lost. No surprise. We were in the Valley of the Destroyed Communities, a maze, a labyrinth, a garden of stone. Walls of hewn blocks of Jerusalem stone, incised with the names of 5,000 Jewish communities destroyed by the Nazis, rise 30 feet to narrow bands of sky fringed with trailing vegetation. The names are deeply carved. The letters draw your fingers into them. You caress the names. Reteag. Gherla. Targu-Mures. Lunca-de-Jos. Vilna. The names are cut three times, in their original language, in Hebrew, and in English. Ahead the way grows dark, but around the corner light slashes across your path. The stone glows. It is stained by plants, by water. There are tunnels, arches. And more names. There are always more names. You sit on the great slabs left as benches and try to take them in. You cannot. There are too many of them.[1]

The Valley of the Destroyed Communities is the culmination of a visit to Yad Vashem, the great Israeli memorial to the Shoah, the Holocaust, the Nazi effort to exterminate the Jews of Europe. The beautiful museum is a vast machinery of remembering, of relentless documentation. In the Hall of Names thousands of notebooks—they seem too many to take in—record the names and biographical details of only half the 6 million Jews the Nazis killed; in the Children's Memorial an infinity of candles and a ceaseless recitation of names recall the one and a half million children murdered; here in the Valley of the Destroyed Communities the spires of stone memorialize the neighborhoods, the villages, the whole towns the Nazis emptied, burned, bombed, bulldozed . . .

Yet this overwhelming act of remembering is simultaneously an act of forgetting, for the Valley of the Destroyed Communities—and the rest of Yad Vashem—has been built on lands of the Palestinian community of Ein Karem on a slope that rose above the village.[2] The hilltop stands directly across the Wadi er Ruwas from

the town of Deir Yasin whose inhabitants the Jews massacred only a couple of years after the revelation to the world of the horrors of the Holocaust.[3] There may be no memorial in Deir Yasin, yet still the world knows of the massacre. Of the fate of Ein Karem there is barely any memory at all. In an interview conducted last year, an elderly woman recalled:

> Ein Karem was a very old city where Muslim and Christian people lived. The Jewish people came in 1948. They were shooting. We left because it was dangerous to stay. I was 13. We escaped in the morning. We went on foot because there was no transportation. We left everything behind. My brothers were babies and we carried them.[4]

The name of Ein Karem is not inscribed on the stone spires in the Valley of the Destroyed Communities, although the dispossession, the dispersal, the destruction of the *community* of Ein Karem took place *right there* and not on another continent hundreds and hundreds of miles away.[5] You think at least there'd be a plaque, "Here lived the community of Ein Karem whose lands we seized to build this memorial to the Holocaust," some sign that the *very act* commemorated in the inscribed stone labyrinth was perpetrated into order to build it.

But then maybe irony's not a tone easy to carve in stone.

The Jews call the genocide carried out by the Nazis the Shoah, the Calamity. The Palestinians call the ethnic cleansing carried out by the Jewish colonialists the Nakba, the Catastrophe.[6] Neither can be forgiven. Neither can be forgotten. But while the Shoah is beginning to solidify into a fact of history, the Nakba continues to unfold around us, to some degree simply because it has never been acknowledged for the catastrophe it was. This will never happen without an unambiguous image of the landscape before 1948, and this need may explain why the most significant monument raised to the Nakba so far has been the monumental *Atlas of Palestine 1948*.[7]

It's fitting that maps should be the medium for the recovery of this lost world since they were so instrumental in its loss.

The Early Mapping of Palestine

As we know from the first chapter, maps are called into being as tools of statehood, and since statehood is insignificant in the early history of Palestine it can occasion little surprise that the region was little mapped, yea! and this despite the fact that as the Holy Land, Palestine was the focus of the concentrated attention—to put it mildly—of Jews, Christians, and Muslims. In fact, the mapping of Palestine is a paradigm of the history of mapmaking; but since it's also the object of counter-mapping and counter-counter-mapping, and an obsessive subject of map art, it makes a uniquely trenchant example around which to review the arguments of this book.

Indeed, despite its attractions, premodern maps of Palestine are all but nonexistent, and in every case they're problematic, their character, meaning, and functions hotly contested.[8] The so-called Madaba mosaic map is a case in point. In an essay in the *Atlas of Israel,* Michael Avi-Yonah called the Madaba mosaic "the earliest original cartographic testimony representing the Land of Israel," but if there's anything about the mosaic we can be certain of, it's that it's not a map of the Land of Israel.[9] Laid out in the mid-sixth century CE on the floor of a Byzantine basilica

in the Old City of Madaba, the 2,000-square-foot mosaic displayed, in a sort of bird's-eye view from the Mediterranean, emblematic vignettes of the major cities of the Near East from Antioch, maybe even from Constantinople, to Alexandria, along with obvious features of the landscape.[10] It has long been assumed, in P. D. A. Harvey's unequivocal words, that the mosaic's "purpose was clear: to illustrate biblical history," and equally that it was based on the by-then 200-year-old *Onomasticon* of Eusebius.[11] In the light of contemporary scholarship neither assertion can any longer be maintained, that is, in the cautious words of Pierre-Louis Gatier, "Avi-Yonah's reconstruction is very doubtful."[12] For example, fewer than 20% of the 150 items located on the Madaba mosaic can be found in the *Onomasticon*, and in the recent words of G. W. Bowersock, "A comparison with overtly instructive material from the Bible presented for the edification of churchgoers demonstrates just how far removed the Madaba mosaic is from any such purpose." As he adds elsewhere, "In fact, what is striking about the Madaba map is the wealth of information it provides on settlements that have no biblical resonance whatever. This is a record of the contemporary world."[13]

This change in perspective is largely a tribute to an enormous expansion in the corpus of late-antique mosaics from the Near East, and a corresponding shift in focus from a history of cartography *desperate* for examples of "maps" from the period to a history of the region during the long era of peace that settled on it following the suppression of the Revolt of Bar Kokhba in the waning years of Emperor Hadrian:

> What secured the relative tranquility of the region was its extraordinarily mixed culture. Many religions and many peoples cohabited together and shared Hellenic traditions they had all inherited. The diversity of the population on the ground is fundamental to understanding the world that the mosaics have exposed. From the beginning the ancient Near East was a land of Arabs of various kinds, both nomadic and sedentary, literate and illiterate, and, at the same time, of Jews of various kinds,

all, thanks to Alexander, infused with Hellenic culture, and later the Latin culture of the Romans which, like the Hellenic, was originally pagan but following the conversion of Constantine, Christian, and, when the Madaba mosaic was made, actually centered in Constantinople.[14] Seen from the perspective of the mosaics, the "Madaba map" is better thought of as a snapshot of the then contemporary world in all its wondrous tolerance and coherence. "The late-antique Near East," Bowersock has concluded, "was a kind of miracle, and its like has never been seen in that region again."[15]

Was this mosaic-picture of the late-antique Near East a map? Harvey calls bird's-eye views like this "picture-maps"—which is how he treats the Madaba mosaic—and Bowersock, who casually refers to it as a map, also refers to as a "document," a "record," a "mosaic," and is always careful to characterize the images of the cities as "vignettes." I point again to the lack of much by way of a mapmaking tradition from which the mosaic might have emerged or to which it could have contributed. The idea that Eusebius might have made a map on which the mosaic was based has, I think, been thoroughly demolished, and the hope that the mosaic might prove to be behind late-medieval European maps of the Holy Land abandoned.[16] *Could* it have contributed to the future development of a mapmaking tradition? From

Madaba? On the floor of a Christian basilica? And one soon to be buried? What do you think?

   Again we're in the presence of a "sport," some sort of one-off, an achievement, in any case, which could have led in dozens of different directions. However this may be, the mosaic *is* the earliest in a sequence that staggers incontinently toward the 19th century, here, a schematic diagram of Jerusalem by a crusader, c. 1190; here a mid-13th-century diagram-map of the Holy Land by Matthew Paris, an English monk; here an early 14th-century map by Pietro Vesconte; here the 15th-century maps accompanying William Wey's accounts of his travels; here the 1475 map from the *Rudimentum Novitiorum* (Figure 8.1); and here the 1486 "map"—really the *landscape panorama* – illustrating Bernhard von Breydenbach's travels through the Holy Land.[17] *It doesn't take all the fingers of two hands to count these "maps."* Do they
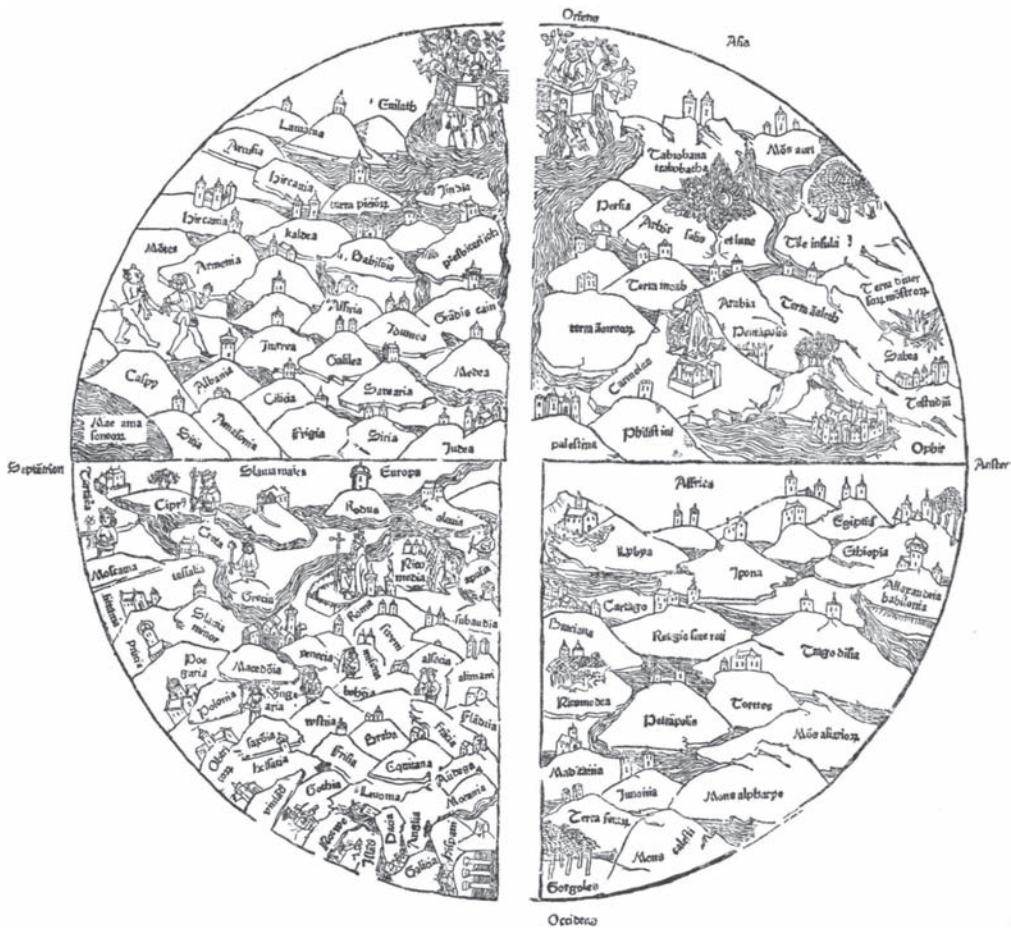
FIGURE 8.1. World map from the *Rudimentum Novitiorum.* This may be the first world map printed in Europe (1475), and it closes a thousand-year history of wrapping geographical thought around the Bible. The top half of the map posts Asia, the lower left Europe, the lower right Africa. Judea and Palestine lie in Asia in the diagram-map's center. The *Rudimentum* also included a map of Palestine itself, with Jerusalem enclosed in *circular* walls. (*Source:* A. E. Nordenskiöld's *Facsimile-Atlas*)

constitute a tradition? Harvey says, "It would be of great interest to know how far the various medieval maps of the Holy Land are related to each other."[18] *How far?* It would be of great interest to know if they were related at all!

Nor does Palestine cut much of a figure in early Islamic mapmaking. It's a dot on Islamic *mappaemundi* of the world—as indeed it is on contemporary counterparts from elsewhere—and a smudge along the eastern edge of late-medieval charts of the Mediterranean; but there seem to be no early Islamic maps of the region. Ahmet Karamustafa notes that while Islamic savants achieved great sophistication in developing the mathematical and astronomical bases of geography, "little or no attempt was made to translate the existing theoretical knowledge into cartographic practice," and that the extraordinarily rich geographical literature rarely took any sort of graphic form. He points out—and I think this applies universally—that

> on a general level, one might observe that the expectation that cartographic practice should accurately and fully reflect cartographic speculation is not well grounded in history. There is no reason theory and practice should go hand in hand. More specifically it is crucial to note that theoretical sophistication, even where we retrospectively find it very relevant to cartographic practice, was not necessarily, or even primarily, directed toward producing maps. Thus, much of what can now be identified as the theoretical basis of cartographic practice was never seen in this light by Muslim astronomers, geographers, and cosmographers. They dealt with cartographic issues as natural parts of a wider intellectual curriculum valid for their time, not as parts of a unified cartographic discourse motivated by the aim of producing maps,[19]

as was also true for the savants, priests, and similar others in Europe, South Asia, China, and Japan.

So . . . what are we talking about? One "map" of Palestine *a century*? If we discount the maps of the crusaders and the maps theirs led to—like those of Matthew Paris—the region itself coughed up but a single "map," and this early on, in the form of a gigantic mosaic on the floor of a basilica in the second-tier town of Madaba. It is, in effect, exactly what we should expect before the emergence of modern nation-states with their handmaiden maps.

The Early Modern Mapping of Palestine

Palestine's situation has been that of a colony, a dependency, a vassalage from . . . *way back*. Though the area had been in Roman hands since 63 BCE, Hadrian was the first to call it Palestine, in 132 CE, following his suppression of the Bar Kokhba Revolt; and Palestine was governed as a Roman province—though administration shifted from Rome to Constantinople—until a brief Persian occupation in the early 7th century. This was immediately followed by the rule of Arab caliphs, initially Damascene Umayyads, then Abbasids out of Baghdad, Egyptian Ikshidids, Tunisian Fatimids, and finally, in the late 11th century, Seljuk Turks from Isfahan. At that time Palestine passed into the hands of the European Crusader kingdoms, which lost it to the Mamluks ruling from Cairo, 1250–1517, who in turn lost it to the Ottoman Turks who held onto it, with only minor interruptions, until the end of World War I. At that point Palestine became a British Mandate of the League of Nations. Colonization begun by European Jews in the late 19th century accelerated

after Britain's Balfour Declaration and under the Mandate. Following World War II these Jews launched a war of conquest—the so-called 1948 War, the Nakba—killing and expelling Palestinians from lands they had lived in for centuries, Palestinians resident today in refugee camps in Lebanon, Syria, Jordan, Egypt, the Palestinian West Bank, and Gaza, which two remaining pieces of Palestine have been under Israeli rule since the 1967 War.

I offer this sketch not to ignore earlier occupations by the Egyptians, Persians, and Greeks, or even the periods of ancient Jewish rule however brief (the Kingdoms of Israel and Judea, that of the Hasmonean Dynasty), but to stress the point that since the territory in question has been called Palestine—which it has been for most of its recorded history[20]—it has been some sort of colony, some kind of province, until, that is, the establishment of the State of Israel and the parallel development of Palestinian nationalism; and that therefore we should expect to see whatever mapping was done to have been carried out by imperial powers until the creation of the Israeli state, when we should expect to see the full flowering of the map in its service.

This is in fact precisely what we do see.

Thus the 16th century does see maps made of Palestine—and in the comparatively large numbers we've come to expect of the early modern period—but they're made by the Venetians (for example, Bernardus Sylvanus, 1511), the Dutch (among others, Mercator, 1537, Willem Blaeu, 1542, Abraham Ortelius, 1584), and the English (Humphrey Cole, 1572, John Speed, 1592), each with extensive colonial interests that in the case of the Dutch and English were expanding rapidly; and these practices continued through the 17th (Thomas Fuller, 1650, Abraham Bar-Jacob, 1695) and 18th centuries (Johann Homann, 1707, Adriaan Reland, 1714, Jean Baptiste Bourguignon d'Anville, 1771). If the first map in this sequence, the 1511 Sylvanus of "Quarta Asiae Tabula," is still firmly indebted to Ptolemy's *Geographia*—that is, to the writings of a second century Hellene—later maps are gradually modernized until, in his 1714 *Facies Palestinae ex Monumentis Veteribus Illustrata,* Reland produced a map independent of both Greek and biblical traditions.[21] It didn't supplant them, however, at least not the mapping of biblical stories that remained—and remains—a staple in the religious book trade.[22]

As the 18th century waned, Palestine began to be more frequently mapped by official agencies of the British, French, and Russians as these found the region increasingly central to their interests, not only with respect to their mutually conflicting ambitions but to the Ottoman Empire. With its 29 provinces and numerous vassal states sprawling over three continents, this empire had never construed itself as a modern state, and its mapping practices confirm this. Cadastral surveys remained verbal, as did the adjudication of property disputes. Not even its sophisticated network of couriers and posting-stations was mapped. "Many areas of administrative practice where one could expect to find signs of map use seem to have been innocent of the manifold uses of cartographic representation," is how Karamustafa puts it, while with respect to Palestine Dov Gavish simply notes that "in the Ottoman period, even in its later years, no central authority existed for directing the mapping of Palestine," at least not until 1909.[23] Consequently, mapping was something carried out by the empire's perpetually mutating adversaries and allies. British military intelligence, for instance, began mapping the Gulf of Aqaba in the middle of the 18th century, and it did so again at its end; while in the early 1770s the

Russian navy began charting Palestine's Mediterranean coast.[24] It was the French, though, during their 1798–1799 invasion of Egypt, who made the most impressive maps of Palestine, Pierre Jacotin even triangulating a strip along the coast. The six large sheets at a scale of 1:100,000 were published in 1810.[25]

Official dominance became still more marked during the 19th century.[26] While private and commercial mapping continued (F. W. Sieber's map of Jerusalem, 1818; Frederick Catherwood's map of Jerusalem, 1835; L. Félicien J. Caignart, Baron de Saulcy's map of the Dead Sea, 1853; Heinrich Berghaus's map of the Negev, 1839; C. W. M. van de Velde's maps, 1850s; and so on), official mapping exploded. During the 1840s British navy surveyors worked the coast as the Royal Engineers worked the interior (J. F. A. Symonds, Ralph Carr Alderson, C. F. Skyring, Charles Rochfort Scott, and others). In 1848 W. F. Lynch commanded a U.S. navy expedition that mapped the Jordan Valley and the Dead Sea. The French were active in the region throughout the middle of the century. Once construction had started on the Suez Canal, the British Admiralty's A. L. Mansell resurveyed the coast, as the Royal Engineers' Charles Wilson remapped the interior. The founding of the Palestine Exploration Fund in 1865 gave Britain the cover of a private initiative, but its survey, again under Wilson, was carried out by the military. This resulted in the 26 sheets of C. R. Conder and H. H. Kitchener's shaded-relief map, *Western Palestine,* 1880, and a single sheet, 1889, from an abortive survey of Eastern Palestine. To complete the project, surveyors working under S. F. Newcombe, including C. L. Woolley and T. E. Lawrence, mapped the Sinai, 1909–1914, with the sheets issued in 1915. The British were particularly diligent about place-names that they recorded in transliterated Arabic, and also published in accompanying gazetteers.[27]

Although these Fund maps were revised, updated, and reprinted in a variety of scales and formats to meet British requirements during World War I, the British Egyptian Expeditionary Force found it necessary nonetheless to map the country *all over again* at a scale large enough to support artillery range-finding and to spot targets identified by the new aerial photography. The Turks and Germans also had surveyors in the field, the Turks since 1909 when they'd belatedly begun mapping the entire empire; the Germans producing, among others, 39 sheets of central Palestine at a scale of 1:50,000. It's so characteristic of the history of mapmaking that this land, so highly revered by the faithful of three religions, was seriously mapped only to serve the military needs of modern imperialist states, the military needs *and* the ensuing colonial needs for establishing policeable borders.[28]

Mapping and Counter-Mapping in Mandatory Palestine

Well, it was seriously mapped only to serve the military needs, the needs to establish borders, *and* the *property-control function,* this latter a need that in the wake of the Balfour Declaration swarmed to the fore in order to facilitate the Jewish colonialism that, with the establishment of the Mandate in 1923, the League of Nations transformed from a British *intention* (in the Declaration) to a British *obligation* (under the Mandate).[29] Anticipating this outcome, which they had maneuvered to assure, the British had already set up, in 1920, a Survey Department of the Government of Palestine.[30] The Survey's mandate was to conduct cadastral mapping for property transfer administration, a mandate that required that the country be mapped *all*

over again, which in some sense is to say, given the veritable hodgepodge of maps that had been accumulating since Jacotin's survey, *for the very first time.* While this too is characteristic of the history of mapmaking, cadastral mapping was especially exigent here where a British prohibition against land transfers—imposed because of the disorder in which the retreating Turks had left Land Registry records—made it impossible for Zionist Jews to acquire land, without which . . . there could be no "return," no national home. For a 20th-century British administration the reconstruction of these records could only mean . . . a mapped cadaster.

And in the 20th century, a mapped cadaster could only mean . . . a triangulation of Palestine to contemporary standards, at least its "settled" part, from Dan to Beer Sheba.[31] In cartographically oriented histories, this always gets a big play—the triangulation *was* well done, and in 1928 it was validated by its connection to the triangulation carried out by the French Mandatory Government's Bureau Topographique du Levant—but underplayed in these same histories is the impact the Survey had, especially following the passage of the 1928 Land Settlement Ordinance (with its unsurprising orientation toward private property owned in freehold), on long-standing, indigenous land use practices. This too is characteristic of the history of mapmaking.

Among the many types of land ownership common in the Ottoman Empire—*jiftlik, mawat, mahlul, matruka, miri, mulk, musha',* and *waqf*—only *mulk* lands had clear titles attached to individuals that could be straightforwardly alienated by Jewish colonialists. Martin Bunton notes that

> restrictions on dispositions by owner-occupiers was the Rubicon that the Colonial Office—ever protective of the cherished rights of individuals to engage in whatever commercial transactions they wanted with their own property, and conscious of its obligation under the mandate to facilitate Jewish settlement—was desperately trying to avoid crossing.[32]

Musha' lands, which villagers held in common and so resisted division and titling by individuals, were cast in an especially disreputable light since they were also held to mitigate against individual initiative and so against the rationalization of agricultural practice.[33] As has been characteristic of every survey ever carried out, the Survey's apparently simple, "geometric" goals were fused with a jumble of political intentions, conscious and otherwise. As Geremy Forman concludes:

> The judicial process of "settlement of title," or "land settlement," constituted the core of British land regime reform in Mandate Palestine. This process, which relied on topographical and cadastral survey, exact mapping and extensive judicial investigation of land rights, aimed at identifying an owner for every parcel of land in the country. British reformers sought to transform the traditional usufruct rights of the indigenous, majority Arab population and the minority population of European Jewish settlers into rights of ownership,[34]

"rights of ownership" construed exclusively in European terms of individual private property.

While the Survey was thus from its conception a tool of colonialism here no less than its counterparts in the Americas had been two centuries earlier,[35] at the same time the Survey was no monolith, and in common with much of local British

officialdom "tended to be largely apathetic towards, if not opposed to, the Balfour Declaration."[36] For this reason not everything the Survey did sat well with the Zionist leadership. For example, Meron Benvenisti points out that

> when the Geographical Committee for names, which operated under the aegis of the Royal Geographical Society (the only body authorized to assign names throughout the British Empire), decided to call the Mandatory geopolitical entity "Palestine" and the city whose biblical name was Shechem, "Nablus," Jewish advisers saw this as an act of anti-Jewish discrimination and a searing defeat for Zionism.[37]

Since 1920 Zionists working for the Mandatory government as advisers on the assignment of Hebrew names had been fighting hard for the "restoration" of biblical Hebrew names in place of the Arabic ones used as a matter of course on Survey maps. When rebuffed by the Survey—*who living on the land would recognize the biblical names?*—Zionists began to create . . . a counter-map.

Benvenisti, an Israeli whose father was one of these counter-mappers, puts it like this: "Suffused with the sense that 'it is impossible for a present-day Hebrew map not to identify by name the places of Hebrew settlement mentioned in the Bible and in post-biblical Hebrew literature,' they set about identifying these sites and putting them on 'Hebrew maps,' which they placed *opposite* the official Mandatory maps."[38] It's important to understand what they were about. It wasn't a question, say, of transliterating Arabic names into Hebrew as سلبان is transliterated into Nablus in English. It was a question of remapping the landscape into a literally delirious simulacrum of one that hadn't existed . . . *for millennia*. Nablus, in fact, had never been called Shechem. The old Samaritan city had been destroyed, probably in 67 CE, by the Romans during the First Jewish-Roman War, razed to the ground. Two kilometers to the west, a distance more significant then than it may be today, the Romans founded the wholly new city of Flavia Neapolis. Following its conquest by Khaled ibn al-Walid in 636, the city's name was Arabicized as Nābulus or Nablus. That is, the desire to call Nablus "Shechem" amounts to the desire to . . . *erase* . . . nearly two millennia of history, to erase the Roman, later the Byzantine, city; to erase the Arab city, the Crusader city, the Ayyubid, the Mamluk city; to erase the Ottoman city, the city that had revolted against the Egyptian Muhammad Ali in the 19th century; to erase the important Palestinian center of the 20th. I don't know how else to think about such a desire except as a kind of delirium.

The Zionist counter-mappers had no such problem. Their agenda was clear, in Benvenisti's words, "to draw a Hebrew map of the land, a renewed title deed."[39] Like most deeds, this one not only documented the boundaries but was guaranteed by a title search. The boundaries, Israeli historian Ilan Pappé argues, had been provided by the British: "The political borders the British decided on for Palestine simultaneously enabled the Zionists to define in concrete geographical terms the Eretz Israel they had in mind for their future Jewish state."[40] The title search was carried out by the Israeli Exploration Society (IES):

> Just as the Royal Geographical Society, through its research and its expeditions into the interior of Africa and the heart of Canada, expressed the British desire to learn about the world in order to annex it to the empire, so did the IES articulate the Jewish ambition to lay claim to the ancestral homeland. Its declared objective was "to develop and to advance the study of the Land, its history, and pre-history, accentuating

the settlement aspect and sociohistorical connection between the People of Israel and Eretz Israel." The IES researchers sought to provide "concrete documentation of the continuity of a historical thread that remained unbroken from the time of Joshua Bin Nun until the days of the conquerors of the Negev in our generation."[41]

That is, the Survey and its counter-mappers co-constructed the geo-body of Israel using the precise mechanism described by Thongchai back in the first chapter: *map it, iconize it, deny its history.*

First, by mapping it, the British gave Palestine borders *as Palestine*; that is, the British *brought Palestine into focus* as a geopolitical entity distinct from Lebanon, Syria, Jordan, and Egypt; and in fact, just as in Thongchai's paradigm case of Thailand, here again the motivation was ultimately Anglo-French competition. The Zionist counter-mappers then Israelized this Mandatory Palestine through their magic of renaming. Second, simultaneously these British borders gave Israel its iconic outline, that is, its primitive knife shape, the Negev being the blade (see Figure 8.2). Compare this instantly recognizable shape with, for example, the formless blob first claimed by the World Zionist Organization in its presentation to the 1919 Paris Peace Conference.[42] Third, through its presentation of the new state *as an existent thing* —indeed, one the counter-mappers claimed had existed for 3,000 years—the map obscured the *very recent* origins of Israel *in history,* explicitly the his-

FIGURE 8.2. Israel's geo-body in the kitchen. The mapped shape of Israel—dream version, everything between the Mediterranean and the Jordan—is ubiquitous, as on these refrigerator magnets on sale in 2009 throughout Israel. The logo form is cast into everything, badges, erasers, thermometer holders, ashtrays, watermarks. The state is inescapable. It is real. (*Source:* Author's collection)

tory of Zionist colonialism and the ensuing ethnic cleansing that allowed Israel to become a *Jewish* state.

These goals had been self-consciously linked from the very beginning. From the start the counter-mappers worked closely with an underground Zionist militia, the Haganah: "In clandestine cartographic offices, the data from British maps were copied and Hebrew maps were produced for use in Haganah operations,"[43] operations wholly devoted to wiping the Palestinians from the land as the mapmakers had already erased them from the map. True, Zionists *had* "bought" some of the land, if only very rarely from those actually occupying it; but they also had zero qualms about simply expelling Palestinians from land—the most of it—that they hadn't bought, but to which they felt magically entitled as a gift from god, as a "patrimony of the Jewish people." If Zionists had to push "squatters" off this land to which their Hebrew maps gave them title, so much the worse for the "squatters," no matter *how many centuries* they'd been squatting there! As this extract from David Ben-Gurion's 1948 diary makes insanely plain, the Zionist memory was . . . *deep*:

> We will establish a Christian state in Lebanon, the southern border of which will be the Litani River. We will break Transjordan, bomb Amman and destroy its army, and then Syria falls, and if Egypt will still continue to fight—we will bombard Port Said, Alexandria, and Cairo. This will be in revenge for what they, the Egyptians, the Arabs, and the Assyrians, did to our forefathers during Biblical times.[44]

It's astonishing, isn't it? Revenge extracted for quasimythical events thousands of years old! What it best demonstrates though is the commonality of imagination behind both the Shoah and the Nakba.

Because that's what's going on here, the Nakba. Ben-Gurion's fantasy had been ignited by his euphoria at the success of the ethnic cleansing campaign, the cities emptied, the villages emptied or destroyed, the homes blown up or bulldozed, the men assassinated, the women and children murdered, the orchards burned. The Zionists mined the houses against the Palestinians' return, for clothing or for food, for the Palestinians were forced to leave—those who weren't killed—with nothing. These things happened, again and again, all over what is now the State of Israel. Hundreds of villages were emptied.[45] Over 800,000 Palestinians were forced from their homes. Who knows how many were killed? The pretense that these were casualties of war is a lie, plain and simple. Nakba deniers are like Holocaust deniers, insane, or so wracked with guilt the admission would destroy them.

After this the making of new maps became a *serious* priority.

After all, the Palestine Exploration Fund had collected 9,000 Arab place-names—only 10% of which were ancient—and the Mandatory surveyors had collected thousands more, all published on large-scale maps. This Arab character of the land, so in-their-face on these maps *covered* with Arabic names, upset the Jewish community; and it only made it worse when the new Israeli government updated the maps by printing "destroyed" in Hebrew (*harus*) next to all the Arab towns, "immortalizing," as Benvenisti puts it, "the cataclysm of 1948 when the old world disappeared and a new world was founded on its ruins," adding that, "no graphic artist could have created a more apt plastic expression of this event."[46]

So Ben-Gurion immediately established the Committee for the Designation of Place-Names in the Negev Region.[47] Its members were mapmakers, and "Mapmaking and the assignment of place-names were their fields of endeavor, and they knew

that this particular job was neither simply a technical exercise nor merely a work
of research—it was an act of establishing proprietorship: they had been asked to
draft a deed of Jewish ownership for more than half of Israel's territory."[48] To put it
differently, it was now important for Israel "to establish 'facts on the ground,' and
the creation of a Hebrew map was an extremely powerful means of doing so, no
less important than the building of roads or the founding of settlements. It was, of
course, also easier, quicker, and cheaper."[49]

What made the new map so powerful—what makes all state maps so powerful—
was its intimate connection to other organs of power and *through them* . . . to road
signs, which proceeded to pound the new names into the ground; to postal cancel-
lations that proceeded to carry the new names around the globe; to news service
date-lines that proceeded to embed the new names in current events.[50] The new
map, Benvenisti concludes,

> was not a show of contempt for the Arabic heritage. On the contrary, it was a decla-
> ration of war on it. The effort the Zionists invested in this project is proof of their
> recognition that the Arab shadow-map—that rests alongside the Hebrew map—had not
> vanished but in fact would remain very much in existence as long as there were people
> living in this land who took care to preserve it.[51]

This Zionist mapping project reached its apotheosis in the national *Atlas of Israel,*
1970, a government publication from which Palestine, given that Israel is taken to
occupy *all the land* between the Mediterranean and the Jordan, has simply . . . *disap-
peared.* Boundaries, the *Atlas* acknowledged, presented a special problem. Where
the first edition, 1956–1964, showed Israel within its 1950s boundaries—that is,
excluding the West Bank, which was then Jordanian—in compiling the maps for
this post–1967 War edition,

> material from Jordanian and other sources was utilized, as well as the results of enu-
> merations and surveys and, in many cases, of basic research carried out by Israel in
> 1967 and 1968. Consequently, coverage now extends in many cases over the entire
> area under Israeli administration since June, 1967 (surrounded, in the maps, by the
> cease-fire lines), including Judea and Samaria which were previously under Jordanian
> administration as well as the Gaza plain formerly held by Egypt.[52]

And so much for Palestine! Judea and Samaria, of course, are just one final bit of
name-magic to secure "the rightful historical claims" of Israel to its "patrimony
from time immemorial," to establish that its "rightful claims to this land are histori-
cal and ancient."[53] Of course, the use of these new boundaries transforms every
rainfall map, every map of *soils* into a political screed.

How else to think about this but as cartographic hocus-pocus?

And so of the *Atlas* less as the cartographic monument it wanted to be taken
for—it's 14 inches by 21 inches, it weighs 10 pounds—than as a piece of legerde-
main?

Today, of course, only a few die-hards dream of Judea and Samaria, though
Israel still calls them that. The rest of the world knows Judea and Samaria as the
West Bank, the fractured home of a future Palestinian state. A great deal had to
happen to recover Palestine from this submergence in Judea and Samaria. A lot of
maps had to be made. A lot of blood had to be shed. A lot of people had to die.

British Maps, Israeli Counter-Maps,
Now Palestinian Counter-Counter-Maps

The first counter-counter map I saw hadn't been easy to find. Mitch and I were in Bethlehem, and there was supposed to be a monumental three-dimensional map of the hoped-for Palestine standing at the entrance of the Deheisha refugee camp. A bus with Deheisha painted on its side was turning a corner, and we ran for it. The driver had just enough English to understand where we wanted to go, and let us off along a stretch of road *I* couldn't distinguish from anywhere else in Bethlehem. The *Let's Go* guide's description of Deheisha opens this way:

> The largest of the three refugee camps in Bethlehem's environs, Deheisha has been and continues to be a symbol of the depressed quality of life Palestinians have suffered during the period of Israeli occupation. Once guarded and completely fenced in, Deheisha has ripped down its wall since the Palestinian Authority gained control of the city, although the remains of turnstiles [doesn't this remind you of the Warsaw ghetto?] are still visible near the main road. Although poverty and crowding continue to reign here, the atmosphere is optimistic and forward looking.[54]

The guide adds that, "besides learning first-hand about life in a refugee camp, there is not much to do in Deheisha," although it does describe the Martyr's Monument ("a complex of arches standing about 5 meters high, the Jerusalem stone sculpture is a three-dimensional map of the hoped-for Palestine") and the Ibdaa Cultural Center. It doesn't bother to mention that Deheisha's 11,000 inhabitants cram themselves into a single square kilometer.

There wasn't much English spoken in Deheisha either, and without knowing the Arabic for Martyr's Monument, Mitch and I opted simply to walk around the camp. I have to say that without the fence I *really couldn't* tell the camp from the rest of Bethlehem. Maybe the streets were narrower, the houses smaller and more crowded, but the grape vines over the backyard arbors were thick, corner shops were everywhere, and there was a sense of settled life that I had a hard time associating with the word "camp." Of course the camp's three generations old—it *should* seem settled—and this emphasizes how long this intolerable situation's been allowed to continue. We ascended a hill I hoped might be crowned with a plaza, that the monument might be there, but instead the streets simply ran down the other side, and we turned around.

As if we'd set off an alarm, kids began to pop up everywhere. The school day had ended, and they were flooding the streets. They washed up the hill like waves we had to breast to get back down. Some brazenly, others shyly tried out their English on us: "Hello," "How are you?" "Thank you, thank you," "You're welcome." But when I said anything more, they only grinned and ducked their heads. Toward the bottom of the hill I ran into an older man. He was coming out of a school and he too had little English, but taking my arm and indicating that I should ask for Ziad, he guided me to the Ibdaa Cultural Center, which was not far from where we got off the bus. Mitch said he'd wait. I was directed from floor to floor until I reached the top. There I was sent across the room to a table where beside a window a young man sat smoking a cigarette. He was wearing a leather jacket and had bright, alert eyes.

"Sit down," he said. "Catch your breath."

After a while I told him about my interest in maps. I told him I'd only recently learned about Abu-Sitta's *Atlas,* and about my interest in the Martyr's Monument. *He* wanted to explain what Ibdaa was about.

"You must understand that we are a grassroots organization working with the children, youth, and women of Deheisha. 'Ibdaa' is a word that means to make something out of nothing. That's what we do here."

He went on to talk about strategies for organizing the youth of Deheisha in terms that made it clear he was thoroughly versed in contemporary culture theory. He was respectful of the efforts of top-down organizations, but unwilling to grant them much of a role in bringing about real change. In a brochure he had an assistant give me he's quoted as saying, "That's true that I was born in Deheisha refugee camp and I grew up in the narrow streets but through Ibdaa I'm struggling not to die here."[55]

"As for your map," he said, pointing through the window, "there's the top of it right there."

Mitch was waiting for me in its shadow. Pointing over his shoulder I said, "There's the map." It was maybe 25 feet from where the bus driver had dropped us off. We walked up into the small plaza from whose center the giant construction rose (Figure 8.3). The borders of this map of the hoped-for Palestine were exactly the borders of Israel in the *Atlas of Israel.*

FIGURE 8.3. Palestine's geo-body in stone. This monumental map towers over the former entrance to the refugee camp of Deheisha. Compare this geo-body to that of Israel in the refrigerator magnets of Figure 8.2: same body, different name. (*Source:* Mitchell Hazouri)

Counter-counter-maps like this aren't everywhere but they're not uncommon either. I was sold an embroidered one in the Old City in Hebron. I'd been writing in my notebook waiting for Mitch to catch up with me when I had the sense I was being looked at. I turned my head to the left to find myself staring down the barrel of an assault rifle not 7 inches from my face. The rifle was tucked up under the arm of an Israeli soldier with a helmet and flak-jacket on, and when I lowered my notebook he moved the rifle away from my face. There were four of them. They were walking down the *suq,* poking their rifles into the few shops that were open, pushing into doors with the barrels of their guns, waving them around, moving on. They never said anything. I trailed them to a shop where I knew the proprietress spoke English.

"They do it everyday," she shrugged, "many times a day. They are terrorists. Who other is? Me? Him?"

She pointed across the street to another shopkeeper. She dragged me over. "Him, they break into his house. You come! See! It all broken now. He has CD."

She dragged me to the stairs to his house. I could sort of see up them, and to one side some rubble and sunlight coming through a gaping hole. I didn't want to go up and see the destroyed house and I didn't want to buy the CD, but the man pushed it on me:

"No money," he said. "Just the world to see."

Back in her shop the woman pushed a stack of embroideries at me. I didn't want to buy anything but I went through the stack anyway. And there it was, another map of Palestine completely replacing the State of Israel (Figure 8.4).

Benvenisti says, "Palestinian mapmaking has been the reply to Israeli maps,"
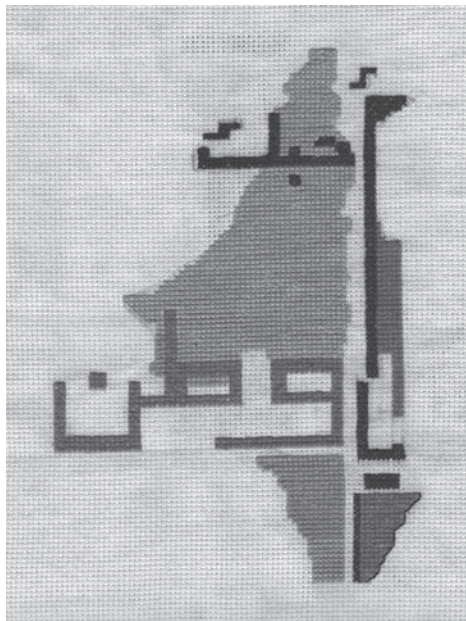
FIGURE 8.4. Palestine's geo-body embroidered on cloth. An embroidery bought in the Old City of Hebron: again compare this geo-body to the refrigerator-magnet geo-body of Israel in Figure 8.2. (*Source:* Author's collection.)

adding that, "On the Palestinian maps, reality is frozen at 1946. Hundreds of villages, towns, ruins, and hallowed graves that no longer exist fill the map of Palestine, whereas the Jewish settlements appear under the classification of 'Jewish Colonies, divided according to the stages of the Zionist conquest, from 1882 to the present.'"[56] Undoubtedly this *is* true of Palestinian counter-counter-mapping, which simply takes what Israel claims to be Israel—everything between the river and the sea—and calls it Palestine. Tit-for-tat. Counter-counter-mapping at its simplest. It can take extraordinary form, however, as it does in Abu-Sitta's magnificent *Atlas of Palestine 1948.*

On its face this is a counter-counter-atlas. It's exactly the same size as the *Atlas of Israel*—on a coated stock it's even heavier—and like the *Atlas of Israel* it's bound in black with the title foil-stamped on the cover, silver here to Israel's gold. It takes precisely the same magisterial tone, and like the *Atlas of Israel* opens with an historical overview. This one doesn't open in the immemorial past, however, but with General Allenby's seizure of Beer Sheba on October 31, 1917, and concludes nearly a hundred pages later with proposals for restoring "the historical continuity of names, not only as recorded on paper but as spoken and remembered"—which is precisely tit-for-tat—and for repopulating the landscape with Palestinians. The atlas proper follows, nearly 300 pages of maps that meticulously reconstruct the Palestinian landscape of 1948, mostly from aerial imagery collected by the British Royal Air Force in 1945–1946. The atlas concludes with an exhaustive index, something the *Atlas of Israel* lacks.

The *Atlas of Palestine 1948* is rooted in fact. It's *all* about facts, one fact after another. There's an impeccable source for every assertion. It's exhaustively referenced. It's almost as though Abu-Sitta were responding to the late Edward Said's "Facts, Facts, and More Facts." Before arguing that though a handmaiden to colonialism mapmaking "can also be the art of resistance if there is a counter-map," Said had asked, "Is there an accurate and usable *Palestinian* map of the West Bank, Gaza, Jerusalem?"[57] Here in Abu-Sitta's *Atlas of Palestine 1948* is an accurate and usable map as well as hundreds of counter-maps, though since it's obvious it never would have come to this without the initial counter-mapping by the Zionists and the State of Israel, counter-*counter*-maps is more to the point.

And more to Benvenisti's point too, that Palestinian maps are filled with villages, towns, ruins, and hallowed graves that no longer exist. While this is undeniably the case, it's important to recall that the original Zionist counter-maps were *also frozen in the past,* and a radically more distant, mythological past at that, locating on the "Hebrew maps" that were "placed opposite the official Mandatory maps" "the places of Hebrew settlement mentioned in the Bible and in post-biblical Hebrew literature." That both the Israeli and Palestinian projects are insanely reactionary is impossible to ignore, but resistance *doesn't have to be reactionary,* and here two very different projects are exemplary.

The first is the mapping of access and closure that the United Nations' Office for the Coordination of Humanitarian Affairs has been carrying out for the past six or so years.[58] This is an extraordinary project that has been producing extraordinary maps, maps whose brilliance of design it's easy to overlook so effectively are its parts integrated and especially when you're absorbed in their wealth of detail. More or less set in motion by Carrie Howard, the mapping unit's work has been shouldered by a small team including Charles Perring, Majed Abu Kubi, Deena Asfour,

and a few others.[59] Every 90 days they publish an updated version of *West Bank: Access and Closure.* I have in front of me one from April 2008; another from October 2006; and a third from August 2005. They're available in a variety of formats, from a large poster-map—which these days hangs in most consulates and embassies—to incrementally smaller versions; booklets containing very large-scale details; and as PDFs online. As the team has come to understand what must be posted if any of it's going to make sense, the maps have become more and more meaningful. And so, a legend unlike almost any other: these days, 12 photographs illustrating what the symbols for trench, road barrier, earth mound, electronic fence barrier, barrier gate, roadblock, road gate, tunnel, checkpoint, observation tower, concrete barrier, and permit system *actually look like,* together with descriptive prose: "Observation Tower—An elevated military tower to monitor/control Palestinian pedestrian and vehicular access" (Figures 8.5 and 8.6).

These images transform the map from an intelligent piece of graphic design into a tool of advocacy that has established the reality of the barrier system for the diplomatic corps and made it an inescapable topic. By beginning with the three areas—A, B, and C—into which the West Bank has been divided by the Oslo Accords, and layering on the Jewish settlements, their protective perimeters, the settler road system, roads with other prohibited or restricted Palestinian use, the Barrier Wall, the roadblocks, checkpoints, earth walls, road barriers, trenches, and the rest, the maps make plain the fragmentation of the West Bank into a couple of dozen virtually isolated islands between which movement is always hard—Mitch and I, even with our American passports, have frequently had to stand at checkpoints . . . *for hours*—and for many Palestinians literally impossible.

There is nothing reactionary about this mapping. It does not take a stand on Israeli or Palestinian legitimacy. But by an informed and patient posting of road barriers and earth mounds, trenches and tunnels, the maps make the point more convincingly than many a polemic that the occupation of the West Bank is not only inhuman but a continuation by other means of the Zionist project of ethnic cleansing.

These examples—the *Atlas of Israel,* the *Atlas of Palestine 1948,* and *West Bank: Access and Closure*—all assume the "cartographic mantle of objectivity."[60] Though each has chosen its facts according to its own lights, you can be sure that each chosen fact is as factual as can be. None has invented data. None is a fantasy. You can go there . . . and check it out. This is also *beguilingly* true of the otherwise wholly different—yet equally nonreactionary—*Subjective Atlas of Palestine.*[61] Organized by the Dutch designer Annelys de Vet, Palestinian artists, photographers, and designers "mapped" Palestine as they see it. There *are* maps, 21 sketch maps—what we used to call "perception maps"—of Palestine; maps of some major cities highlighting cultural events in 2007 (there were a lot); a map of "The Extremities of Ramallah;" and a world map of the Palestinian diaspora; but mostly there are photographs. There's a two-page spread, for instance, of photos of the "Documents That I Needed to Travel outside Palestine," 18 of them, including the artist's Canadian, Jordanian, and Palestinian passports.[62] There's a two-page spread on "Twelve Ways to Eat Chickpeas," a four-page spread called "In the Absence of a Currency" (Palestinians don't have one of their own), a 12-page spread on Palestinian dress. There are also six pages on "A Lifeline to My Brother" in an Israeli prison, and eight pages of letters from prisoners. The introduction acknowledges the nightmare of the occupation, but also its
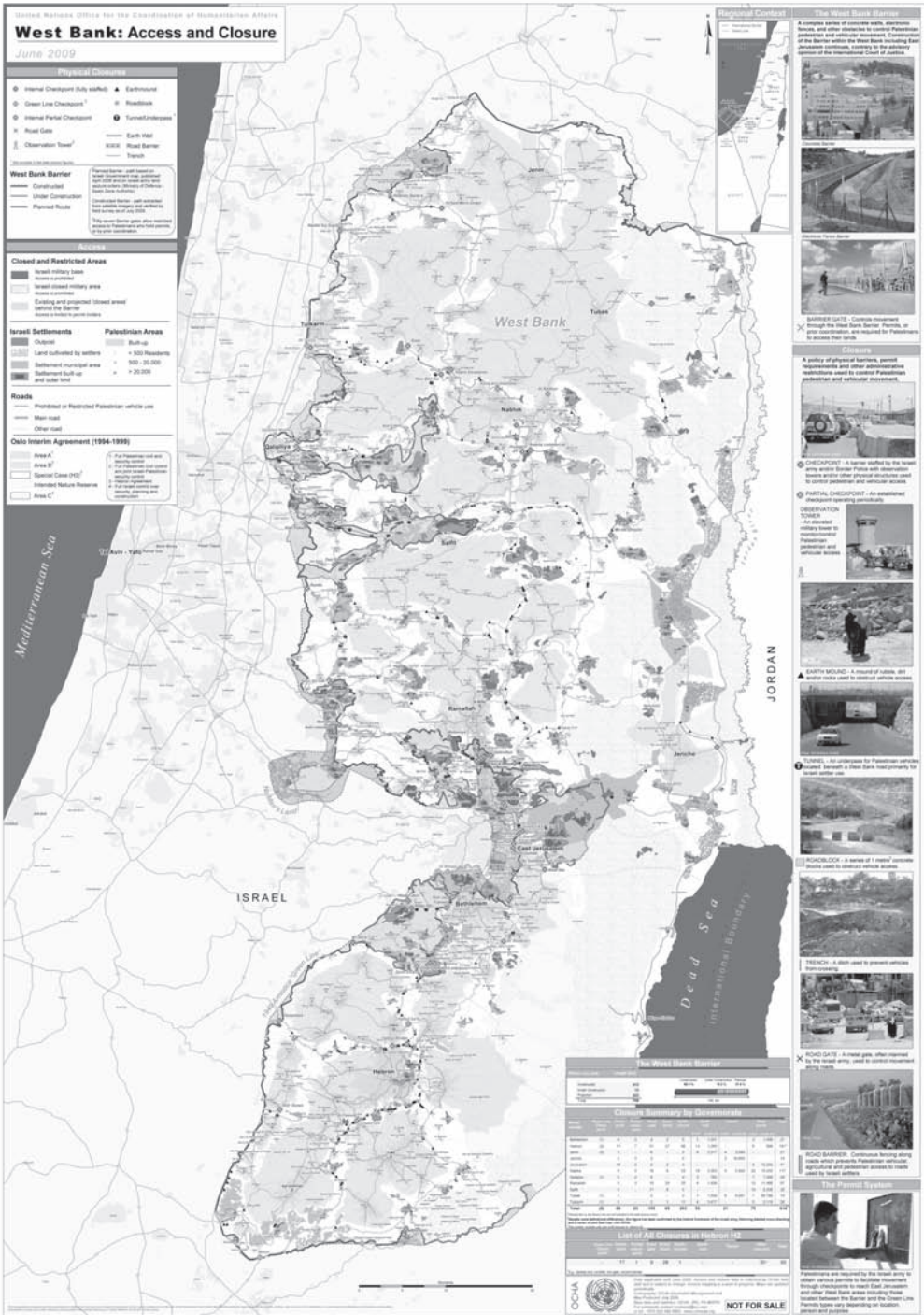
FIGURE 8.5. The UN's Office for the Coordination of Humanitarian Affairs (OCHA) for the Occupied Palestinian Territory (so altogether OCHA oPt) *West Bank Closure Map/ June 2009.* This extraordinary map can be downloaded in all its detail and full color at *www. ochaopt.org.* (*Source:* UN OCHAoPt)
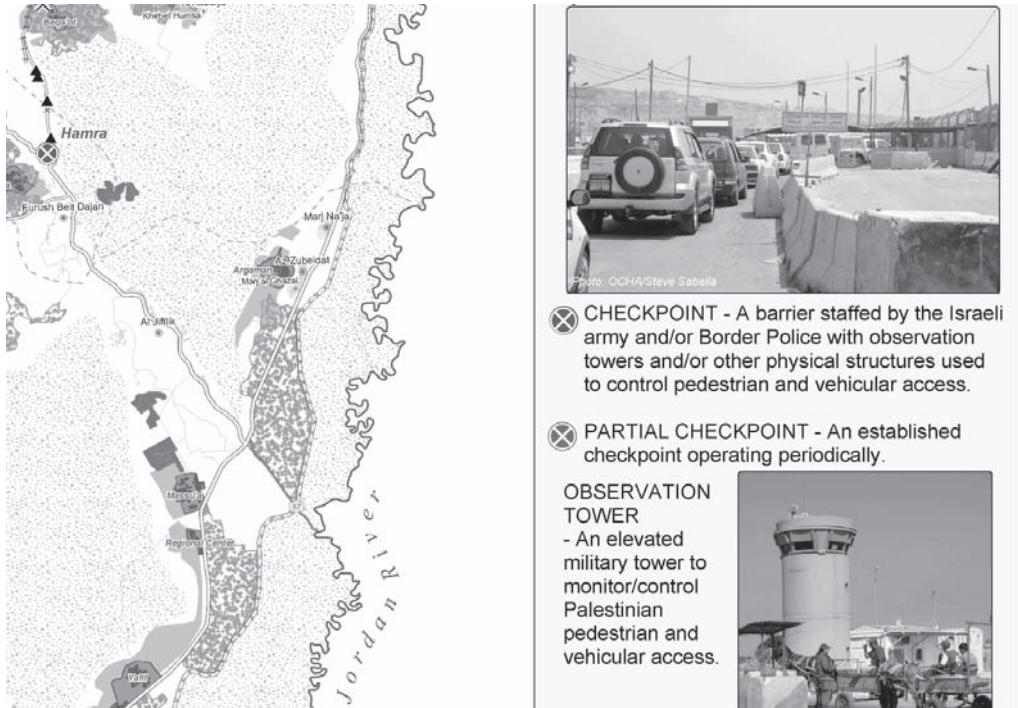
FIGURE 8.6. *West Bank Closure Map/June 2009* legend detail. Checkpoints and partial checkpoints marked on the map are here translated into descriptions and pictures . . . of checkpoints and partial checkpoints. (*Source:* UN OCHAoPt)

comic aspect, "like a surrealist dream come true." The *Subjective Atlas* may not be what Said meant when he called for "an accurate and usable *Palestinian* map," but there's no doubt that the *Subjective Atlas* is every bit as necessary.

Art Mapping the Conflict and the Occupation

No less necessary is the map art that began to appear in the wake of the 1967 War. You may recall that Alighiero Boetti was originally moved to work with maps by the 1967 War, tracing from a newspaper the outlines of the Occupied Territories which with other subjects he was later to engrave on copper as *Twelve Forms from 10 June 1967* (1967–1971); and also that he'd turned the tracing of the Sinai, West Bank, and Golan Heights into his first embroidered piece, the *Occupied Territories* (1969).[63] Boetti's attention was unusual for the time, as was the slightly later attention of the Israeli-born Conceptual artists Michael Druks, Joshua Neustein, and Dganit Berest,[64] and actually it was only after the Palestinian Intifada of 1987–1993, which is when the world first became generally aware of what the "Miracle of Israel" had cost the Palestinian people, that map art became common.

Druks seems to have begun working with maps as early as 1971 when in an effort to emphasize the man-made character of boundaries he sketched a map of Israel as overlapping sewing patterns (*Israeli Pattern,* 1971). A couple of years later

he merged Israel with his personal identity in a series of maps of Druksland, which was laid out over a contour map of Druks's face. In *Druksland Physical and Social 15 January 1974, 11:30 am* (from the portfolio, *Flexible Geography: My Private Atlas,* 1974) the region corresponding to the right side of his head is named Right Druks, that corresponding to his nose and left cheek Left Druks, but that corresponding to his forehead Occupied Territories.[65] Druks was especially interested in issues of boundaries and identity, as was Joshua Neustein, though Neustein approached the issues substantially more aggressively in such works as *Territorial Imperative* (1976–1978), *Still Life* and *Blind Patriot* (both 1983), and *Homeward Patriot* (1984). In *Territorial Imperative,* for instance, Neustein took a dog to urinate on the Israeli border in the Golan Heights, on the German-Danish border near Krusa, and near the peace line in Belfast. Neustein then made maps that posted the territory as marked by the dog against the territory as marked by the states. In *Still Life* Neustein burned two tons of tires near the border during one of Israel's wars with Lebanon, scorching the earth into the shape of a jet fighter. Neustein has continued to work with maps, as evidenced by his incredible *Fanning the Fear* (2003)—a large floor map of the United States in Arabic instead of English—and his *Israel Masking Tape Boiling Point* (2004).[66] Berest's work was perhaps the most conventional, using maps of Israel as a way of grappling with issues of scale, dimension, and perspective (as in *Map,* 1976).

Palestinian artists working with maps early on included Kamel Al-Moghani (*Palestine,* 1982), Salah Al-Atrash (*Untitled,* c. 1983), and Imad Al-Bitar (*Untitled,* c. 1986).[67] The Israeli artist David Reeb worked with the Green Line, the 1949 Armistice line between Israel and its neighbors, which later became the line separating Israel from the West Bank. In one telling, the name comes from the green ink Moshe Dayan used to draw the line on the official map, but, whatever the origin, Reeb played with both the name and the line in *Green Line with Police* (1985), *Blue-Pink-and-Green Green Line* (1986), *Green Line with Green Eyes* (1987), *Studio with Green Line* (1987), and other paintings.[68] Slightly later Joshua Glotman also painted maps (as in *Untitled,* 1993), but by then the scene was beginning to open up.[69] Tina Sherwell, for example, made an extensive series of what one commentator has called "delicate, half-shredded maps of the country." An Englishwoman with a Palestinian mother, Sherwell found her attention focused by the First Intifada. At the time she was working on her master's degree in the textiles program at Goldsmith College and thinking about the unique logic of cloth, but she was also reading Said and looking at Hatoum's work and was definitely interested—her words—"in deconstructing the map and interrogating dominant media representations of Palestine generally." This all came together in the map pieces she made, mostly 1991–1994 (but staggering on to 2000), pieces in which she imprinted and/or embroidered maps of Palestine onto complicated collage-quilt-layerings of textiles in which each individual fragment of cloth makes resonant references to Palestine, to Palestinian women, to the occupation. The cross-stitching Sherwell used to evoke traditional Palestinian embroidery also recalled Boetti's *Occupied Territories.*[70]

Perhaps the most famous Palestinian artist to work with maps is Mona Hatoum, whose glass-marble *Map* (1999) I touched on in the last chapter. Before *Map* came *Present Tense* (1996), a perhaps even more remarkable map made by pressing glass beads into blocks of soap that Hatoum had laid out on the floor of the Anadiel Gallery in Jerusalem's Old City. Hatoum recalls:

On my first day in Jerusalem I came across a map divided into a lot of little areas circled in red, like little islands with no continuity or connections between them. It was a map showing the territorial divisions arrived at under the Oslo Agreement, and it represented the first phase of returning the land to the Palestinian authorities. But it was really a map about dividing and controlling the area.[71]

Hatoum saw the soap, hand-made from olive oil in Nablus, as a symbol of resistance, "one of those traditional Palestinian productions that have carried on despite drastic changes," especially when laid out on the floor like mosaic tesserae. Into the soap Hatoum pressed red beads to outline the archipelago into which she had seen Palestine was being divided in a continuing effort to destroy it, red beads that the gallery's owner saw "as drops of blood or a skin disease."[72] Other works accompanied the map, including photographs of further aspects of Palestinian life that, like the manufacture of the soap, were persisting in spite of the divisions outlined by the beads.

More and more artists have been making maps about the subject. Among Joyce Kozloff's Palestinian pieces are several from her *Knowledge* series, *The Holy Land, 1584* and *Knowledge: Arabia, 1492* (both 1998). Nurit Gur-Lavy has spent years wrestling with an aerial photograph of the Jabalia refugee camp in Gaza in a series of paintings that include *Gaza: Aerial Photograph* (2001), *Kami Pass* (2001), *Gaza–Aerial Photograph–Red Gaza* (2002), and *Aerial Photograph* (2004). Deborah Natsios explores the sky over Jerusalem, actually and metaphorically, in her powerful portfolio, *Jerusalem SKY* (2002). Atsmon Ganor explores the relationship of the personal to the political by drawing on, cutting up, and collaging maps (*Bar Cochva Rebellion (the "Atlas" series),* 1999, the animation, *Multiple Heads,* 2004). Mel Chin's *Render* (2003) is an installation that draws connections among George W. Bush, a female suicide bomber, keffiyehs, and Jewish settlements in the West Bank. Alban Biaussat's *The Green(er) Side of the Line* (2005) brought the Green Line into sight with green balls and long pieces of thick green ribbon, as did Francis Alÿs's SOMETIMES DOING SOMETHING POETIC CAN BECOME POLITICAL AND SOMETIMES DOING SOMETHING POLITICAL CAN BECOME POETIC (2004–2005) in which Alÿs walked the Green Line with a dripping can of green paint. Nikolas Schiller adds Naji al-Ali's Handala character to a mandala-collage of the map of Israel and Palestine from the CIA's 1993 *Atlas of the Middle East* (*Israel/Palestine, 1993,* 2006). Matan Israeli's *route no. 1: board, tower, house, tree, flags, and stairs* (2009) is a map of a route among pieces grappling with the conflict at the neighborhood level, at that of a house. The *L(A)ttitudes* show at the Ann Loeb Bronfman Gallery (2008) put many of these and other works into conversation with each other, as the Spertus Museum's *Imaginary Coordinates* (2008) put them into conversation with five centuries of older maps of Palestine and contemporary candleholders, refrigerator magnets, military medals, postage cancellations, and erasers—all in the shape of Israel or Palestine.[73]

Mel Chin's *Render* focuses a number of emotionally laden lenses onto a map. Chin has built a room proportionate to the Kaaba, but wrapped it in the white muslin of Jewish shrouds. Within it he's hung a portrait of George W. Bush framed in steel. The profile of this frame is that of a Cobra Attack Helicopter. Only Bush's mouth and eyes are visible, the rest is black, so that inescapably Bush's becomes the face of a terrorist. To leave this "Kaaba," the viewer is forced to turn around and pass through a door in a wall plastered with bits of shredded *keffiyehs,* the tra-

ditional Arab headdress. These bits have been painted with pigments mixed with Palestinian soil to look like pieces of flesh, and their total mass approximates that of a young female suicide bomber. But they've been arrayed as a map of Jewish settlements in the West Bank. To anyone with a sense of this pattern, the settlements leap off the wall: Ma'ale Adummim, Gilo, Modi'in Illit, Ari'el. In this mess everyone's complicit—Jews, Muslims, Israelis, Palestinians, Bush, and you . . .—as leaving you pass through the map-field of shredded flesh.

Deborah Natsios's *Jerusalem SKY* is a portfolio of six prints and simultaneously a Web-based project supporting migratory bird conservation (Figure 8.7). The sky in question is *not* that into which Jesus and Muhammad ascended. Instead, it's a contemporary sky of "battlespace and triumphalist war games, where artificial intelligence intercedes with simulation scenarios and new algorithms for *dies irae* under the rubric of 'total air supremacy.'" At the same time, it's a sky through which half a billion birds navigate annually, an avian migration Natsios also thinks about as a pilgrimage. The inevitable collisions between planes (jets, reconnaissance aircraft, unmanned drones, and the like) and birds—so-called *birdstrikes*—are symptomatic of unresolved spatial conflicts between militarized airspace and transboundary avian flyways and have resulted in casualties whose numbers have far exceeded those of modern military campaigns. These conflicts, of course, reflect, derive from, the unresolved spatial conflicts on the ground between Israelis and others. Natsios's project tosses maps, literal bird's-eye views, radar, and other reconnaissance imag-
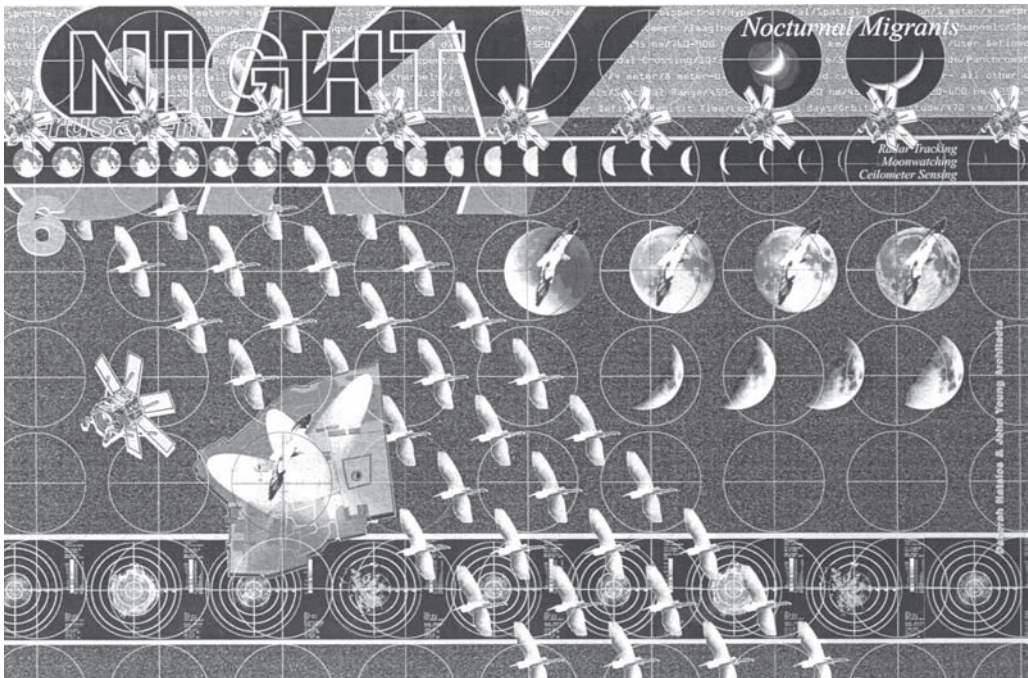
FIGURE 8.7. Deborah Natsios's *Nocturnal Migrants* (2002). Here a few of the half-billion birds that navigate the air above Jerusalem cross the sky in the first of the six prints in Natsios's portfolio, *Jerusalem SKY.* A map of Jerusalem appears in the lower left. (*Source:* Deborah Natsios)

ery, rooftops, avian and human pilgrims, the local, regional and global, the sacred and the profane . . . into the air.

Matan Israeli's *route no. 1: board, tower, house, tree, flags, and stairs* is organized by a large map painted on a notice board in Musrara, a walled neighborhood on the Jewish, west side of Jerusalem (Figure 8.8). Musrara is a former Palestinian neighborhood from the remaining piece of which, on the Palestinian, east side of the city, it's separated by Route No. 1, a thoroughfare that runs along the old 1949 border between Israel and Jordan.[74] To Israeli's Musrara neighbors, his map offers a vision of their walled community as seen from outside, to outsiders a view of the community behind the walls. A red line connects the map itself with the tower, house, tree, flags, and stairs. The house, formerly Palestinian as well, is where Israeli lives and, in a gesture toward the original owners' traditions of hospitality, welcomes viewers to eat and drink. A seat on the couch offers a view of a tree outside—a living eucalyptus—in a pruned stump of which Israeli has sculpted the haunting face of the Palestinian who can never live here again, the face of a ghost. In the same stump Israeli has planted a lemon tree, symbol of the Palestinian yearning to return. Down the road the flags are those the U.S. army uses to cordon off areas damaged by nuclear, chemical, or biological weapons. Here it's plain that the damage is that done to the fabric of city by the divisions the map not only visualizes but enforces. Beyond the flags Israeli has built a stair that breaches the wall, that is, that takes us off the map. It's not obvious that Israeli originally built the stair to shorten a girlfriend's walk to his home, but the yearning for connection is palpable.[75]

Francis Alÿs's SOMETIMES DOING SOMETHING POETIC CAN BECOME POLITICAL AND SOMETIMES DOING SOMETHING POLITICAL CAN BECOME POETIC is now an installation, with maps, photographs, other documentation, and "gun-projectors," but originally it was a walk caught in a film by Julien Devaux that followed Alÿs along the Green Line as he trailed green paint from the can in his hand:
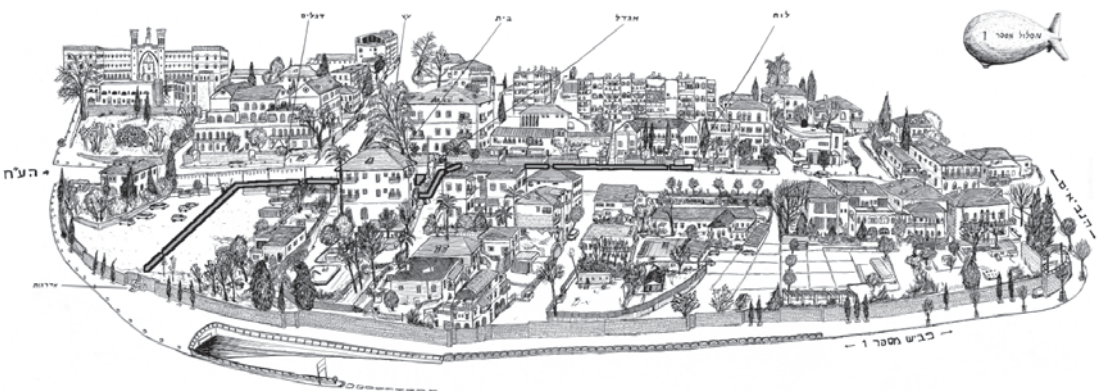
FIGURE 8.8. Matan Israeli's *route no. 1: board, tower, house, tree, flags, and stairs* (2009). A red line on the original reproduction has been replaced here by a striped line, cutting across the lot in the lower left, which can be followed backwards to the board where the map is posted a little right of center. That's Route No. 1 coming up out of the underpass. The view is that from the blimp, upper right. (*Source:* Matan Israeli)

Alÿs walks past and among Palestinian kids, and past Orthodox Jews waiting for a bus. He walks across thoroughfares and down side streets, in and out of Jewish and Palestinian neighborhoods, around corners, up a rocky hill where he meets some goats and past the wall of the Old City. His wavering Green Line is very playful, like a child's doodle writ large, but you always suspect that he'll be arrested forthwith, especially when he passes soldiers with guns.[76]

The work, Gregory Volk insists, "has nothing to do with making statements; instead it poses questions," which is what all the map art does, indeed what all map art always does. It takes the statements, the assertions, the this-is-heres and the that-is-theres of the maps and says . . . *really? Are you sure?*

There Aren't Two Sides

I get a kick out of it when people talk about "showing both sides." Type "maps of Palestine" into your browser and see what you get: maps, counter-maps, counter-counter-maps, counter-counter-counter-maps . . . it doesn't stop. It doesn't stop because there aren't two sides, there are 22 sides, or 222 sides. There's the fringe Orthodox settler side in Israel ready to push the Palestinians across the river altogether, there's the old Zionist side, there's a huge peace side that's really many sides, a let's-pull-back-to-the-'67 border side, a completely anti-Zionist side—god! who knows how many others? And that's just the Jews. Twenty percent of the Israeli population is . . . *Palestinian.* On the other side of the line they're just as fragmented: Fatah and Hamas hardly cover the territory that is also splintered among Christians and Muslims, north and south, urban and rural. What makes it look like there are two sides is the state. I almost typed "the two states" but there's only one, Israel, and the territories Israel persists in occupying in flagrant violation of international law and opinion. And the Israelis—whatever "side" they're on—they get one kind of identity card, and the residents of the Occupied Territories, they get another. And this kind of identity overrides, scrambles the "side" you're on. It nails you to the cross of the state and makes you take *its* side.[77]

It's the state that's fucked things up, the states, all of them, and all maps they need to give themselves their memorable shapes and policeable borders and tell them where everybody is; every *body,* that is, the taxable body, the body that can be turned into a soldier, the worker body, the reproducing body, the body that can be thrown into jail. Oh, and all the rest that states need in order to maintain their grip on things. What I wonder is this. What if we started multiplying the number of maps beyond anything we've seen so far? Not just counter-maps—not when we've just seen the way a state like Israel can fashion itself *entirely* out of counter-maps—and not just map art—which is better but in the bitter end just another kind of commerce—but, I don't know, guerilla maps, crazy maps, subterfuge maps, hurrah-for-anything maps, lunatic maps, maps like whirling snowflakes . . .

. . . and they were *everywhere,* contradicting, undermining, denying, proclaiming, confusing . . . until maps became a kind of babbling and people stopped paying any attention to them? Could we . . . could we *dissolve* the maps of states in them? Could we . . . dissolve the *state*?

Without any maps there wouldn't be any borders; states would sort of *melt* into each other. Without maps states would start corroding internally. We'd have to give

up national identity—would *that* be a relief! And then there'd be no one to throw the rockets and no one to throw them at. And—

I know, I know—utopian anarchist insanity!

But I still can't help thinking the world would be a lot better off without the maps.

That's one way of thinking about it anyway, though probably it's never been very satisfactory. And probably today it's little more than "a periphrastic study in a worn-out poetical fashion," as Eliot put it, leaving "one still with the intolerable wrestle with words and meanings," actually with worse, with the question of . . . *what to do?*

When you're stuck at a checkpoint, say Huwara south of Nablus, where I've never waited for less than an hour to have some callow 19-year-old Israeli soldier check my passport, thoughts like these come easily. With its flag flapping in my face my thoughts *flash* to the state. Yet as the minutes drag by, I find that my attention has shifted to my fellows, to the soldiers around us. Who *are* we who are trying to get through? And who are these conscripted soldiers *really*? Are *we* the state? In which case what to do takes on a wholly different color.

And then my glance strays from the checkpoint, drifts out over the olive groves blanketing the slopes, takes in a village, distant hills. Is *that* the state?

Or is it—the map theorist in me has to ask myself—*only* in maps that the state exists? Is it finally just . . . *a mapped thing?* And all the rest complaisance and complicity and paranoia and desire?

The wrestling with words and meaning *is* intolerable. It's also all there is, and maps are just another form the wrestling takes.

Wrestle on, I guess. It's got to be better than shooting.

Except when . . .

Aye, *there's* the rub!

Notes

Introduction

1. While I would hesitate to call myself an actor–network theoretician, I am broadly sympathetic with the aims of actor–network theory. In the world in which maps are actors, social force is sooner or later always a matter of signage (NO PARKING), fines, armlocks, handcuffs, guns, prison bunks. But see Bruno Latour's critique of the social as a substance or force in *Reassembling the Social: An Introduction to Actor–Network–Theory* (Oxford University Press, Oxford, UK, 2005).
2. That is, if a discourse function *is* a way a person has to affect the behavior of another in a communication situation, it is literally work—that is, the application of a force one body exerts on another to change the state of motion of that body.
3. For engaging histories of the mapping of Mars, see K. Maria D. Lane, "Geographers of Mars: Cartographic Inscription and Exploration Narrative in Late Victorian Representations of the Red Planet" (*Isis 96,* 2005, pp. 477–506), and K. Maria D. Lane, "Mapping the Mars Canal Mania: Cartographic Projection and the Creation of a Popular Icon" (*Imago Mundi 58*(2), 2006, pp. 198–211). A more popular account is Oliver Morton's *Mapping Mars: Science, Imagination, and the Birth of a World* (Picador, New York, 2002).

Chapter One

1. Arthur Miller, *Timebends* (Grove Press, New York, 1988, p. 594).
2. The late Denis Cosgrove traced the idea of the earth as a globe, at least in the Western tradition, in his *Apollo's Eye: A Cartographic Genealogy of the Earth in the Western Imagination* (Johns Hopkins University Press, Baltimore, 2001).
3. Not everyone believes the earth is round either. Though I was first introduced to the Flat Earth Society in Martin Gardner's *Fads and Fallacies in the Name of Science* (as in 1957 Dover Books retitled Gardner's 1952 *In the Name of Science*), Christine Garwood has recently published a comprehensive history of (especially) the 19th- and 20th-century, Christian fundamentalist revivals of flat earth belief in her *Flat Earth: The History of an Infamous Idea* (Macmillan, London, 2007). Others elsewhere in the world, not Christian fundamentalists, also believe the earth may not be round.
4. Many in the cartographic and geospatial technologies communities continue to believe that maps *are* a kind of seeing, almost in the same way some Christian fundamentalists

believe the earth is flat, that is, without a lot of thought but very fervently. Among the most serious recent attempts to maintain this position is Gerald Fremlin with Arthur H. Robinson, *Maps as Mediated Seeing* (*Monograph 51, Cartographica 35*(1/2), Spring/ Summer 1998). A corrected offprint, dated May 2000, should be considered the definitive version of this monograph.

5. As I write this, debate rages over whether Iran's president, Mahmoud Ahmadinejad, said, "Israel must be wiped off the map," or whether دياب زا صفـحه روزگـار محو وشد would be better translated, "the regime occupying Jerusalem must fall." It seems that in this case, many have insisted on taking literally what is ordinarily taken as metaphor, and that in context Ahmadinejad's remarks were no more than a call for a world without Zionism, which is something even many Israeli Jews ardently desire.

6. The use of map metaphors is as old as substantive map usage, some 400 years or so. In his interesting *Mapping Discord: Allegorical Cartography in Early Modern French Writing* (University of Delaware Press, Newark, 2004), Jeffrey N. Peters quotes extensively from the 17th-century critic, Charles Sorel, who speculated about the origin of the form and gives numerous examples of contemporary usage (pp. 23–24).

7. The word "map" does not appear in the King James Version, the New King James Version, the New American Standard Bible, the Amplified Bible, the English Standard Version, or the Contemporary English Version among Bibles whose concordances I consulted. It does show up, especially in Joshua 18:8, in a number of "living language" Bibles including the New International Version, The Message, and the New Living Translation. Here's the passage from The Message: "So the men set out. As they went out to survey the land, Joshua charged them: 'Go. Survey the land and map it. Then come back to me and I will cast lots for you here at Shiloh in the presence of God.'" Here's that same passage from the King James Version: "And the men arose, and went away: and Joshua charged them that went to describe the land, saying, Go and walk through the land, and describe it, and come again to me, that I may here cast lots for you before the LORD in Shiloh." But then the King James was an early 17th-century version whose translators felt neither the license nor the need to drag maps into it (maps were still uncommon in early 17th-century England), whereas The Message was translated in what purports to be the street language of the very late 20th century when "describing" land could only imply "making a map of it." Incidentally, The Message also uses the "wipe off the map" metaphor as here in Genesis 34:30: "Jacob said to Simeon and Levi, 'You've made my name stink to high heaven among the people here, these Canaanites and Perizzites. If they decided to gang up on us and attack, as few as we are we wouldn't stand a chance; they'd wipe me and my people right off the map.'" This is about as map-anachronistic as you can get.

8. In preparation for his article "What Was a Map?: The Lexicographers Reply" (*Cartographica 33*(4), Winter 1996, pp. 1–11), J. H. Andrews complied 321 definitions of the word "map" from 1649 to 1996. You can consult these definitions online at *www.usm. maine.edu/~maps/essays/andrews.htm,* or read them in book form in kanarinka bot's *42 or 363 Definitions of Cartography* (Free Press, Götenborg, Sweden, 2004).

9. Erik Jonsson suggests thinking of these abilities as "our awareness of our familiar environment," in his *Inner Navigation: Why We Get Lost and How We Find Our Way* (Scribner, New York, 2002, p. 27). Jonsson's trying to counteract the use of the map metaphor in thinking about navigation: "Part of the trouble we have when we try to look at our cognitive map comes from the 'map' label, which is misleading. For our cognitive map is not a map; it does not look at all like a map. It would be better to call it our 'awareness of our familiar environment.'" Michael Curry expands on this in his "Toward a Geography of a World without Maps: Lessons from Ptolemy and Postal Codes" (*Annals of the Association of American Geographers 95*(3), 2005, pp. 680–691), when he says, "People do

not, on the whole, walk around with anything that could seriously be termed 'maps' in their heads, and to attempt to resuscitate that idea by redefining maps as 'sets of directions' (to take just one example) is to be dishonest" (p. 689). Amen!

10. Motivating here was a concern to undo the racist and ethnocentric biases that ran through both the history of cartography and studies of environmental cognition. Brian Harley and David Woodward's response was to inaugurate the History of Cartography project in whose first 3,000 pages (J. B. Harley and David Woodward, eds., *The History of Cartography,* University of Chicago Press, Chicago, 1987–) the emphasis was determinedly on non-Western practice. Jim Blaut and David Stea's response was to study map behavior in very young children in a number of different settings. The conclusive statement here was J. M. Blaut, D. Stea, C. Spencer, and M. Blades, "Mapping as a Cultural and Cognitive Universal" (*Annals of the Association of American Geographers 93*(1), March 2003, pp. 165–185). However admirable the instincts behind all this work, the fact is that maps are a recent development in human culture and anything but universal.

11. Much of what follows is a revision and expansion of my "Maps and Mapmaking" entry in Helaine Selin, ed., *Encyclopedia of the History of Science, Technology and Medicine in Non-Western Cultures* (Kluwer, Dordrecht, The Netherlands, 1997, pp. 549–554).

12. "Speech, the universal way by which humans communicate and transmit experience, fades instantly," begins Denise Schmandt-Besserat in her *Before Writing: From Counting to Cuneiform* (University of Texas Press, Austin, 1992), still the most convincing account of the origin of writing in the Middle East—better than 5,000 years ago—for the counting and accounting of goods with clay tokens. Writing arose out of the need to store information and transmit it over space and over time; and whenever these needs arose, writing systems emerged.

13. An excellent introduction to these rich fusions of functions remains Alexander Marshack's *The Roots of Civilization: The Cognitive Beginnings of Man's First Art, Symbol, and Notation, revised and expanded* (Moyer Bell, Mt. Kisco, NY, 1991).

14. Again, the easiest way to convince yourself of this is to peruse the 3,000 published pages of the History of Cartography project, many of whose articles have admirable appendices with lists of extant maps together with their dates; and when I say "maps" here I mean maps according to Harley and Woodward's mind-bogglingly inclusive definition so that these lists represent the outer limits. For serious reservations about this definition, see J. H. Andrews, "Reflections on the Harley–Woodward Definition of 'Maps'" (*Irish Geography 40*(2), 2007, pp. 200–205).

15. Along with the putative appearance in China of an exceptional military mapping function as early as the third century AD, and the late medieval appearance in the Mediterranean of a coastal sailing function. For the Chinese case, see the treatment of the third century CE Pei Xiu's treatise on mapmaking in Cordell D. K. Yee's "Taking the World's Measure: Chinese Maps between Observation and Text" (in Harley and Woodward, eds., *The History of Cartography, Vol. 2.2, Cartography in the Traditional East and Southeast Asian Societies,* University of Chicago Press, Chicago, 1994). This has to be taken as an interim report, for work on the early history of Chinese mapmaking remains in its infancy. For the coastal sailing function see Tony Campbell, "Portolan Charts from the Late Thirteenth Century to 1500," in Harley and Woodward, eds., *The History of Cartography, Vol. 1, Cartography in Prehistoric, Ancient, and Medieval Europe and the Mediterranean* (University of Chicago Press, Chicago, 1987, pp. 371–463).

16. For the Babylonian case, see A. R. Millard, "Cartography in the Ancient Near East" (in Harley and Woodward, Vol. 1, op. cit., pp. 107–116); for the Japanese case, see Kazutaka Unno, "Cartography in Japan" (in Harley and Woodward, Vol. 2.2, op. cit., pp. 346–477); and for the English case, see, for example, M. W. Beresford, "Inclesmoor,

West Riding of Yorkshire, *circa* 1407," among others (in R. A. Skelton and P. D. A. Harvey, eds., *Local Maps and Plans from Medieval England,* Oxford University Press, Oxford, UK, 1986, pp. 147–162).

17. Millard calls the Babylonian "map" a diagram in Millard, op. cit., p. 111; Harvey characterizes mappaemundi as diagrams in his *Mappa Mundi: The Hereford World Map* (University of Toronto Press, Toronto, 1996, p. 21), and in much other writing; Thongchai Winichakul uses the term "Buddhological" in his *Siam Mapped: A History of the Geo-Body of a Nation* (University of Hawai`i Press, Honolulu, 1994, p. 22). For a photograph of the Gotenjiku Zu see Unno, op. cit., p. 372.

18. Sources for these materials include the following: for Philip II, Geoffrey Parker, "Maps and Ministers: The Spanish Hapsburgs" (in David Buisseret, ed., *Monarchs, Ministers, and Maps: The Emergence of Cartography as a Tool of Government in Early Modern Europe,* University of Chicago Press, Chicago,1992, pp. 124–152), and Barbara E. Mundy, *The Mapping of New Spain: Indigenous Cartography and the Maps of the Relacíones Geográficas* (University of Chicago Press, Chicago, 1996); for Japan, Mary Elizabeth Berry, *Japan in Print: Information and Nation in the Early Modern Period* (University of California Press, Berkeley, 2006); for Louis, David Buisseret, "Monarchs, Ministers, and Maps in France before the Accession of Louis XIV" (in Buisseret, ed., op. cit., pp. 88–123); and for Siberia, Valerie Kivelson, *Cartographies of Tzardom: The Land and Its Meaning in Seventeenth Century Russia* (Cornell University Press, Ithaca, NY, 2006).

19. One of Berry's most important contributions is her documentation of the way the map rapidly permeated the fabric of Japanese life. Her book opens with a description of the print resources, including maps, available to a clerk traveling from Kyoto to Edo in 1710. There was already a *wealth* of maps of Japan to choose from, and a wealth of route maps, and a wealth of maps of Edo. Indeed, over *200* different maps of Edo had been published during the first decade of the 18th century alone. Berry contextualizes the maps with the wealth of histories, guidebooks, and rosters, including the rosters of prostitutes and actors, most of which were accompanied by maps of their own. If it sounds like Google Maps, apparently it was!

20. Classics of the genre include Lloyd A. Brown's *The Story of Maps* (Little, Brown, Boston, 1949) and John Noble Wilford's *The Mapmakers: The Story of the Great Pioneers in Cartography from Antiquity to the Space Age, revised edition* (Alfred A. Knopf, New York, 2000 [1981]). I critiqued the original edition of Wilford's history in a review article in *Cartographica* (*19*(3 & 4), Autumn & Winter 1982, pp. 127–131).

21. O. A. W. Dilke's Greek and Roman Maps (Cornell University Press, Ithaca, NY, 1985) remains the classic treatment. I first objected to this story in my review in *Cartographica* (*22*(4), Winter 1985, pp. 97–101). Dilke published this material again a couple of years later, "with additional material supplied by the editors" (in Harley and Woodward, eds., *Vol. 1,* op. cit., pp. 177–279); and I objected again in my "*The History of Cartography, Volume 1:* Review Article" (*Cartographica, 24*(4), Winter 1987, pp. 69–78). This history is being reconceptualized even as I write.

22. See Patricia Seed's *Ceremonies of Possession in Europe's Conquest of the New World, 1492–1640* (Cambridge University Press, Cambridge, UK, 1995) for this role, but as contextualized within the larger set of possession protocols.

23. See Benedict Anderson's widely influential *Imagined Communities,* especially the revised edition, with its added appendices, including "Census, Map, Museum," the map material stimulated by Anderson's reading of Thongchai on Siam (Verso, London, 1991).

24. See William Urry, "Canterbury, Kent, *circa* 1153 × 1161" (in Skelton and Harvey, op. cit., pp. 43–58). It's more accessible in Harvey's *Medieval Maps* (University of Toronto Press, Toronto, 1991, pp. 15–16).

25. For example, see Tony Campbell's *The Earliest Printed Maps: 1472–1500* (University of

California Press, Berkeley, 1988); and Evelyn Edson's *The World Map 1300–1492: The Persistence of Tradition and Transformation* (Johns Hopkins University Press, Baltimore, 2007). Despite the title, Edson actually begins her treatment with the Bianco atlas of 1436.

26. Here I'm quoting from Wilford, op. cit., p. 6, but how far is this from crackpot assertions like, "The ancients were measuring and mapping the globe during the Ice Age," which comes from James I. Nienhuis's *Ice Age Civilizations* (Genesis Veracity, Houston, TX, 2006), back cover and pp. 19–28, where Nienhuis uses ancient mapmaking to prove that the Ice Age ended around 1500 BCE?

27. As Buisseret writes in the first paragraph of his introduction to *Monarchs, Ministers, and Maps,* "One of the great problems in the history of cartography—and, indeed, in the intellectual history of early modern Europe—is this: how did it come about that whereas in 1400 few people in Europe used maps, except for the Mediterranean navigators with their portolan charts, by 1600 maps were essential to a wide variety of professions?" His book is an effort to answer this question. I need to say that the 1985 Nebenzahl Lectures where the papers collected by Buisseret were originally presented was a signally important moment for me, simultaneously resolving the problems I had had with the "history" of ancient "mapmaking" and the questions I'd been revolving about the role of the map.

28. Ian Hacking, *The Emergence of Probability: A Philosophical Study of Early Ideas about Probability, Induction, and Statistical Inference* (Cambridge University Press, Cambridge, UK,1975, p. 9).

29. But P. D. A. Harvey is pretty explicit about the 1500: "In the England of 1500 maps were little understood or used. By 1600 they were familiar objects of everyday life," in *Maps in Tudor England* (University of Chicago Press, Chicago, 1993, p. 7). His book is about this emergence.

30. For example, Helen Wallis and Arthur Robinson state categorically that "the earliest maps from more complex societies are also topographical and thus include the earliest of all maps known. The map found at Çatal Hüyük, Anatolia, apparently shows a volcano and a street pattern and probably dates from 6200 BC" (*Cartographical Innovations: An International Handbook of Mapping Terms to 1900,* Map Collector Publications in association with the International Cartographic Association, Tring, Herts., 1987, p. 73); but Stephanie Meece has conclusively demonstrated that this famous "map" is *not* a map. She's also carefully traced the route by which the possibility of its *being* a map solidified into the certain fact that it was a map. See her convincing "A Bird's Eye View—of a Leopard's Spots: The Çatalhöyük 'Map' and the Development of Cartographic Representation in Prehistory" (*Anatolian Studies 56,* 2006, pp. 1–16). It's going to take a long time before this "fact" gets weeded out of all the places it's been seeded.

31. See Catherine Delano Smith, "Cartography in the Prehistoric Period in the Old World: Europe, the Middle East, and North Africa" (in Harley and Woodward, eds., *Vol. 1,* op. cit., pp. 54–101); and my "*The History of Cartography/Volume 1:* Review Article," op. cit., where I bemoan her self-contradictory attempt at applying Piagetian developmental psychology to Paleolithic marks she imagines might have been maps. Also see the first edition of *The Power of Maps* (p. 33) for further objections to her work.

32. See Millard, op. cit.

33. See A. F. Shore, "Egyptian Cartography" (in Harley and Woodward, eds., *Vol. 1,* op. cit., pp. 117–129).

34. See the articles on South Asian cartography by Joseph E. Schwartzberg in Harley and Woodward, eds., *The History of Cartography, Vol. 2.1, Cartography in the Traditional Islamic and South Asian Societies* (University of Chicago Press, Chicago, 1992, pp. 293–509). As Schwartzberg says, the study of South Asian cartography is still in its infancy.

35. Schwartzberg, "Maps of Greater Tibet" (in Harley and Woodward, eds., *Vol. 2.2,* op. cit., pp. 607–685).

36. See the extraordinary series of articles on Islamic cartography, early geographical mapping, and Ottoman geographical mapping by Ahmet T. Karamustafa, Emilie Savage-Smith, Gerald R. Tibbetts, S. Maqbul Ahmad, Raymond Mercier, David A. King and Richard P. Lorch, J. M. Rogers, and Sivat Soucek in Harley and Woodward, eds., *Vol. 2.1,* op. cit., pp. 1–292. Many of these articles were the first to be essayed on their topics. Despite this, some broad conclusions can already be drawn. I return to Karamustafa's arguments in the final chapter.

37. See Harvey, *Medieval Maps,* op. cit., Skelton and Harvey, op. cit., and Harvey's articles, "Medieval Maps: An Introduction" and "Local and Regional Cartography in Medieval Europe" (in Harley and Woodward, eds. *Vol. 1,* op. cit., pp. 283–285 and 464–501). In this same volume see as well David Woodward, "Medieval *Mappaemundi*" (pp. 286–370).

38. Unno, op. cit.; Berry, op. cit.

39. See John K. Whitmore, "Cartography in Vietnam" (in Harley and Woodward, eds., *Vol. 2.2,* op. cit., pp. 478–508).

40. Thongchai, op. cit.

41. Barbara Mundy, "Mesoamerican Cartography" (in David Woodward and G. Malcolm Lewis, eds., *The History of Cartography, Vol. 2.3, Cartography in the Traditional African, American, Arctic, Australian, and Pacific Societies* (University of Chicago Press, Chicago, 1998, pp. 183–256).

42. For data like these, susceptible to change though they may be, we are all indebted to the heroic efforts of Woodward and Lewis and their collaborators in Woodward and Lewis, *The History of Cartography, Vol. 2.3,* op. cit. Sporadic mapmaking at large and very small scales is predicted for all civilizations with large bureaucracies and extensively mediated relationships.

43. On Wen Cheng-ming see, among others, Richard Edwards, *The Art of Wen Cheng-ming (1470–1559)* (University of Michigan Museum of Art, Ann Arbor, 1976). Similarly influential within their separate traditions, Wen and Michelangelo were almost exact contemporaries, 1470–1559 and 1475–1564, respectively.

44. At least until the very recent development of map art and the work of Ai Weiwei and others (but more on this below). Ai is known for, among other things, carving huge maps of China and the world out of wood, out of stacks of fabric. On Ai Weiwei see, most recently, David Coggins, "Ai Weiwei's Humane Conceptualism" (*Art in America,* September 2007, pp. 118–125).

45. On Mixtec mapmaking see Mary Elizabeth Smith, *Picture Writing from Ancient Mexico: Mixtec Place Signs and Maps* (University of Oklahoma Press, Norman, 1973); and Mundy, *Mapping of New Spain,* op. cit., and Mundy, "Mesoamerican Cartography," op. cit.

46. The quotations are from Collette Caillat and Ravi Kumar, *The Jain Cosmology* (Harmony Books, New York, 1981), p. 35. See also "Cosmographies: The Jain Tradition" (in Joseph E. Schwartzberg, "Cosmographical Mapping," in Harley and Woodward, eds., *Vol. 2.1,* op. cit., pp. 367–379).

47. David Woodward, "Reality, Symbolism, Time, and Space in Medieval World Maps" (*Annals of the Association of American Geographers 75*(4), 1985, pp. 510–521), p. 519. This paper was a more polemical version of his chapter on *mappaemundi* in Harley and Woodward, eds., *Vol. 1,* op. cit.

48. In addition to the works already cited by Parker, Buisseret, Mundy, Berry, Kivelson, P. D. A. Harvey, and Thongchai, attention needs to be drawn to Laura Hostetler's work on China, *Qing Colonial Enterprise: Ethnography and Cartography in Early Modern China* (University of Chicago Press, Chicago, 2001); Marcia Yonemoto's on Japan, *Mapping*

Early Modern Japan: Space, Place, and Culture in the Tokugawa Period, 1603–1868 (University of California Press, Berkeley, 2003); Martin Brückner's on the Americans between the 1680s and 1820s, *The Geographic Revolution in Early America: Maps, Literacy, and National Identity* (University of North Carolina Press, Chapel Hill, 2006); and Raymond B. Craib's *Cartographic Mexico: A History of State Fixations and Fugitive Landscapes* (Duke University Press, Durham, NC, 2004). The expansion of the literature on the history of mapmaking since I published *The Power of Maps* in 1992 is deliriously astonishing.

49. Buisseret, "Monarchs, Ministers, and Maps in France before the Accession of Louis XIV," op. cit., p. 109.

50. Parker, op. cit., p. 135.

51. Ibid.

52. Ibid., 139.

53. In Peter Barber, "England I: Pageantry, Defense, and Government: Maps at Court to 1550" (in Buisseret, ed., op. cit., pp. 26–56), p. 30. The translation into English is that of Sir Thomas Hoby in 1561.

54. This and the following data about Italian mapmaking come from John Marino's "Administrative Mapping in the Italian States" (in Buisseret, ed., op. cit., pp. 5–25).

55. For the medieval period see Skelton and Harvey, eds., op. cit.; for the following period see Barber, op. cit., and Peter Barber, "England II: Monarchs, Ministers, and Maps, 1550–1625" (in Buisseret, ed., op. cit., pp. 57–98).

56. Again, see Buisseret, "Monarchs, Ministers, and Maps in France before the Accession of Louis XIV," op. cit; also Peters, op. cit., especially pp. 53–55; and for a wholly different, but equally supportive take, Tom Conley's *The Self-Made Map: Cartographic Writing in Early Modern France* (University of Minnesota Press, Minneapolis, 1996), where his concern is less with bureaucratic applications than with the role maps played in articulating an emergent self's relation to the idea of national space. For a somewhat later period and more generally, see Mary Sponberg Pedley, *The Commerce of Cartography: Making and Marketing Maps in Eighteenth-Century France and England* (University of Chicago Press, Chicago, 2005).

57. For the Spanish Habsburgs, see Parker, op. cit.; for the Austrian Hapsburgs, see James Vann, "Mapping under the Austrian Habsburgs" (in Buisseret, ed., op. cit., pp. 153–167); for the United Provinces, see Roger J. P. Kain and Elizabeth Baigent, *The Cadastral Map in the Service of the State: A History of Property Mapping* (University of Chicago Press, Chicago, 1992, pp. 9–46); for Sweden see Kain and Baigent, op. cit., pp. 49–67; and for Poland see Michael J. Mikoś, "Monarchs and Magnates: Maps of Poland in the Sixteenth and Eighteenth Centuries," also in Buisseret, pp. 168–181.

58. This and the following derive from Berry, op. cit., largely from pp. 54–103.

59. Again, see Kivelson, op. cit.; Mundy, "Mesoamerican Cartography," op. cit.; and Brückner, op. cit.

60. Kivelson, op. cit., p. 15. Based on her own research and that of Berry and others, Kivelson here generalizes Harvey's remark about Europe: "Maps were practically unknown in the middle ages. This may seem a strange way to begin a book that displays a whole pageantry of maps from many different parts of medieval Europe—but it is a fact, and it is one we must accept if we are to appreciate what these maps were" (*Medieval Maps,* op. cit., p. 7).

61. Marino, op. cit., pp. 21–22.

62. Berry, op. cit., p. 83.

63. Kivelson, op. cit., p. 49.

64. Kain and Baigent, op. cit., p. 342.

65. Ibid., p. 343.

66. By using "perform" I do want to allude to the ceremonies of possession to which Patri-

cia Seed refers (op. cit.), but more importantly I want to anticipate the idea that maps are members of that class of "performative utterances" that J. L. Austin writes about in *How to Do Things with Words* (Oxford University Press, Oxford, UK, 1962). I'll have more to say about this in the next chapter.

67. See, from a voluminous and contested literature, Joseph R. Strayer, *On the Medieval Origins of the Modern State* (Princeton University Press, Princeton, NJ, 1970), for a succinct overview from one perspective. For a less succinct overview from another, see Perry Anderson's *Lineages of the Absolutist State* (Verso, London, 1979 [1974]).

68. Inescapably, the map is one of the rationalizing and disciplinary techniques that Foucault recognizes emerging with the modern state in the 17th century; and while Foucault doesn't discuss the map as such in these pages, the best place to understand how he would have is the third part, "Discipline," of *Discipline and Punish: The Birth of the Prison* (Random House, New York, 1979), not only the "locus classicus" of the pages on the "art of distribution" and those on panopticism, but the whole piece. It's interesting that even when he was asked directly about the "map as an instrument of power/knowledge" he didn't answer, though admittedly it was a question *I* don't believe could be legitimately asked since it assumed the map as an instrument of power in the ancient and medieval worlds. See "Questions on Geography" (in Michael Foucault, *Power/Knowledge: Selected Interviews and Other Writings, 1972–1977,* Pantheon, New York, 1980, pp.63–77), with the question on p. 74. That the map is an instrument of normalization, however, I have no doubt, though from the very beginning—that is, the 16th century—it had . . . *its other side* (about which a foretaste in the last section of this chapter).

69. Brückner, op. cit., p. 120.

70. Kivelson, op. cit., p. 10.

71. Berry, op. cit., p. 39.

72. Conley, op. cit. This is, in fact, the central theme of *The Self-Made Map,* a theme Conley explores by teasing out the relationships among the emerging state, emerging mapmaking, and "the growth of a new medium—literature—in early modern print culture" (p. 2). I perhaps make too little of the parallel growth of print, but so much important mapmaking—that surrounding the growth of the cadaster, for example—never made it into print that I feel *too much* can be made of the importance of print. Yet certainly print was the prime enabler of the map's ability to embody the nation's geo-body in popular patriotic culture.

73. Brückner, op. cit., p. 121.

74. Hostetler, op. cit., p. 80.

75. Brückner, op. cit., p. 56.

76. For British Guyana see D. Graham Burnett's *Masters of All They Surveyed: Exploration, Geography, and a British El Dorado* (University of Chicago Press, Chicago, 2000).

77. Thongchai, op. cit., p. 129. The following discussion of the geo-body is entirely derived from Thongchai.

78. For example, of French maps, Peters, op. cit., observes, "Whereas only about half of 16th-century maps showed boundaries at all, Sanson's maps employ a system of solid, dotted, and colored lines to distinguish in juridical terms the military units of gouvernements that replaced the duchies and counties of feudalism" (p. 28). Peters's source for this is ultimately James Akerman's doctoral dissertation, *On the Shoulders of a Titan: Viewing the World of the Past in Atlas Structure* (Pennsylvania State University, 1991, p. 558).

79. Anderson, op. cit., p. 175. John Fels and I anticipated both Thongchai and Anderson here in our 1986 paper, "Designs on Signs: Myth and Meaning in Maps" (*Cartographica, 23*(3), Autumn, 1986, pp. 54–103), here reprinted in Chapters 3 and 4.

80. Brückner, op. cit., pp. 122–123. This evolved from a pre-Revolutionary display of maps

to related, if not identical, ends. See, among others, Margaret Beck Pritchard's, "'Useful & Elegant Furniture for Screens, Halls, Large Rooms, Stair Cases': Maps as Symbolic Objects" (in her and Henry G. Taliaferro's *Degrees of Latitude: Mapping Colonial America,* The Colonial Williamsburg Foundation and Henry Abrams, New York, 2002, pp. 43–53).

81. And then "through chronologically arranged sequences of such maps, a sort of political-biographical narrative of the realm came into being" (Anderson, op. cit., pp. 174–175). Walter Goffart chronicles the rise of such sequences in his *Historical Atlases: The First Three Hundred Years, 1570–1870* (University of Chicago Press, Chicago, 2003), unsurprisingly tracking the rise the modern nation-state. Characteristically, in the first such map Goffart discusses, William Lambarde's *Map of the Anglo-Saxon Heptarchy,* Lambarde describes an "England, as it was devided in the Saxonnes tyme into VII kyngdoms," as though there *were* an England then (pp. 52–53). Goffart's focus is exclusively European.

82. That this was also true of maps—that maps too were natural, preexistent—fed into the myth about the origins of the state *outside* history.

83. Berry, op. cit., p. 79.

84. Kivelson, op. cit., p. 54.

85. Berry, op. cit., p. 58.

86. Indian scholars are particularly concerned with the role of the map in popular patriotic visual practices. Among much else see Sankaran Krishna's "Cartographic Anxiety: Mapping the Body Politic in India," variously available but most frequently cited in Hayward Alker Jr. and Michael Shapiro, eds., *Challenging Boundaries: Global Flows, Territorial Identities* (University of Minnesota Press, Minneapolis, 1996, pp. 193–215); and Sumathi Ramaswamy, "Visualizing India's Geo-body: Globes, Maps, Bodyscapes" (*Contributions to Indian Sociology 36,* 2002, pp. 151–189). I take up the case of Israel in my concluding chapter.

87. A proposition "is primarily a form of words which expresses what is either true or false," says Bertrand Russell in *Introduction to Mathematical Philosophy* (Simon & Schuster, New York, 1971 [1919], p. 155), though in *An Inquiry into Meaning and Truth* he acknowledged that "Words are not essential to propositions. The exact psychological definition of propositions is irrelevant to logic and theory of knowledge; the only thing essential to our inquiries is that the sentences signify something other than themselves. . . . That this something must be psychological (or physiological) is made evident by the fact that propositions can be false" (Norton, New York, 1940, pp. 237–238). In *Our Knowledge of the External World* Russell further distinguished between atomic (elsewhere basic), molecular, and general propositions, where an atomic proposition "expresses what we have called a fact" and general propositions take the form of "all men are mortal." Molecular propositions contain conjunctions like *if, or, and, unless,* and so on (Allen & Unwin, London, 1922 [1914], pp. 55–58), though he first made this distinction (and formally) with Alfred North Whitehead in their *Principia Mathematica* (Cambridge University Press, Cambridge, UK, 1913), pp. xv–xix. Generally, maps are concerned with atomic propositions, though see below where general propositions are posted on maps of generic landscapes.

88. For a more subtle analysis here, see Martin W. Lewis and Kären E. Wigen, *The Myth of Continents: A Critique of Metageography* (University of California Press, Berkeley, 1997).

89. Berry, op. cit., p. 49.

90. This is most pronounced in the original, Louvain, edition, and much less so in the more elaborately and three-dimensionally rendered version of the revised 1518 Basel edition. The latter was drawn by Ambrosius Holbein, and while it's unknown who drew the original, see the speculation in the Edward Surtz and J. H. Hexter edition of

Utopia (Yale University Press, New Haven, CT, 1965, pp. 16–17). As soon as it was published, Utopia as a place became a touchstone for fantasy worlds—in 1532, for example, Rabelais sited Pantagruel's birth there—and consequently it has generated an enormous literature. Among others see Brain R. Goodey's "Mapping 'Utopia': A Comment on the Geography of Sir Thomas More" (*Geographical Review 60*(1), 1970, pp. 15–30); the lengthy summary in Alberto Manguel and Gianni Guadalupi's *The Dictionary of Imaginary Places* (Macmillan, New York, 1980, pp. 387–393); and its lead-off position (following only Eden and Atlantis) in J. B. Post's *An Atlas of Fantasy, new revised edition* (Ballantine, New York, 1979). Because of permissions obstacles, Utopia's actually not in the first, 1973 edition of Post's *Atlas.* (Let me add that it's not easy to write a footnote with a straight face with Pantagruel tromping around in the background.)

91. Scudéry's map was engraved for the first, 1654 volume of *Clélie* by François Chauveau. A more elaborate version, engraved in 1659 and signed "Desreveaulx" appears as the frontispiece to James S. Munro's *Mademoiselle de Scudéry and the Carte de Tendre* (Durham Modern Language Series, Durham, NC, 1986). Peters, *Mapping Discord,* op. cit., notes that Scudéry's map "generated a remarkable vogue for allegorical cartography that began in the 1650s, lasted throughout the rest of the century, and intersected with several of the period's most important cultural conflicts," p. 23.

92. Peters, op. cit., p. 113. It's one of the theses of his book that "maps are always allegorical," and he means *all* maps (p. 33).

93. Schlaraffenland is a cockaigne, a land of milk-and-honey. Schnebelin, a German military commander, wrote about Schlaraffenland in his satire, *Erklärung der Wunder-seltzamen Land-Charten Utopiae,* first published in Nuremberg in 1694. Homann, a well-known Nurenberg publisher of atlases, may have made his map of Schlaraffenland as early as 1694, and Schnebelin may have had the map in front of him as he wrote. On this point see Franz Reitinger's *Johann Andreas Schnebelin's* Erklärung der Wunderseltzsamen Land-Charten Utopiae (Verlag Rockstuhl, Bad Langensalza, 2004, pp. 296 ff. and 334 ff.). More generally see Reitinger's, "Mapping Relationship: Allegory, Gender, and the Cartographical Image in Eighteenth-Century France and England" (*Imago Mundi 51,* 1999, pp. 106–130), which, despite the title deals with the 17th to the 19th centuries. On cockaigne in general see Herman Pleij's exhaustive *Dreaming of Cockaigne: Medieval Fantasies of the Perfect Life* (Columbia University Press, New York, 2001).

94. The map is best known from its 1745 printing but copies are extant from 1720. See Giuliana Bruno's *Atlas of Emotion: Journeys in Art, Architecture, and Film* (Verso, London, 2007, pp. 230–231). Bruno also covers some of the ground plowed by Peters, op. cit.

95. My first English edition of the *Travels into Several Remote Nations of the WORLD,* by Captain Lemuel Gulliver [Jonathan Swift], London, was printed in 1726 for Benj.[amin] Motte, at the Middle-Temple Gate, Fleet Street.

96. *Treasure Island* may have been inspired by a map of an imaginary island created by Stevenson's young stepson, Lloyd Osbourne, who would recall that

> busy with a box of paints I happened to be tinting a map of an island I had drawn. Stevenson came in as I was finishing it, and with his affectionate interest in everything I was doing, leaned over my shoulder, and was soon elaborating the map and naming it. I shall never forget the thrill of Skeleton Island, Spyglass Hill, nor the heart-stirring climax of the three red crosses! And the greater climax still when he wrote down the words "Treasure Island" at the top right-hand corner! And he seemed to know so much about it too—the pirates, the buried treasure, the man who had been marooned on the island . . . "Oh, for a story about it," I exclaimed, in a heaven of enchantment

in response to which Stevenson began writing, and reading aloud to his family, the opening pages of *Treasure Island.* At least that's Osbourne's memory. Stevenson claims

it was not Osbourne's but his own map that prompted the story, though he acknowledges that they were Osbourne's water colors, and that he often joined his stepson at his easel: "On one of these occasions, I made the map of an island," going on to detail the role of his map in creating *Treasure Island* in his essay, "My First Book." ("The map was the chief part of my plot," he writes.) In any case, this original map was lost by the publisher and Stevenson had to draft another, the one that appeared in the 1883 edition. See Emma Lesley's introduction to her edition of *Treasure Island* (Oxford University Press, New York, 1998, pp. vii–viii), for Osbourne's recollections, and pp. 192–200 for Stevenson's essay, Stevenson's *very* interesting essay.

97. See Katharine Harmon's, *You Are Here: Personal Geographies and Other Maps of the Imagination* (Princeton Architectural Press, New York, 2004), where her acknowledgment map, "The River of Gratitude," is on pp. 190–191; and Louise van Swaaij and Jean Klare, *The Atlas of Experience* (Bloomsbury, New York, 2000). Inserted into their book is a foldout map of the "World of Experience."

98. See Arthur R. Chandler's *E. H. Shepard: The Man Who Drew Pooh* (Methuen, London, 2003), the endpapers of which are decorated with Shepard's map of Guilford.

99. I touched on the evolution of these maps in the original edition of *The Power of Maps,* pp. 30–31, but they're responsible for a large literature all their own.

100. As of mid-2007, World of Warcraft alone had 9 million players worldwide. Brady Games has published a 200-page *World of War Craft Atlas.* There are similar compendia for each of the big games, wall maps, poster maps. Many of these are little more than printed screenshots, but others have been re-created for print. Victor Technologies produced a particularly elaborate *Advanced Dungeons & Dragons Forgotten Realms: Interactive Atlas,* and you should see the foldout map of Liberty City that comes with Grand Theft Auto IV (Rockstar Games). But there really is no end to this stuff.

101. Michael Hosking, *Marvel Atlas #1* (Marvel Publishing, New York, 2007), and *Marvel Atlas #2* (2008). Wayne Mann brought these to my attention.

102. See Chapter 7.

103. For example, Ai Weiwei's sculpture, *Map of China* (2004), made of Tieli wood taken from destroyed Qing dynasty temples, went for $228,000 at Sotheby's auction of contemporary Chinese art in March 2006, more than twice its estimate. See "Chinese Contemporary Art Prices Skyrocket" (*Art in America,* May 2006, p. 45).

104. Paul Kingsbury and John Paul Jones III have written an interesting paper that unfortunately I was able to review only after having written this—"Beyond Apollo and Adorno: Dionysus and Walter Benjamin on Google Earth" (*Geoforum,* in press)—in which they warn against the dangers of "foreclosing our theorizations about how Google Earth is actually used" by viewing it solely from a dystopian perspective anxious about its potential for rationalization and control *or* from a utopian perspective giddy over its potential for empowerment (both Apollonian); and instead urge us to consider its Dionysian, its ludic dimensions. This could apply with equal force to the entire world of maps.

105. See my "Cartography Is Dead (Thank God!)" (*Cartographic Perspectives 45,* Spring 2003, pp. 4–7) which, despite the animosity it's garnered from surviving cartographers, will only gain validity as they die off.

106. Oh, and they *are* trying. See the *Geographic Information Science and Technology (GIS&T) Body of Knowledge* published in 2006 for the University Consortium for Geographic Information Science by the Association of American Geographers to catch the flavor of their desperation. Put together by a task force of the usual suspects (ESRI, GE, Intergraph, Penn State, Ohio State, Redlands), this is all about establishing . . . *standards*! Gotta have those standards!

Chapter Two

1. Perhaps this is an appropriate place to underscore the contention of Gilles Deleuze and Félix Guattari that "the object of science is not concepts but rather functions that are presented as propositions in discursive systems," in *What Is Philosophy?* (Columbia University Press, New York, 1994, p. 117).

2. I did not invent this portrait. It was widespread, but it was synopsized in the Jill Lawrence *USA Today* piece that accompanied the map, in its county form, in its initial appearance (*USA Today,* November 8, 2000, p. 1).

3. Michael Gastner, Cosma Shalizi, and Mark Newman, "Maps and Cartograms of the 2004 U.S. Presidential Election Results," *www-personal.umich.edu/~mejn/election.* Gastner is with the Santa Fe Institute, Shalizi is at Carnegie-Mellon, and Newman is at the University of Michigan.

4. See Robert Vanderbei's site, *www.princeton.edu/~rvdb/JAVA/election2004,* for the map. For the comments see Philip A. Klinkner (2004) "Red and Blue Scare: The Continuing Diversity of the American Electoral Landscape" (*The Forum 2*(2), 2004, Article 2 (*www. bepress.com/forum/vol2/iss2/art2*), where you can also find reactions).

5. Lawrence, *USA Today,* op. cit. The differences, Lawrence concluded, were like those between Venus and Mars.

6. Nelson Goodman, *Language of Art* (Hackett, Indianapolis, IN, 1976, p. 8).

7. I got the idea of the "spaces of representation" from Hans-Jörg Rheinberger's really terrific *Toward a History of Epistemic Things: Synthesizing Proteins in the Test Tube* (Stanford University Press, Stanford, CA, 1997). I can't praise this book too highly.

8. Goodman, op. cit., pp. 6–7.

9. Ibid., p. 9.

10. Though no matter how it shows it, the alibi of the map is always that it's "just the facts, ma'm." Here, this from *The Economist*: "There is no surer way for *The Economist*'s Asia section to cause offence than to publish a map." The magazine claims that almost any map of the continent upsets some reader or government but also claims that, "we use maps not to portray the world as it ought to be, or even as we would like it to be, but [here it comes] as it is. Angered most often, to judge by its actions, is the government of India." *The Economist*'s maps show Kashmir carved up into Indian, Pakistani, and Chinese areas of control, and "Every time we print one, every single issue of the magazine distributed in India is defaced with an official stamp." Rejecting imputations of malice, *The Economist* says, "The truth is more benign: in using 'the line of control' that divides Kashmir in the absence of an agreed international frontier we are merely noting the status quo, not endorsing it" (*www.economist.com*, September 5, 2007). I thank my son Randall for pointing me to this quotation.

11. Or as George Lukács put it, "The nature of history is precisely that every definition degenerates into an illusion: history is the history of the unceasing overthrow of the objective forms that shape the life of man" (*History and Class Consciousness,* MIT Press, Cambridge, MA, 1972, p. 186).

12. *en.wikipedia.org/wiki/Mountain*, accessed December 3, 2007.

13. F. J. Monkhouse, *A Dictionary of Geography* (Aldine, Chicago, 1965, p. 209).

14. Bill McKibben, "mountain," in Barry Lopez, ed., *Home Ground: Language for an American Landscape* (Trinity University Press, San Antonio, TX, 2006, p. 236).

15. J. V. Howell, coordinating chairman, *Glossary of Geology and Related Sciences, Second Edition* (American Geological Institute, Washington, DC, 1962, p. 192).

16. Rhodes W. Fairbridge, ed., *The Encyclopedia of Geomorphology* (Reinhold, New York, 1968, p. 737).

17. Op. cit., p. 150, my emphasis.

18. Richard Bissell, *How Many Miles to Galena?* (Little, Brown, Boston, 1968, p. 307).

19. The nihilism is best articulated in his *Objects and Persons* (Oxford University Press, Oxford, UK, 2001). Other mereologists have actually written about maps. See Roberto Casati and Achille C. Varzi's *Parts and Places: The Structures of Spatial Representation* (MIT Press, Cambridge, MA, 1999), especially the entertaining chapter on boundaries and the cursory one on the semantics of maps. They regard this as work in mereotopology.

20. After all, from the Greek, ἄτομος or *átomos,* which meant "the smallest indivisible particle of matter," that is, something that could not be divided. Merricks is not committed to electrons or quarks, just to something indivisible.

21. John Fels and I reproduce this map, in color, and describe it and its immediate descendant in a recent chapter on the construction of nature as system, as science, in our *The Natures of Maps: Cartographic Constructions of the Natural World* (University of Chicago Press, Chicago, 2008, pp. 175–179). We could as readily have included it in our chapter on the construction of nature as mystery, where we treat what we call portrait maps (and Thelin and Pike do call theirs a "digital shaded-relief portrayal") and discuss maps that lack linguistic coding. The phrase "gentle folds of the Appalachians" is Gilbert Grosvenor's apropos an early portrait map. See *Natures* (pp. 188–203).

22. Both of these are from Barry Lopez, op. cit., p. 201.

23. This was Benjamin Lee Whorf's question too, though his answer was language: "English terms like sky, hill, swamp, persuade us to regard some elusive aspect of nature's endless variety as a distinct THING, almost like a table or a chair. Thus English and similar tongues lead us to think of the universe as a collection of rather distinct objects and events corresponding to words. Indeed this is the implicit picture of classical physics and astronomy—that the universe is essentially a collection of detached objects of different sizes." At this point he objects to the logicians' use of tables, chairs and apples as test objects, continuing, "The real question is: What do different languages do, not with these artificially isolated objects but with the flowing face of nature in its motion, color, and changing form; with clouds, beaches, and yonder flight of birds? For, as goes our segmentation of the face of nature, so goes our physics of the Cosmos" (*Language, Thought, and Reality,* MIT Press, Cambridge, MA, 1956, pp. 240–241).

24. It wasn't until 1950 that the primary USGS map product adopted this scale for the 7.5-minute topographic quadrangles that came to replace the earlier smaller-scale maps.

25. This history is the subject of the chapter on nature as park, in Wood and Fels, *The Natures of Maps,* op. cit., pp. 208–220.

26. The metaphor is that of Francisco Varela, Evan Thompson, and Eleanor Rosch, in their *The Embodied Mind: Cognitive Science and Human Experience* (MIT Press, Cambridge, MA, 1991, p. 135). Obviously, I would argue that even their "weak sense of representation" is controversial (pp. 134–135). The argument of the rest of the paragraph is that of Humberto Maturana and Francisco Varela as developed in *Autopoieis and Cognition: The Realization of the Living* (D. Reidel, Boston, 1980) and *The Tree of Knowledge: The Biological Roots of Human Understanding* (Shambhala, Boston, 1987). Central to their increasingly influential argument is the idea of the autonomy of the living that brings forth a world.

27. Fritjof Capra, referring to the "Santiago theory" of Maturana and Varela that no *things* exist independent of the process of cognition, has written, "There are no objectively existing structures; there is no pregiven territory of which we can make a map—the map making itself brings forth the features of the territory," in his *The Web of Life: A New Scientific Understanding of Living Systems* (Anchor Books, New York, 1996, p. 271).

28. The notion of the mapmakers' responsiveness to inner and outer voices is developed at

length in my paper, "The Map as Kind of Talk: Brian Harley and the Confabulation of the Inner and Outer Voice" (*Visual Communication 1*(2), 2002, pp. 139–161).

29. Again, see Chapter 7. The growing presence of map art not only induces more and more people to make maps, but influences professional mapmakers as well. The point, however, is not that map artists work in isolated garrets, but that the voices that speak to them are different from the voices speaking to the mapmakers working for the CIA.

30. This whole paragraph recasts what Fels and I call a "conceptual scaffold" in *The Natures of Maps,* op. cit., pp. 26–27. The balance of this chapter is a reworking of the "Spatial/Meaning Calculus" from *Natures* (pp. 28–33).

31. "Carrying out their effects while becoming silent is what [objects] are so good at," Latour says, adding that "objects, no matter how important, efficient, central, or necessary they may be, tend to recede into the background very fast . . . and the greater their importance, the faster they disappear. It does not mean they stop acting, but that their mode of action is no longer visibly connected to the usual social ties since they rely on types of forces chosen precisely for their differences with the normal social ones," in *Reassembling the Social,* op. cit., pp. 79–80.

32. Or in J. L. Austin's terms, "constative," as in his "The constative utterance, under the name, so dear to philosophers, of *statement,* has the property of being true or false," in his "Performative-Constative" (in E. D. Klemke, *Contemporary Analytic and Lingusitic Philosophies,* Prometheus, Amherst, NY, 1983, pp. 411–420), p. 411. Again, also see Austin's classic *How to Do Things with Words* (op. cit.). Sometimes the terms *locutionary* and *illocutionary* are used. There's a growing literature on the topic.

33. For an introduction, see Louis Hjelmslev, *Prolegomena to a Theory of Language* (University of Wisconsin Press, Madison, 1961) and Roland Barthes, *Elements of Semiology* (Hill and Wang, New York, 1967).

34. The posting turns the two Austinian constatives, the *this* and *there,* into a performative. Neither true nor false, Austinian performatives *perform an action,* as in the performative utterances, "I thee wed," "I apologize," "I welcome you to our home," and . . . "I name this ship *Liberté.*" This last example is Austin's own, and although he's thinking about ship christenings, others, such as baptisms, have the same structure. Indeed, so do *all namings.* While we may *resist* the idea that saying, "That mountain over there" is a performance like a christening, the fact is that until such a naming is performed, the there-thing (the "mountain") is, and how to say this, *unthinged.* The mountain is not brought into being *as a mountain* until the conceptual category is draped over it. This is much easier to think about when talking about claiming territory in the name of a king, and the boundary "christenings" that such claiming requires. The resulting map-things—boundaries, colonies, states—are plainly brought into being by performatives, of which the map is so sturdy an example. Maps do not establish facts: they perform namings, claimings, and so on. Maps are performative *tout court.*

35. Denis Wood and John Krygier, "Ce n'est pas le monde" (in Martin Dodge, Rob Kitchin, and Chris Perkins, eds., *Rethinking Maps,* Routledge, London, 2009, pp. 189–219). Krygier and I conceived this in June 2006 and presented it that October at the Critical Geography Mini Conference (Columbus, Ohio), where it was received with what can best be described as bemusement; and at the annual meeting of the North American Cartographic Information Society (Madison, Wisconsin), where it was received with open hostility. A few months later it got a much more positive reception at the American Association of Geographer's Monticello Symposium (Charlottesville, Virginia, June 2007). We've revised the piece in response to the comments we received at each outing, and the version in *Rethinking Maps* is its fourth.

36. Lately, George Lakoff has been stressing the importance of repetition (and its effect on

synaptic structure) in political discourse. See his *Don't Think of an Elephant! Know Your Values and Frame the Debate* (Chelsea Green, White River Junction, VT, 2004), which, like the rest of his argument, has evolved from his work in cognitive linguistics. What worked to build the idea of nation in the 18th century works today to shape its future.

37. Hence the willingness of people to buy into the vision of a completely polarized America following the 2000 election. Even though they *knew* that the vote was near enough a draw—even in Florida—the Red and Blue map swayed them.

38. There are maps that plot purely conceptual types as teaching aids, for example, populating a generic landscape with generic mountains, rivers, coastlines, bays, and oceans, that is, with what Russell called "general" as opposed to "atomic propostions" (*Our Knowledge of the External World,* op. cit.). See Figure N.1.

39. Note that in the legend the mark denotes a conceptual type. It signifies a material instantiation of that type only when posted in the cartographic sign plane.

40. The second of Charles Sanders Peirce's three trichotomies of signs recognized three general sign functions: iconic, symbolic, and indexical (see his "Logic as Semiotic: The Theory of Signs" (in Justin Buchler, ed., *Philosophical Writings of Peirce,* Dover Publi-
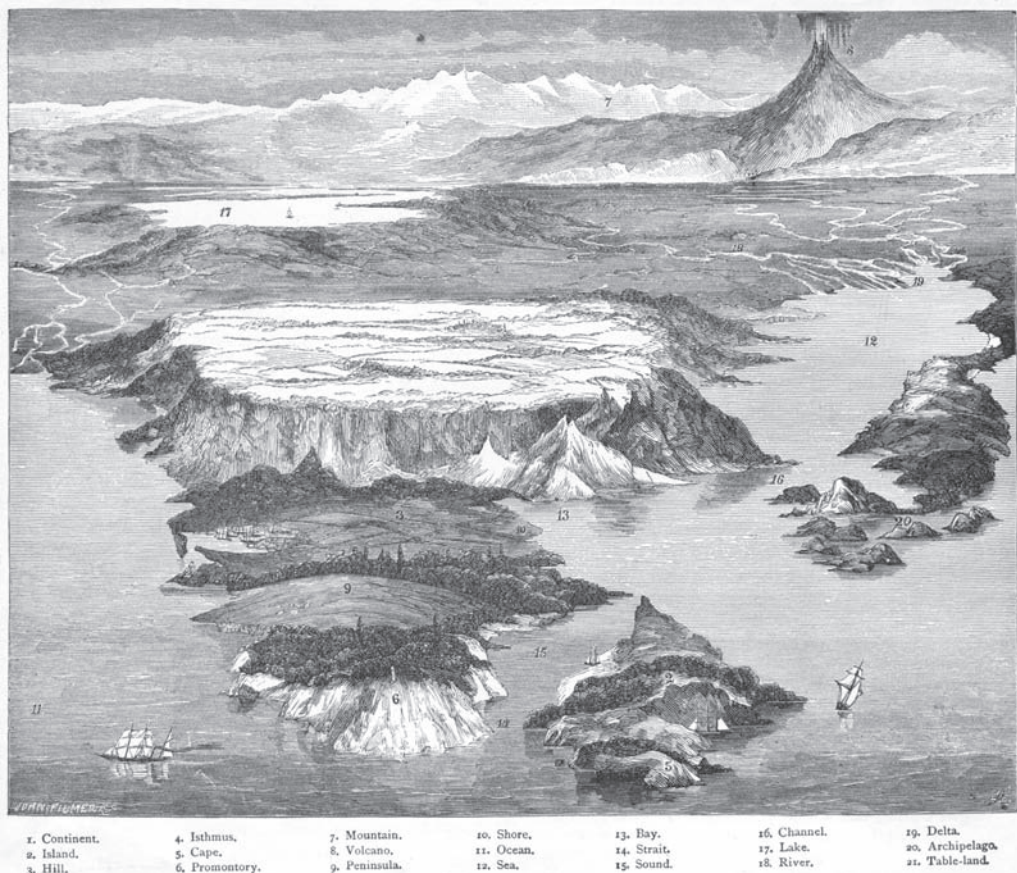
FIGURE N.1. General landscape. The landforms here are purely generic, and point to no actual cape, bay, or delta on the earth. That is, the indexical function here is less spatial than lexical. (*Source:* M. F. Maury, *Manual of Geography, Revised,* University Publishing, New York, 1898, p. 10)

cations, New York, 1955, pp. 98–119). Contemporary interpretations of these distinguish among icons (signs manifesting perceptible qualities of their referents, Peirce's "objects"); symbols (signs that work thanks to an explicit rule or code); and indices (signs that refer through a dynamical connection). Map signs asserting that *this is there* actualize all three functions simultaneously.

That is, iconic and symbolic signing functions bring the *this* into the map, while its location in the sign plane fulfills the indexical function. No sign could be *purely* indexical, even though the crosshair demarking the intersection of lines of longitude and latitude might *seem* to offer little but the proposition that *there is there.* In fact, the crosshair instantiates *two* conceptual types (it is a symbol after all), the line of longitude and the line of latitude, even though it does foreground the indexical function. What *this*es might be manifest *there* is left to be discovered. A fine example is the vegetation survey, which entails the fixing of random locations within a given territory and then their subsequent visitation to witness and enumerate just which floral *this*es are actually at the given *there*s.

41. Andro Linklater, *Measuring America: How the United States Was Shaped by the Greatest Land Sale in History* (Penguin Group, New York, 2002, p. 167). See also Kain and Baigent, *The Cadastral Map . . .* , op. cit. It's also worth checking out the old surveying manuals. John Norden's *The Surveyor's Dialogue* of 1607 is a good place to start, though it's more concerned with justifying surveying than with the how to. G. A. Wentworth's *Surveying and Tables* (Ginn and Company, Boston, 1882), which promises to present the subject "according to the best methods in actual use," is a great introduction. Contemporary textbooks are much more concerned with the use of total stations, with or without GPS interfaces. Here the data is downloaded from the total station to a computer that produces the map.

42. Debbi Sykes and Bill Muller, "Produce Vendors Fight City Hall," *News and Observers* (August 27, 1992, p. 1B). I first used this example in the paper, "How Maps Work," that I read to inaugurate the 1992 Power of Maps exhibition at the Cooper-Hewitt National Museum of Design ("How Maps Work," *Cartographica, 29*(3&4), Autumn/ Winter 1992, pp. 66–74), where I was already thinking about maps as assemblages of linkages enabling the transmission of authority, in this case the linkage of the Preddys and the zoning overlay, and through the overlay the linkage of the Preddys to the whole body of zoning code.

43. That is, the transmission relation is transitive.

44. Robert G. Bailey, *Ecoregions of North America* (U.S. Department of Agriculture, Forest Service, Washington, DC, 1997). This is a map of the provinces, with the domains and divisions laid out in insets. See also Bailey's *Ecosystem Geography* (Springer-Verlag, New York, 1996), and the treatment in Wood and Fels, *The Natures of Maps,* op. cit., pp. 179–181.

45. On the general nature of taxonomies, see Geoffrey C. Bowker and Susan Leigh Star's engaging *Sorting Things Out: Classification and Its Consequences* (MIT Press, Cambridge, MA, 1999).

46. The omission of first initials is a token of the currency of these classifications—as updated—in the earth sciences. It's N. M. Fenneman, whose *Physical Division of the United States* was originally published in 1928 by the Association of American Geographers; C. Hart Merriam, whose *The Geographic Distribution of Life in North America* was originally published by the Smithsonian in 1893 (as *Life Zones and Crop Zones* in 1898); A. W. Küchler whose *Vegetation Mapping* was published by The Ronald Press in 1967; and W. Köppen who summarized 30 years of work on climate in his *Grundriss der Klimakunde* (de Gruyter, Berlin, 1931).

47. See Wood and Fels, *Natures,* op. cit., p. 31 and pp. 88–95.

48. Sam LaGrone, "Residents Must Adjust as Wake-Franklin County Line Shifts" (*News and Observer,* February 4, 2008, p. B1); also Jesse James DeConto, "Redrawn Lines, Redrawn Lives" (*News and Observer,* Feburary 5, 2009, pp. A1, A8). Numerous Web resources are provided by both counties to help residents understand and participate in the process.

49. State borders are similarly caught up in the hierarchical structure in which they're embedded, and their disputes have to be adjudicated by the Supreme Court of the United States. International boundaries have to be adjudicated . . . yes, well, there's a train wreck for you!

Chapter Three

1. This chapter is an updated version of the first half of Wood and Fels, "Designs on Signs," op. cit., 1986, the year that unbeknownst to us R. J. Sullivan published "The Production and Design of Official State Highway Maps" (*Proceedings of NESTVAL 14,* 1986, pp. 17–25, where NESTVAL is the New England–St. Lawrence Valley Geographical Society). There might have been something in the water, but our papers could not have been more different. Then in 1991, Larry Bender wrote *Mapping America: A Critical Analysis of Official State Highway Maps* (unpublished M.A. Thesis, University of Oregon) and in 1994 Mark Bockenhauer came out with "Culture of the Wisconsin Official State Highway Map" (*Cartographic Perspectives 18,* 1994, pp. 17–27), this latter a straightforward extension of our work into a longitudinal analysis of Wisconsin state highway maps. Although our paper had initially been greeted with resounding silence, it has since been cited with increasing frequency in a bewildering variety of disciplines, especially after its incorporation in 1992 as the fifth chapter of *The Power of Maps,* the year the paper also provided a template for one of the rooms in The Power of Maps exhibition that I co-curated for the Cooper-Hewitt National Museum of Design. That room's header ran, "Whose agenda is in your glove compartment?" above a vitrine in which we'd installed a glove compartment ripped from a car, out of which tumbled an array of state highway maps. Elsewhere in the room a North Carolina state highway map was deconstructed along with other maps of the North Carolina Department of Transportation. The exhibition was remounted at the Smithsonian in Washington in 1994.

2. Bockenhauer notes that Indians are included on Wisconsin state highway maps exactly as they are on this one, that is, only as tourist icons (Bockenhauer, op. cit., p. 25).

3. Fels and I introduced the idea of the perimap in our *Natures of Maps* (op. cit., pp. 8–12), to refer to all the material surrounding the map image proper, here, the insets, the index, the mileage chart, safety tips, legend, and everything on the other side (welcome, prayer, schedule, and inventory). The *epimap* embraces all the material *not physically part* of the map that shapes the map's reception, here press releases, newspaper articles like G. D. Gearino's "Putting N.C. on the Map: Behind the Scenes of DOT's 2006 Edition" (*News and Observer,* January 15, 2006, pp. 1D and 4D), and the like, including, in the case at hand, our 1986 article (and so this chapter as well), the exhibition, and the controversy that surrounded it. We call the combined perimap and epimap the *paramap.*

4. So many maps are given away that the Commerce Department's Division of Travel and Tourism ran out of its 1.9 million copies of the 1996 edition well before the 1997 edition was due. At the same time the Department of Transportation still had maps from its 700,000-copy run (Rob Christensen, "Lack of Maps Puts Crimp in N.C. Welcome for Tourists," *News and Observer,* September 23, 1997, p. 3A). As we'll see below,

until 1992–1993, the two departments had each been responsible for one side of the map. According to Bockenhauer, a similar situation prevailed at the time in Wisconsin. Such promotionalism is an important theme in the history of the U.S. highway map generally and has attracted a good deal of attention. See, among much else, James Akerman's "Blazing a Well-worn Path: Cartographic Commercialism, Highway Promotion, and Automobile Tourism in the United States" (*Cartographica 30*(1), 1993, pp. 1–20); Douglas Yorke, John Margolies, and Eric Baker, *Hitting the Road: The Art of the American Road Map* (Chronicle Books, San Francisco, 1996); and James Akerman, ed., *Cartographies of Travel and Navigation* (University of Chicago Press, Chicago, 2006), especially Akerman's own, "Twentieth-Century American Road Maps and the Making of a National Motorized Space" (pp. 151–206), where his discussion of official state highway maps is pretty much confined to pp. 186–189.

5. And it's been in color since 1936 when the map included a 40-inch hand-drawn panorama of the Blue Ridge Parkway, then under construction, on the back.

6. Bockenhauer, op. cit., finds this to be characteristic of Wisconsin state highway maps too, at least of the 17 dating from 1918 through 1991–1992 that he examines. He displays the legend from the *1978–79* and the *1991–92 Wisconsin Official State Highway Map* (p. 19).

7. Arthur Robinson, Randall Sale, Joel Morrison, and Phillip Muehrcke, *Elements of Cartography, Fifth Edition* (John Wiley & Sons, New York, 1984, p. 159). It's instructive that, despite their indispensability, legends are granted but two paragraphs in the chapter on *design,* where they illustrate the principles of figure–ground relationships. In light of the discussion, below, about the "naturalization" function of myth, it's not at all surprising that Robinson et al. should have said "naturally indispensable."

8. Ibid.

9. Interestingly, the same logo is used on the Wisconsin map, from 1987 on, in the early years at least, in the center of the north arrow. Obviously, the people who produce these maps for the various states all talk to one another, sharing ideas from design to production technologies.

10. Ulla Ehrensvärd says, "the role color plays on maps has yet to receive thorough historical scrutiny," and this remains true despite her, "Color in Cartography: A Historical Survey," in David Woodward, ed., *Art and Cartography* (University of Chicago Press, Chicago, 1987, pp. 123–146). See my review in *Cartographica* (*24*(3), Autumn 1987, pp. 76–82), especially, on color (pp. 80–82).

11. Currently, the most vocal advocate for the use of natural color on maps is Tom Patterson of the National Park Service. His valuable trilogy of papers on the topic begs to become a book: "View from on High: Heinrich Berann's Panoramas and Landscape Visualization Techniques for the U.S. National Park Service" (*Cartographic Perspectives 36,* Spring 2000, pp. 38–65); "Getting Real: Reflecting on the New Look of National Park Service Maps," a parallel tribute to Hal Shelton (*Cartographic Perspectives 43,* Fall 2002, pp. 43–56); and a paper coauthored with Nathaniel Vaughn Kelso, "Hall Shelton Revisited: Designing and Producing Natural-Color Maps with Satellite Land Cover Data" (*Cartographic Perspectives 47,* Winter 2004, pp. 28–55 and 69–80). The papers also constitute a ringing declaration of cartographic realist principles, and while the ideas are DOA, Patterson's willingness to lay them out in such detail is useful. See our treatment in Wood and Fels, *Natures* (pp. 198–202).

12. Though this custom ceased with the 1992–1993 edition when the growing number of city insets—by then 11—were moved to what had been the Commerce side of the map where their scale could be increased. In 1995 another eight insets were added. As of 2007 there were a river basin map and 22 city insets on the back.

13. As, see Bockenhauer, they are from contemporaneous Wisconsin state highway maps.

As I noted above, it's plain that lots of sharing goes on among the teams responsible for these maps in different states.

14. The contradictions here are . . . *terrifying*. Animals and roads don't, after all . . . *mix*. Here, this from James Berry:

> "The rabbits are all gone," someone said. "I haven't seen a rabbit in years; they used to be everywhere." And in Halifax [North Carolina] the other day at a meeting of retired school teachers someone said, "Do you ever see rabbits anymore?" And everybody shook their heads and wondered. And on the way from Raleigh to Chapel Hill Tuesday, I saw six run-over possums and two raccoons and three thousand pushed-over trees and fifty earth movers smoking and chugging and doing the only thing they can do: clearing and grading. So the creatures had to flee. Where could they go? Someone spoke up. "That's what it means to have a job. You have to have a job to get money, and you have to have money to live, and having a job means you have to be doing something, and everything you do changes the world. So you see, it's just the way it is. The creatures have to go. Rabbits and possums and raccoons and trees and woodpeckers and all, what do they matter? Roads! That's what North Carolina's all about. North Carolina's about roads and more roads. And it's about automobiles. You got to be able to go from anywhere to anywhere at sixty miles an hour; without stopping. The creatures can just get out of the way." (James Berry, "It's People or Rabbits, Reprise, March, 1985," *The Center for Reflection on the Second Law, Circular 146,* May 1992, p. 1.)

And of course . . . this *is* the North Carolina of the road map!

15. From 1918 through the late 1940s, Wisconsin was "the playground of the Middle West," and later "a family vacation land."

16. This may once have been true, though it's likely that Texas had surpassed North Carolina even as early as the 1978–1979 edition. The maps now claim that "North Carolina's highway system is the nation's second largest state maintained network."

17. Roland Barthes, *Mythologies* (Hill and Wang, New York, 1972, p. 109). Felicitously translated by Annette Lavers, *Mythologies* consists of a number of "mythologies" followed by the long essay, "Myth Today." It is from this latter that this reference and the following quotation come.

18. Barthes, *Mythologies,* pp. 115–116.

19. Ibid., p. 115.

20. Ibid., p. 131.

21. This is the essential burden of Mark Monmonier's *How to Lie with Maps* (University of Chicago Press, Chicago, 1991; *Second Edition* 1996), as well as his *Bushmanders and Bullwinkles: How Politicians Manipulate Electronic Maps and Census Data to Win Elections* (University of Chicago Press, Chicago, 2001). Of course as we've seen from the various versions of the election return maps in Chapter 2, "*People Make*" would have been more to the point than "*Politicians Manipulate.*" I would say that "*Politicians Manipulate*" is an example of Monmonier trying to manipulate the inherent and inescapable artifice out of the map, pretending that only *politicians* manipulate instead of *every mapmaker*. Whatever gets you through the night, I guess.

22. This is even more obvious at the county level: it would be genuinely helpful to distinguish counties prohibiting the sale of alcoholic beverages from those selling beer and wine and mixed drinks. But in fact the carefully delineated counties are not distinguished in any way. Then why show them? This isn't a question that can be answered at the level of language. Only on the level of myth is their presence explicable, where North Carolina (and any other state), defender of states' rights as it necessarily is, can be seen to dissolve in turn into its constituent counties, their boundaries an unscreened application of the yellow used to demarcate the sovereignties surrounding North Carolina, leaking, as it were, into the state via these county edges.

23. The large handsome map came with the May 2008 issue. Under the word "Tibet" in minute letters that one has to strain to see it says "Autonomous region," but of course that's an autonomous region . . . *of China,* not a sovereign state. The *Economist* article I quoted in the second chapter anent Kashmir had things to say about Tibet too: "And what to do about Tibet? Label it the 'Tibet Autonomous Region' of China, and we distort reality: it is no more autonomous than, say, East Timor was under Indonesian occupation. Yet call it 'Tibet', and we appear to accept China's truncation of Tibetans' ancestral lands" (Economist.com, September 5, 2007). What gets Koreans and Japanese upset (among many other things) is the naming of the Sea of Japan/East Sea. To avoid offending either group, the British Museum has simply decided not to name the sea at all.

24. The question is whether mapmakers are ever going to be willing to accept their personal responsibility for the decisions they make, or will forever . . . pass these off onto the world. Bob Abramms of ODT, which distributes the Peters Map, confronted this issue when a customer complained about the portrayal of Tibet as Chinese. Abramms forwarded the query to his cartographers, who responded with a more nuanced version of the usual "we show the world as it is." After thinking this over, Abramms responded:

> I have been giving your thoughts on Tibet quite a lot of thought. And I would like to reply. The marketing spin put on the Peters Projection is that . . . "In this complex and interdependent world in which the nations now live, the peoples of the world deserve the most accurate possible portrayal of their world." Along the bottom of the map, there are ample references to the European-centered view portrayed by the Mercator projection and the injustice it does to the rest of the world. It makes explicit reference to Northern areas as places where "whites have traditionally lived." And it says that the Mercator projection is "not compatible with objectivity." As two examples of "objectivity" I point to the disputed border of Kashmir (shown as a dotted line) and the name of Myanmar (with the original name of "Burma" shown under it in parentheses). For all these reasons, I find your rationalization of why you won't portray Tibet as a disputed border rather flimsy. The invasion of Tibet took place a mere 52 years ago—half way through the 20th Century . . . it's not like we're talking about a dispute that goes back millennia . . . and it was an invasion that was protested in international forums by the Tibetans from the very beginning . . . there was NEVER a period of consent by Tibet to Chinese rule. . . . The validity of the Chinese occupation of Tibet (until then a sovereign nation) comes only from the refusal of the International community to do anything about it. And given the claims of the Peters Projection to "objectivity" and respectful fair play it is especially disappointing to have this dispute swept under the rug. The repudiation of white western colonial imperialism may be "objective," but it is also old hat. Very old. It's now merely a stylish social attitude that costs nothing to sport about in public. But embracing anti-white, anti-European critical tropes is hardly the end-all and be-all of "the most accurate possible portrayal of [the] world." I guess what I'm trying to say is that it's all fine and good to be iconoclastic when it costs you nothing. And admittedly an accurate portrayal of the Tibetan and other geo-politically thorny territorial disputes could get you into a great deal of hot water. But your excuses of "UN recognition" fly only so far as the bottom right corner of your map, on which one finds note of sponsorship. . . . "This map is produced with the support of the United Nations Development Programme." One dares not bite the hand that feeds I guess. But in the end it is a sad commentary (which undermines your message) that your "objectivity" and idealism extend only as far as your pocket book.

Contrast this with the *Economist*'s "we use maps not to portray the world as it ought to be, or even as we would like it to be, but as it is." They only beg the question whether they're idiots or cynics.

25. Actually my use of "many" here is merely hopeful. The *Economist* is hardly alone in insisting on its "objectivity."

26. Or even the fact, highly relevant to motorists, that along with its award for the second most miles in a state-maintained highway system (or close to it), North Carolina *also* gets the award for *most substandard state-owned bridges.* According to *Better Roads,* a transportation trade magazine, 8,286 of the state's 16,828 bridges were either substandard or functionally obsolete. Bill Holman, an environmental lobbyist, observed that part of the trouble is that businesses are more interested in new roads than in improving old ones: "You don't open up new areas to development when you replace a bridge" ("Officials Say Bridges Still Get Less Attention," *News and Observer,* May, 18, 1992, p. B2). See also Barry Yeoman's five-part series, "Highway Robbery: How Campaign Dollars Rule the Roads," in the first part of which he documents the relationship between routes and campaign contributions (Barry Yeoman, "Paving under the Influence," *The Independent, 10*(21), May 20–26, pp. 8–13). This is every day, and in every state, but it underlines our contention—here, in this immediate, local context—that what gets mapped is what makes money for those who have money. And all the rest of it is a kind of technical handwaving.

27. It was also a sixth as many as the state printed of its *1988–1989 North Carolina Coastal Boating Guide* (100,000 copies) and a third as many as it printed of its *North Carolina Variety Vacationland 1989–1990 Aeronautical Chart* (40,000 copies). The state's priorities could not have been clearer: road maps, 1.6 million copies; boat maps, 100,000 copies; maps for private planes, 40,000 copies; maps for public transportation, 15,000 copies. Curiously, although the governor's wife's photograph graced the highway map, it is missing from the public transportation guide, where he stood alone. The state no longer publishes this map.

28. Bockenhauer notices a similar absence of blacks from Wisconsin maps where he also picks up a distinct sexist vibe.

29. See, for instance, the beautiful treatment of the "Top Hat, White Tie, and Tails" number from Astaire's *Top Hat* in Gerald Mast's *Howard Hawks: Storyteller* (Oxford University Press, New York, 1982, pp. 21–24), which considers each of these elements (except for Ginger, who didn't dance in that number).

30. Umberto Eco, *A Theory of Semiotics* (Indiana University Press, Bloomington, 1976, pp. 48–49).

31. Ibid., p. 49.

32. New York was certainly played for a sign in the destruction of the World Trade Towers. It very much mattered that the Towers were in New York, as that the other targets were in Washington.

33. Roland Barthes, *Camera Lucida* (Hill and Wang, New York, 1981, pp. 100–102). Of course this takes us straight back to Nelson Goodman in Chapter 1.

34. These examples come from the verso of "Central America," published as a supplement to the *National Geographic,* April 1986, 466A.

35. The Central America map is as cited above. That of the Central Plains comes from the verso of "Central Plains," published as a supplement to the *National Geographic,* September 1985, 352A.

36. The reference is to the original edition of *The Nuclear War Atlas,* a 20-inch by 34-inch sheet with 28 two-color maps recto—in inflammatory black and red—and text verso published by the Society for Human Exploration, Victoriaville, Quebec, 1982, although the Backwell version is socially conscious enough (William Bunge, *The Nuclear War Atlas,* Basil Blackwell, Oxford, UK, 1988).

37. Michael Kidron and Ronald Segal, *The State of the World Atlas* (Simon and Schuster, New York, 1981). This was followed by a second edition, *The New State of the World Atlas*

(Simon and Schuster, New York, 1984); a third edition, *The New State of the World Atlas Revised and Updated* (Simon and Schuster, New York, 1987), and so on. It was in its eighth edition under the Penguin imprint when I wrote this. It has spawned a whole family of similarly engaged atlases: Michael Kidron and Dan Smith's *The War Atlas* (Pan Books, London, 1983); their *The New Atlas of War and Peace* (Simon and Schuster, New York, 1991); Joni Seager and Ann Olson's *Women in the World Atlas* (Simon and Schuster, New York, 1986); and Joni Seager's *The State of the Earth Atlas* (Simon and Schuster, New York, 1990), all of them currently available in contemporary editions. In each of these, the violation of not only good cartographic taste but map reticence about its interests signals . . . *righteous indignation.*

38. Roland Barthes, "The Plates of the Encyclopedia" (in *New Critical Essays,* Hill and Wang, New York, 1980, p. 27).

Chapter Four

1. This chapter is an updated version of the second half of Wood and Fels, "Designs on Signs," op. cit., 1986. For more see the headnote to Chapter 3.

2. The *New York Picture Map* was created by Hermann Bollmann for Pictorial Maps Incorporated, New York. The recto carries Bollmann's rendering of midtown Manhattan in five colors, and the verso a two-color planimetric map of the city of New York. Approximately 34×43 inches, the map sheet folds to fit a jacket that includes 48 pages of text. It is not dated. For another approach to a not dissimilar issue, see Edward Tufte's treatment of Constantine Anderson's highly similar axonometric of a nearly identical portion of midtown Manhattan (*Envisioning Information,* Graphics Press, Cheshire, CT, 1990, p. 37). Tufte's conclusion? A most unconventional design strategy: "*to clarify, add detail.*"

3. R. L. Gregory, in *Eye and Brain: The Psychology of Seeing* (McGraw-Hill, New York and Toronto, second edition, 1973, pp. 160–176), identified *personal experience* and the *geometry of environment* as key ingredients of our ability to decode perspective transcriptions. For more recent appraisals that complicate, but do not materially contest, our point insofar as it's made about maps, see the essays in Heiko Hecht, Robert Schwartz, and Margaret Atherton, eds., *Looking into Pictures: An Interdisciplinary Approach to Pictorial Space* (MIT Press, Cambridge, MA, 2003), where there is a pronounced, but hardly universal retreat from the conventionalist arguments Gregory would have been most comfortable with.

4. Nikhil Bhattacharya, "A Picture and a Thousand Words" (*Semiotica, 52*(3/4), 1984, pp. 213–246). This, and several of the references that follow, are from this special issue titled *The Semiotics of the Visual: On Defining the Field,* edited by Mihai Nadin.

5. *Pretense* because unlike the widely distributed satellite photo collages of the earth at night, this map is actually a map of population distribution, not night lights: *Map GE-70, No. 1, Population Distribution, Urban and Rural in the United States: 1970 (nighttime view)* (Bureau of the Census, U.S. Department of Commerce, Washington, DC).

6. The distinction being drawn here is essentially the same as that of Hansgeorg Schlichtmann, "Characteristic Traits of the Semiotic System 'Map Symbolism'" (*Cartographic Journal, 22*(1), June 1985, pp. 23–30). Schlichtmann differentiates "plan information" from "plan-free information" on the basis of the former's inclusion of location, and content items contingent thereon (i.e., transcribed shape and extent).

7. Compare, for example, the satellite image reproduced on pages 28 and 29 of the *Atlas of North America: Space Age Portrait of a Continent* (National Geographic Society, Washington, DC, 1985); or that on page 54 of Michael and Susan Southworth, *Maps: A Visual Survey and Design Guide* (Little, Brown, Boston, 1982).

8. The term *metaphor* is used here in the most general sense of representation through a surrogate interpretant. Within written language, distinctions among metaphoric types are numerous; but their applications to graphic signs are largely unexplored and of questionable utility.

9. Barbara S. Bartz in "Type Variation and the Problem of Cartographic Type Legibility—Part One" (*Journal of Typographic Research, 3*(2), April 1969, pp. 130–135), summarizes the iconic ("analogous") characteristics of letterforms in the cartographic context as those referring to location (point location, linear and areal extent, shape and orientation of feature), quality, quantity, and value (relative importance).

10. Southworth and Southworth, op. cit., p. 189, reproduce two examples; Kevin Lynch reproduces another (*Managing the Sense of a Region,* MIT Press, Cambridge, MA, 1976, pp. 158–159 and dust jacket).

11. Paschal C. Viglionese, "The Inner Functioning of Words: Iconicity in Poetic Language" (*Visible Language, 19*(3), 1985, pp. 373–386), foregrounds these potentials in a series of analyses attentive to the prephonographic origins of linguistic expression and the cultural bases of iconicity.

12. By reducing *all* aspects of map production equally to codes, we hope to reveal the similarity among what are usually entirely segregated. Thus, ordinarily, projections are treated as problems in . . . mathematics, but map layouts as ones of . . . design (whence a lot of the old science/art distinction, despite the fact that science can hardly be reduced to math, or art to design). In fact, both are equally . . . *coded* (only the codes are different).

13. A classical example would be the 23 small multiples of Los Angeles air pollution showing the average hourly distribution of reactive hydrocarbons that Tufte illustrates in his *The Visual Display of Quantitative Information* (Graphics Press, Cheshire, CT, 1983, p. 170); but Stephen Hall illustrates images he calls maps of phenomena transpiring in small parts of nanoseconds. See the image of the creation of the first Z particle observed in Stephen Hall, *Mapping the Next Millennium: The Discovery of New Geographies* (Random House, New York, 1992, between pp. 240 and 241).

14. We refer here to the maps occupying pp. 80–81 and 148–149 of *Goode's World Atlas, Sixteenth Edition* (Rand McNally, Chicago, 1982).

15. One might reflect here on the currency of data drawn from geographic information systems, the difference in time between their point of acquisition and point of use, and the liability potentially incurred. Given the naïve tendency of most users to accept any electronically coded information as current, the onus is clearly on the purveyor of information to inform the user to the contrary. Political bubble-bursting notwithstanding, this is a responsibility that the system manager ignores at his own peril: unearthing a telephone cable is one thing; cracking open an oil tanker is quite another.

16. This similarity has been increasingly acknowledged. See, for example, Nina Siu-Ngan Lam and Dale A. Quattrochi, "On the Issues of Scale, Resolution, and Fractal Analysis in the Mapping Sciences" (*Professional Geographer, 44*(1), 1992, pp. 88–98), where "scale" and "resolution" refer equally to spatial, temporal, and "spatiotemporal" domains. Note the up-to-date use of "mapping sciences." What Lam and Quattrochi really make clear, however, are the number of *new* avenues for political activity in the process of mapping.

17. See Robert J. Beck and Denis Wood, "Cognitive Transformation of Information from Urban Geographic Fields to Mental Maps" (*Environment and Behavior 8*(2), 1976, pp. 199–238) for an extended discussion of motile and temporal synchronization; Tommy Carlstein, *Time Resources, Society and Ecology* (George Allen and Unwin, London, 1982, pp. 38–64); and Allan Pred, most comprehensively in *Making Histories and Constructing*

Human Geographies: The Local Transformation of Practice, Power Relations, and Consciousness (Westview, Boulder, CO, 1990).

18. This map is reproduced, with some fanfare, in Tufte's *Visual Display,* op. cit., pp. 41 and 176. Indeed, the map has since become inescapable.

19. The example at hand concludes the *North American Road Atlas* published by the American Automobile Association (Falls Church, VA, 1984).

20. *The World Geo-Graphic Atlas: A Composite of Man's Environment,* edited and designed by Herbert Bayer, was produced in 1953 for the Container Corporation of America. Described in the Foreword as "an effort to contribute modestly to the realms of education and good taste," it is, as a gesture of corporate good will or a device of corporate promotion (take your pick), an exceptionally lavish and ambitious volume. On the role of "exchange value" at the expense of "use value" in Bayer's involvement with the Container Corporation of America, see Folke Nyberg's comments in his "From *Baukunst* to Bauhaus" (*Journal of Architectural Education, 45*(3), May, 1992, p. 136).

21. Which is pretty much, but not quite the story. In his preface to the Blackwell edition, Bunge has this to say about the original, poster version:

> On a brief visit back to Toronto, James Cameron, a geographer at York University, suggested that I do an atlas on nuclear war. York provided newspaper clippings and some cartographic work through the efforts of Gerry Bessenbrugge but soon broke off its involvement. Yet my wife and I persisted, and this resulted in the poster edition of this atlas which was on the streets in June, 1982, just one week too late for the great United Nations demonstration in New York City. The first edition of the atlas was designed for field use among the unemployed of Detroit's black slum ghetto. . . . The original edition was in the tradition of *Lobeck's Physiographic Diagram of North America,* with 20,000 words of text on one side and 28 maps on the other, suitable for poster display upon completion of reading it. The 20 in. × 34 in. poster folded into a 5 in. × 8 in. size designed for peace demonstrations, where it was abundantly sold. Selling the atlas as an excuse to talk peace during the summers of 1982 and 1983, talking to thousands of people door-to-door, often at great length, especially in Toronto, retaught me Detroit's lesson that people needed, as well as a dire warning, hope and a more articulated plan for saving children. (*The Nuclear War Atlas,* op. cit., pp. xxi–xxii)

Although not likely to inspire envy among many professional mapmakers, this atlas in its poster form assumed the form appropriate to its purpose. It would be hard to imagine as an expensive coffee-table book like the *World Geo-Graphic Atlas* except, perhaps, as a device of the blackest humor.

22. This term is more widely accepted among graphic designers than among linguists. Thomas Ockerse and Hans Van Dijk, "Semiotics and Graphic Design Education" (*Visible Language, 8*(4), 1979, p. 363) describe the supersign as "a sign which allows for a complex simultaneity of possible interpretants." In "De-Sign/Super-Sign" (*Semiotica, 52*(3/4), 1984, pp. 251–252), Ockerse elaborates on

> the problem of defining the so-called "super-sign." This means to provide a rational system for communication wherein the sum forms the major mode of signification. The participating elements within this complex whole contribute bits of information. The whole is actually a sign made up of other signs; more precisely, the supersign is a sign system. This system is intended to include all signs that operate within the system or that can/will influence the system: the bits, their structural relations, the sum representations created by the juxtapositions of micro- and macro-elements (bits to bits, bits to groups, groups to groups, groups to the whole, the whole to others, etc.). Involved are potential layers and levels of information (in terms of importance, denotative and connotative references) for reader/viewer. The supersign is like a text; but its potential is even intertextual, a characteristic of signs. In fact, the supersign concept even provides

a system that invites the reader/viewer to become an active participant in a generative process.

It will become apparent that, in our analysis, the term *system* has a more specific meaning than that intended by Ockerse; but this does not indicate disagreement over the nature or function of the supersign.

23. C. Grant Head, "The Map as Natural Language: A Paradigm for Understanding" (*Cartographica, 21*(1), 1984, pp. 1–32) stresses two levels of interpretation, citing the following: Barbara Bartz Petchenik, "From Place to Space: The Psychological Achievement of Thematic Mapping" (*American Cartographer, 6,* 1979, pp. 5–12); Judy M. Olson "A Co-ordinated Approach to Map Communication Improvement" (*American Cartographer, 3,* 1976, pp. 151–159); and Jacques Bertin, "La test de base de la graphique" (*Bulletin du Comitrancais de Cartographie, 79,* 1979, pp. 3–18). Among these, however, it turns out that only Petchenik's analysis is entirely restricted to two levels ("being-in-place" and "knowing-about-space"): Olson's "Level One" and "Level Two" are supplemented by a "Level Three" that is curiously distinct in its attention to meanings; and Bertin, in *Semiology of Graphics* (University of Wisconsin Press, Madison, 1983, pp. 141 and 151), acknowledges a variety of "intermediate" levels between the "elementary" and the "overall." Schlichtmann (op. cit., pp. 25 and 27–28) identifies three levels of signification—"minimal signs, macrosigns, and texts"—which seem to differ more in extent than degree of synthesis. While none of these analyses recognizes a presentational, or discursive, level of signification, our terms are probably in closest agreement with Schlichtmann's.

24. Our concern here is not the neurological processing of stimuli, but the *interpretation* of visual signs. The map user, regardless of—and oblivious to—physiological means, is obviously capable of both composing and decomposing complex signs; one of these abilities is of little use without the other. There seems to be a tendency among academic mapmakers to regard perception as an exclusively constructive—even additive—process, encouraged perhaps by an affinity for mechanistic perceptual models that, for the most part, simply invert the biological metaphors of technological design (offering cameras for eyes, telecommunications systems for neural systems, or industrial robot vision for human cognition), and driven by a virtual obsession with the measurement of responses to largely decontextualized cartographic expressions. But the issue at hand is one of interpretive strategy: a strategy that operates on the organization of meanings, and the construction and deconstruction of *meaningful structures.* Its application is bidirectional and comprehensive.

25. This subject is given thorough treatment by Jacques Bertin, op. cit., pp. 195–268 and 321–408.

26. Paul Klee, *Pedagogical Sketchbook* (Faber and Faber, London, 1968, pp. 18–21). First published in 1925 and first translated in 1953, this, together with Wassily Kandinsky, *Point and Line to Plane* (Dover, New York, 1979), rooted the Formalist approach to visual design firmly in the curriculum and practice of the Bauhaus. More recent treatments of a general nature include Donis A. Dondis, *A Primer of Visual Literacy* (MIT Press, Cambridge, MA, 1973), Wucius Wong, *Principles of Two-Dimensional Design* (Van Nostrand Reinhold, New York, 1972) and, despite its title, Jacques Bertin's *Semiology of Graphics.* For decades, Formalism has dominated the methodology of cartographic design: its appearance in the modern textbook is effectively compulsory, and a bibliography of papers that construct "design guides" from Formalist principles would be too extensive to present here. For a relatively concise, cartographically oriented review see Howard T. Fisher, *Mapping-Information: The Graphic Display of Quantitative Information* (Abt Associates, Cambridge, MA, 1982, pp. 60–115).

27. Though why not? The roads on the North Carolina road map *are*. What, of course, we understand in this way is that "roads" per se are not features. Rather, federal roads are, state roads are, county roads are, and so on.

28. However, the blue line, in and of itself, does represent a road on the North Carolina highway map.

29. Maurice Merleau-Ponty, *Signs* (Northwestern University Press, Evanston, IL, 1964, p. 39).

30. In the case of cadastral maps, this other sign system is often purely linguistic (the description of the boundary, the names of the owners, and so on).

31. This term is used in the sense intended by Charles S. Peirce: to express a causal relation between object (steep slope, river, city) and interpretant (twisting road, parallel roads, circular highway segment).

32. The familiar example of the musical theme, which retains its identity despite transposition to another key or rescoring for a different ensemble of instruments, is remarkably evocative of the cartographic sign system that retains *its* identity throughout numerous topological and scalar transformations, spatial reorientations, and symbolic representations. Clearly, the recognizable whole, in both cases, is an artifact of structure rather than sensation, a *gestalt*.

33. Bill Bunge made a similar point with his map "The Continents and Islands of Mankind," which shows—against a white ground in black—simply those portions of the globe harboring more than 30 persons per square mile. Period. About the map he made these comments:

> When the original explorers went out they searched for people too, for instance, good slaves. But mapping people was very dangerous. People are also mobile. Compared to mountains, rivers, coastlines, they are nearly invisible. But at least the names of "tribes" were placed on original maps. And as this material was accumulated it became known as "the map." It became the stuff of the "base map." And once the "base map" for a region was complete, it was "explored." It has been impossible evidently to conceive even philosophically of a more appropriate base map for our times. We use as the absolute irreducible element the distinction between what is wet and what is dry. Might it not be better to distinguish between what is populated and what is empty of people? The deserts of the world, the ice caps, have more in common with most of the oceans than with South Asia. The North Atlantic, with its permanently transient population, might be better classified with Iowa than the South Pacific. Even recognizing that some human interest has always been shown in humans—the priorities have been so reversed that the base map itself should be reexamined. It might be sanguine to start having grade school children around the world memorizing the continent and islands of people as the basic ingredient in their mental maps. (*The First Years of the Detroit Geographical Expedition* [Field Notes, 1], Society for Human Exploration, Detroit, MI, 1969, p. 2).

34. Kidron and Segal, op. cit.

35. Robert Scholes, *Semiotics and Interpretation* (Yale University Press, New Haven, CT, 1982, p. 144).

36. Ibid., p. 34.

Chapter Five

1. Here's the language from Hillsborough's Mapping the Risk program:

> To protest a floodplain boundary, street or stream name/location, or other map information, submit certified topographic maps or other certified ground elevation data that are of greater detail and/or more recent than those used for the preliminary map panel in question. In addition, the requested changes to the floodplain should be marked on

the topographic mapping and flood map panel. Protests of a floodway require updated hydraulic modeling. Technical Information you are submitting with the Protest Request (check all that apply):

☐ Certified Topographic Information (No certification needed if it is a government product, such as a USGS Map).

☐ Elevation Certificate Signed and Sealed by a Licensed Surveyor or Design Professional.

☐ Copy of the Preliminary Flood Map Panel (with requested changes to the floodplain drawn on it).

☐ Other Information.

Almost every local community has similarly adapted the FIMA requirements (see below).

2. I downloaded this at *www.fema.gov/pdf/fhm/st_durapp.pdf.* FIMA, of course, is part of FEMA, where neither the M nor the A stands for the same thing.

3. Most such postings go up and come down, yet I accessed the Mohamed Al Fayed invitation at *www.caledonia.org.uk/land/guestlog.htm* on May 31, 2008, but also 2 years earlier.

4. Whereas typically this takes the form of a reactionary cordoning, as in "Sheriff Ronnie Strength is offering demonstrators a 5.1-acre field in front of Savannah West Apartments, a third of a mile from Augusta National's main gate"—accompanying the publication of a map showing the "Site of protest" in relation to Augusta National Golf Club—it can also take the entirely proactive form of *The Right to Protest,* which the Australian government publishes as a guide for protesters with its "You do not require formal approval to conduct a protest or demonstration within the National Capital," its helpful maps, and its expressed desire, "To build the national capital in the hearts of all Australians."

5. "The police designated protest pen," as the legend on *The 2004 RNC Protesters Map* has it.

6. See the text on McArthur's map, and watch Bob Abramms, current publisher of McArthur's map, talk about McArthur at *www.ODTmaps.com.* There's even a picture of 12-year-old Stuart.

7. Gwendolyn Warren, "About the Work in Detroit," *Field Notes: Discussion Paper No. 3, The Geography of the Children of Detroit* (The Detroit Geographical Expedition and Institute, Detroit, 1971, pp. 10–16), p. 12.

8. Bunge, *Nuclear War Atlas,* op. cit, 1982, and op. cit., 1988.

9. Bunge, op. cit., 1982.

10. Kidron and Segal, *The State of the World Atlas,* op. cit., 1981. The atlas was unpaginated, but I quote from the first page of the Introduction.

11. Kidron and Segal, *The New State of the World Atlas,* op. cit., 1987.

12. My main source here is Ken Garland's *Mr. Beck's Underground Map* (Capital Transport, 1984). The anxiety about what to call it shows up on the copyright page where Garland says, "Though not strictly speaking a map, the term is almost universally used by people when referring to the London Underground Diagram, hence the title of this book." Garland calls it a diagram throughout. Mark Overden engages in the same sleight, entitling his very popular book *Transit Maps of the World: The World's First Collection of Every Urban Train Map on Earth* (Penguin, London, 2007), while at the same time running as a head in his introduction the phrase, "from maps to diagrams." For a rather more semiotic perspective on Beck's map, see Janin Haidlaw's "The London Underground Map: Imagining Modern Time and Space" (*Design Issues 19*(1), 2003, pp.

25–36); and for an ethnographic/STS/cognitive-mapping perspective, Janet Vertesi's "Mind the Gap: The London Underground Map and Users' Representations of Urban Space" (*Social Studies of Science 38*(1), 2008, pp. 7–33).

13. Simon Patterson, *The Great Bear,* 1992, lithograph on paper, image: 1027 × 1280 mm, edition of 50. The Tate bought its copy in 1996. Whereas you could see an image at the Tate collection as recently as last year, now all you find is "Sorry, image not available due to copyright restrictions." The best thing I've read about *The Great Bear* is Anna Oliver's "A Reading of Simon Patterson's Piece *The Great Bear*" (2001–2003), which she wrote as part of her coursework on her MFA at Cardiff School of Art (*www.annao.pwp. blueyonder.co.uk*).

14. Quoted from the Tate catalogue entry for *The Great Bear.*

15. Since the point of this is going to be that Transport for London (TfL) has been curtailing access to these images as infringements of copyright, you just have to search around for them. Many sites where you could see them now carry nothing but the sentence, "Content removed at the request of Healeys Solicitors acting on behalf of Transport for London and Transport Trading Ltd."

16. Read *all* about it at *www.geofftech.co.uk/tube/sillymaps.*

17. Most accessible at *www.geofftech.co.uk/tube/sillymaps,* although there's a bigger version at *static.flickr.com/45/111234775_4370a5999a_o.jpg.*

18. So, it was an interesting decade: the Wood and Fels you know; the Harley and Woodward you know; the Harley citations are to papers all of which have been collected in J. B. Harley, *The New Nature of Maps* (Johns Hopkins University Press, Baltimore, 2001); the Rundstrom citation is to "A Cultural Interpretation of Inuit Map Accuracy" (*Geographical Review 80*(2), April 1990, pp. 155–168), though perhaps more important is his "GIS, Indigenous Peoples, and Epistemological Diversity" (*Cartography and Geographic Information Systems 22*(1), 1995, pp. 45–57); the Pickles references are to his "Geography, GIS, and the Surveillant Society" (*Papers and Proceedings of Applied Geography Conferences 14,* 1991, pp. 80–91) and his edited *Ground Truth: The Social Implications of Geographic Information Systems* (Guilford Press, New York, 1995); Turnbull's *Maps Are Territories: Science Is an Atlas* was originally published by Deakin University, Geelong, Australia, in 1989 and is still in print with the University of Chicago Press; and Doug Aberley published *Boundaries of Home: Mapping for Local Empowerment* with New Society Publishers, Philadelphia, in 1993. Crampton's, "Cartography's Defining Moment: The Peters Projection Controversy, 1974–1990" appeared in *Cartographica* (*31*(4), 1994, pp. 16–32). I mentioned that *Maps Are Territories* is still in print, but in fact all of the books are.

19. Again, see M. W. Beresford, "Inclesmoor, West Riding of Yorkshire, *circa* 1407," among others, in R. A. Skelton and P. D. A. Harvey, eds., *Local Maps and Plans from Medieval England,* op. cit., pp. 147–162, but all of the maps in Skelton and Harvey are examples of "writing."

20. For examples of scads of them, see Kivelson's *Cartographies of Tzardom,* op. cit.

21. Again, Buisseret, "Monarchs, Ministers, and Maps in France before the Accession of Louis XIV," op. cit., p. 109.

22. My "Cartography Is Dead (Thank God!)" appeared as an opinion column in *Cartographic Perspectives 45* (Spring 2003, pp. 4–7). Tom Koch's supportive, "Response to 'Cartography Is Dead (Thank God!)'," appeared in *Cartographic Perspectives 48* (Spring 2004, pp. 4–6), while James R. Carter's riposte, "Cartography Is Alive (Thank God!)," appeared in *Cartographic Perspectives 49* (Fall 2003, pp. 4–9). I touch on this again further on.

23. See Wolfgang Scharfe's, "Max Eckert's 'Kartenwissenschaft': The Turning Point in German Cartography" *Imago Mundi 38,* 1986, pp. 61–66), p. 62.

24. Arthur Robinson and Randall Sale, *Elements of Cartography, Third Edition* (Wiley, New York, 1969, pp. 15–16). Five "phases" were passed through in this "process": (1) the choosing of a scale, (2) the choosing of a projection, (3) careful generalization, (4) a striving for legibility, suitability, and efficiency, and (5) actual production. As late as 1969, Robinson is still quoting Eckert in his description of this "process."

25. Cited in the collection available at *www.usm.maine.edu/˜maps/essays/andrews.htm* that Andrews made in preparation for his article "What Was a Map? The Lexicographers Reply," op. cit. The usage was common well into the 19th century. The distinction, however, is made by Ptolemy in the second century. See *Ptolemy's Geography: An Annotated Translation of the Theoretical Chapters* (Princeton University Press, Princeton, NJ, 2001, p. 57).

26. The Royal Geographical Society was only formed in 1830. The first university department of geography was established in Germany, only in 1874. The National Geographic Society was formed only in 1888. The University of Chicago established the first American Department of Geography in 1903. The academic histories of geography and cartography are intimately entwined.

27. Max Eckert, "On the Nature of Maps and Map Logic" (*Bulletin of the American Geographical Society 40*(6), 1908, pp. 344–351), p, 346, emphasis mine.

28. As translated by Scharfe, op. cit., p. 64.

29. Erwin Raisz, *General Cartography* (McGraw-Hill, New York, 1938 and 1948); and Raisz, *Principles of Cartography* (McGraw-Hill, New York, 1962).

30. For the christening of thematic cartography, see Nikolaus Creutzberg, "Zum Problem der thematischen Karten in Atlaswerken," (*Kartographische Nachrichten 3*(3/4), 1953, pp. 11–12). For the Raisz quotation, see *Principles,* op. cit., p. 9.

31. It was like a little thematic cartography explosion: Eduard Imhof, *Thematische Kartographie: Beiträge zu ihrer Methode* (de Gruyter, Berlin, 1962); Erik Arnberger, *Handbuch der thematischen Kartographie* (Deuticke, Wien, 1966); Werner Witt, *Thematische Kartographie. Methoden und Probleme, Tendenzen und Aufgaben* (Jänecke, Hannover, 1967 and 1970); Sylvie Rimbert, *Leçons de cartographie thématique* (Société d'édition d'enseignement supérieur, Paris, 1968).

32. Raisz, 1938, op. cit., p. xiii.

33. I love the "usually" in his "usually thought of," that is, usually *by him* and *his students* of which it scarcely needs observing there was a shitload. The sentence appears in Arthur Robinson, *Elements of Cartography* (Wiley, New York, 1953, p. 8).

34. I also love the way this preempts surveying and geography. What an empire builder!

35. This is still from *Elements,* 1953, p. 8. He did a lot of work in these few paragraphs.

36. Ibid., pp. 106–119, p. 106.

37. The literature on classification is enormous, but for an invigorating overview, try Geoffrey Bowker and Susan Leigh Star, *Sorting Things Out: Classification and Its Consequences,* op. cit.

38. Robinson and Sale, op. cit., pp. 10–11.

39. Arthur Robinson, Randall Sale, Joel Morrison, and Phillip Muehrcke, *Elements of Cartography, Fifth Edition* (Wiley, New York, 1984), previously cited in Chapter 3.

40. Erik Armberger, *Thematische Kartographie* (Westermann, Braunschweig, Germany, 1977); Petchenik, "From Place to Space," op. cit.; Arthur Robinson, *Early Thematic Mapping in the History of Cartography* (University of Chicago Press, Chicago, 1982). On the latter, see my corrosive review in *Cartographica* (*20*(3), Autumn 1983, pp. 109–112).

41. Borden Dent, *Principles of Thematic Map Design* (Addison-Wesley, Reading, MA, 1985, p. 3). There may be two subclasses, but even Dent acknowledges that what *he* thinks about as thematic maps anyway accounts for "only 10 percent of the field" (p. 5). I can't possibly imagine how this could be, however, since in his other category of general-

purpose maps he includes only topographic and general-purpose atlas maps. Obviously, he excludes from the superordinate map category almost all maps, in common, I think, with most cartographers, who simply can't *see* cadastral maps, locator maps in auto dealership ads, maps associated with newspaper editorial content, school zone maps, and so on. Judith Tyner (see below) put these all into a third great category she called special-purpose, but then she collects mapback detective fiction and knew there was more to maps than topo quads and dot maps of hog distribution!

42. Robinson, Sale, Morrison, and Muehrcke, op. cit., pp. 6–11.

43. Erik Armberger, *Thematische Kartographie, 2nd ed.* (Höller und Zwick, Braunschweig, Germany, 1987); Borden Dent, *Cartography: Thematic Map Design* (W. C. Brown, Dubuque, IA, 1990, 1993, 1996), with the fifth edition published by WCB/McGraw-Hill (Boston, 1999). As I write this, a sixth posthumous edition is scheduled for release, updated by Jeff Torguson and Thomas Hodler.

44. J. S. Keates, *Cartographic Design and Production* (John Wiley, New York, 1973, p. 59). There was a second edition in 1989.

45. J. S. Keates, *Understanding Maps, Second Edition* (John Wiley, New York, 1996, p. 144). The first edition was published in 1982.

46. John Campbell, *Introductory Cartography* (Prentice-Hall, Englewood Cliffs, NJ, 1984, p. 4). A second edition was published by W. C. Brown (Dubuque, IA, 1991).

47. Philip Gersmehl, *The Language of Maps (Pathways in Geography Series, No. 1)* (National Council for Geographic Education, 1991, p. 101).

48. In 1992 Judith Tyner published *Introduction to Thematic Map Design.* Tyner's slant on map classification was individual. While acknowledging that there were three classes, Tyner made these out to be general-purpose, special-purpose, and thematic. General-purpose maps, she proposed, "do not emphasize one type of feature over another," while special-purpose maps "are created for a very specific type of user. Geologic, soil, and cadastral maps are included here," along with all navigational maps. Thematic maps, Tyner allowed, "have been called a variety of names (special subject, statistical, distribution, and data maps) but the term 'thematic' is now generally accepted." She stressed a point subdued since Raisz: "Although general-purpose and special-purpose maps are produced by cartographic agencies, institutions, and firms (frequently by teams of specialists such as surveyors, photogrammatrists, designers, and cartographers), a thematic map, even if produced by a similar agency, is probably the work of only one or two people."

49. Cynthia Brewer, *Designing Better Maps: A Guide for GIS Users* (ESRI Press, Redlands, CA, 2005); John Krygier and Denis Wood, *Making Maps: A Visual Design to Map Design for GIS* (Guilford Press, New York, 2005); Schuyler Erle, Rich Gibson, and Jo Walsh, *Mapping Hacks: Tips & Tools for Electronic Cartography* (O'Reilly Media, Sebastopol, CA, 2005); and Janet Abrams and Peter Hall, *Else/Where: Mapping New Cartographies of Networks and Territories* (University of Minnesota Design Institute, Minneapolis, 2006). But the distinction is losing its force even within what remains of traditional cartography. In 1999, Terry Slocum published *Thematic Cartography and Visualization,* sure to be the last in the lineage of comprehensive thematic cartography texts that was inaugurated with Imhof's *Thenatische Kartographie* in 1962. In Slocum's second edition, retitled *Thematic Cartography and Geographic Visualization* (with Robert McMaster, Fritz Kessler, and Hugh Howard, 2005), Slocum pretty much dissolves the distinction when he admits that, "Although cartographers commonly distinguish between general-reference and thematic maps, they do so largely for the convenience of categorizing maps. The general reference map also can be viewed as a thematic map in which multiple attributes are displayed simultaneously; thus, the general-reference map can be termed a multivariate thematic map. Furthermore, although the major emphasis of general-

reference maps is on *location* of spatial phenomena, they can also portray the *spatial pattern* of a particular attribute (e.g., the pattern of drainage on a USGS topographic sheet)."

50. Except in the presets and defaults of computer mapping programs where like a mortmain it will constrain mapmaking for some time to come.

51. In "An Introduction to Critical Cartography," Jeremy Crampton and John Krygier say, "In sum then, the answer to the question 'what is critique?' is that it is a politics of knowledge. First, it examines the grounds of our decision-making knowledges; second it examines the relationship between power and knowledge from a historical perspective; and third it resists, challenges, and sometimes overthrows our categories of thought" (*ACME: An International E-Journal for Critical Geographies 4*(1), pp. 11–33), p. 14; but the locus classicus remains Immanuel Kant's *Critique of Pure Reason* (*Unabridged Edition,* St. Martin's, New York, 1965 [1781, 1787]), where in this regard the "Preface to the Second Edition" is especially worth reading.

52. See E. G. R. Taylor, "Cartography, Survey, and Navigation, 1400–1750" (in Charles Singer et al., *A History of Technology: Volume III,* Oxford, 1957, pp. 548–551); and Robert Putnam, *Early Sea Charts* (Abbeville Press, New York, 1983, pp. 89, 122).

53. As quoted by Putnam, op. cit., p. 89. There is no accessible translation of the text into English. A French translation is available in Gerhard Mercator, "Texte et traduction des légendes de la mappemonde originale de Gérard Mercator, publiée en 1569" (*Revue Hydrographique 9*(2), 1932, pp. 7–45). This is widely cited, obviously by those who've never seen the article, as an English translation in an English-language journal, frequently with inaccurate page numbers. The *Revue Hydrographique* was published by Le Bureau Hydrographique International of the Principality of Monaco during the years 1923–1946.

54. I found the phrase, "paradox of advances and retrogressions," in Kenneth Nebenzahl's *The Atlas of Columbus and the Great Discoveries* (Rand McNally, Chicago, 1990, p. 126), but the idea is commonplace. Mireille Pastoureau puts it this way: "For all its lacunae and imperfections, Mercator's world map remains one of the masterpieces of cartography" (in her "The 1569 World Map," Marcel Watelet, ed., *The Mercator Atlas of Europe* (Walking Tree Press, Pleasant Hill, OR, 1998, p. 87), while John Noble Wilford says, "Reliable as the map was in most respects, it contained one outstanding mistake (Wilford, 2000, op. cit., pp. 89–90), and so on.

55. From a letter of February 23, 1546, quoted by Nicholas Crane in his *Mercator: The Man Who Mapped the Planet* (Henry Holt, New York, 2003, p. 230).

56. Ibid., p. 135, but from the same letter of 1546. It took almost three decades for Mercator to resolve these concerns in the form of his novel projection.

57. Ibid., pp. 135–136.

58. The quotation marks around *projection* are meant to draw attention to the fact that Mercator probably did not construct his "projection" as such but rather came to it—as centuries later Arno Peters would come to his Mercator-critical "projection"—by hand. That is, originally both would have been more appropriately described as constructions.

59. Gall announced his projections in a presentation to the British Association for the Advancement of Science in 1855, "On Improved Monographic Projections of the World" (*Report of the Twenty-fifth Meeting of the British Association for the Advancement of Science,* John Murray, London, 1856, p. 148). Gall comments on their evolution—he was trying to map the stars—and slow adoption in "Use of Cylindrical Projections for Geographical, Astronomical, and Scientific Purposes" (*Scottish Geographical Magazine 1,* 1885, pp. 119–123). An interesting review is that of I. R. Tannehill and Edgar Woolard, "Gall's Projection for World Maps" (*Monthly Weather Review,* September 1936, pp.

294–297), though their focus is on his stereographic projection, which for years was the principal world base used by the U.S. Weather Bureau, rather than on his orthographic which would later achieve fame as the Gall–Peters projection.

60. The first quotation comes from the foreword to Peters's *Compact Peters World Atlas* (Hammond, Union, NJ, 2002, p. 3); the second from his *Die Neue Kartographie/The New Cartography* (Universitätsverlag and Friendship Press, Klagenfurt and New York, 1983, p. 68). Very much worth reading for its tone and the history of his efforts to create his projection is the lecture he gave in 1974 to the German Cartographical Society (Universum Verlag, Munich-Solln, 1979).

61. The condemnation took the form of a preposterous and wholly ineffectual resolution that was endorsed by the American Cartographic Association, the American Geographical Society, the Association of American Geographers, the Canadian Cartographic Association, the National Geographic Society, and so on. See Arthur Robinson's "Rectangular World Maps—No!" (*The Professional Geographer 42*(1), 1990, pp. 101–104), which he concludes by predicting the resolution's futility. For the contemporary debate see, among much else, the entry and discussion at *en.wikipedia.org/wiki/Talk:Gall-Peters_projection.* I especially appreciated the comment directed to the main anti-Peters polemicist: "Still struggling with the Peters projection? Maybe a new religion will be created soon; and then it will be a matter of faith and no rational arguments will be allowed any more!"

62. Though map artists have intentionally violated every one of Eckert's desiderata. For the quotation, again see Scharfe, op. cit., p. 64.

63. Scharfe, op. cit., p. 65.

64. Though as we'll see in a couple of pages, Doug Aberley was not entirely opposed to the idea.

65. Scharfe, op. cit., p. 65.

66. As did his students, one of whom, George McCleary, supervised the dissertation of Borden Dent, *Perceptual Organization and Thematic Map Communication: Some Principles for Effective Map design with Special Emphasis on the Figure-Ground Relationship* (published as *Place Perception Research Report No. 5,* Clark University Cartographic Laboratory, Worcester, MA, 1970). I raise this case not because it was unusual but because it was exemplary, and because Dent would go on to author a key cartography text. One of Dent's committee members, David Stea, was a psychologist, and he played a key role in the experimental design. Dent subjected 450 students to a test that generated 7,200 individual responses, which were in turn subjected to a fairly simple statistical analysis. "The net result of the findings of this research," Dent concluded, "should broaden the cartographer's understanding of the perceptual effects of the media he commonly employs on the map" (p. 201). While Eckert is nowhere referred to, the whole thing—the psychologist, the experiment, the dissertation—was essentially an incarnation of Eckert's program for cartography. (For the record I was a Ph.D. student of McCleary's at the same time and one of Dent's pretest subjects.)

67. Robinson and Sale, op. cit., p. 17.

68. While I've looked through Arnberger's rather extraordinary *Handbuch,* I have in no way read it. What I really know of its content comes from John Leighly's review (*Geographical Review 58*(2), 1968, pp. 314–316, with the "wild branch" on p. 314 and the *Wissenschaft* on p. 315).

69. Wood, "Cartography Is Dead (Thank God!)," op. cit., and Jeremy Crampton, "Cartography's Defining Moment," op. cit. In addition to his careful documentation of the controversy to 1990, Crampton rather brilliantly profiled both Gall, an unorthodox Scottish clergyman and amateur astronomer, whom establishment cartographers championed, and Peters, at the time a still-living Marxist historian.

70. For background on the history of Indigenous mapping, see David Woodward and G. Malcolm Lewis, eds., *The History of Cartography 2.3: Cartography in the Traditional African, Arctic, Australian, and Pacific Societies* (University of Chicago Press, Chicago, 1998). The two-column, 640-page volume is uneven, but what a wealth of material they've collected! More accessible is Lewis's *Cartographic Encounters: Perspectives on Native American Mapmaking and Map Use* (University of Chicago Press, Chicago, 1998), which he edited but also wrote most of. More palatable still is Mark Warhus, *Another America: Native American Maps and the History of Our Land* (St. Martin's Press, New York, 1997), in our context here, especially the concluding chapter on contemporary Native American maps.

71. This and much of the following argument was worked out in conversation with Joe Bryan, who is, of course, responsible for none of my insanity. Thanks, Joe!

72. Examples of the way civil rights activism could inspire Indian activism were the *fish-ins* of the early 1960s that were first staged by National Indian Youth Council members who earlier had participated in "freedom rides" and civil rights marches in Alabama and Mississippi.

73. For a U.S. perspective, see Vine Deloria and Clifford Lytle's *The Nations Within: The Past and Future of American Indian Sovereignty* (University of Texas Press, Austin, 1998 [1984]). This is a second edition.

74. It might be worth noting that Calder, president of the Nisga'a Tribal Council from 1954 to 1974, was also the first status Indian ever to be elected to the Canadian Parliament.

75. The decision has been variously interpreted, but the language is fairly extraordinary:

> There is an aboriginal Indian interest usufructuary in nature which is a burden on the title of the Crown and is inalienable except to the Crown and extinguishable only by a legislative enactment of the Parliament of Canada. This aboriginal title does not depend on treaty, executive order or legislative enactment but flows from the fact that the owners of the interest have from time immemorial occupied the areas in question and have established a pre-existing right of possession. In the absence of an indication that the sovereign intends to extinguish that right the aboriginal title continues.
>
> Furthermore, the Proclamation of 1763, since it applies to "all the Lands and Territories lying to the Westward of the Sources of the Rivers which fall into the Sea from the West and North West as aforesaid" indicated that the framers of the Proclamation were well aware that there was territory to the west of the sources of the rivers and showed that it was intended to include therein the lands west of the Rocky Mountains. In addition, the recorded activities of the explorers at the time do not support the view that the territory west of the Rockies was *terra incognita*.
>
> Once aboriginal title is established it is presumed to continue until the contrary is proven and when the predecessors of the appellants came under British sovereignty they were entitled to assert their Indian title as a legal right. This right could not therefore be extinguished except by surrender to the Crown or by competent legislative authority and then only by specific legislation. However, there was no surrender by the Nishgas and neither the Colony of British Columbia nor the Province, after Confederation, nor the Parliament of Canada, enacted legislation specifically purporting to extinguish the Indian title. It must be presumed that the British Crown intended to respect native rights and the onus of proving that the Sovereign intended to extinguish the Indian title was on the respondent. The Proclamations and Ordinances relied on to establish an exercise of sovereignty and the assertion of title to lands by the Crown in fee were not relevant to the claim brought by the appellants which did not challenge the fee of the Crown but rather sought a declaration that the appellants possessed a right of occupation against the world except the Crown and that the Crown had not to date lawfully extinguished that right. In any event, the Proclamations and Ordinances relied on, to the extent that they extinguished aboriginal Indian title, were ultra vires since the Com-

mission, Letters Patent and Instructions forming an integral part of the Commission, of the colonial Governor did not give any power or authorization to extinguish Indian title. (CALDER v. A.-G. B.C. 91, 1973, 34 D.L.R. (3d) 145 (also reported: [1973] S.C.R. 313, [1973] 4 W.W.R. 1))

76. Hugh Brody refers to the Royal Proclamation of 1763 as "the so-called Magna Carta of Indian rights in British North America," reserving, as it did, "as a hunting territory for Indians all lands west of the Allegheny Mountains" (*Maps and Dreams* (Douglas and McIntyre, Vancouver (BC), 1981, p. 63). As *Calder* made clear, these lands could be alienated only by treaty with the Crown—or later the Canadian and American federal governments—and was the legal basis for the treaties they signed. The Proclamation, *Calder* implied, meant that any group that had not signed a treaty continued to enjoy the Aboriginal title that flowed "from the fact that the owners of the interest have from time immemorial occupied the areas in question and have established a pre-existing right of possession." It's this clause that led to the land use and occupancy studies and the map biographies.

77. M. R. Freeman, *Report of the Inuit Land Use and Occupancy Project,* 3 vols. (Department of Indian Affairs and Northern Development, Ottawa, 1976). See Linda Ellanna, George Sherrod, and Steven Langdon's 250-page typescript, "Subsistence Mapping: An Evaluation and Methodological Guidelines" (*Technical Paper Number 125,* Division of Subsistence, Alaska Department of Fish and Game, Juneau (AK), 1985), for the Alaskan and Canadian contexts out of which the method emerged and to which it contributed.

78. Brody, op. cit., p. 147.

79. The general point was made by Peter Herlihy and Gregory Knapp in their "Maps of, by, and for the Peoples of Latin America" (*Human Organization 62*(4), Winter 2003, pp. 303–314, with the key remark in the notes on p. 310), as later by Mac Chapin, Zachary Lamb, and Bill Threlkeld in their "Mapping Indigenous Lands" (*Annual Review of Anthropology 34,* 2005, pp. 618–638), where attention is drawn to the work of Boas and his students on p. 621. Julian Steward and Carl Sauer were important conduits.

80. Key here is the work of MIT planner, Kevin Lynch, on urban imagery. See his germinal *Image of the City* (MIT Press, Cambridge, MA, 1960). The psychologist, David Stea, brought Lynch's ideas to geographers at Clark University. I, for example, collected sketch maps in both my master's and doctoral work, in the former case collecting maps from nearly 300 residents of San Cristobal las Casas in Chiapas (*Fleeting Glimpses* (Clark University Cartographic Laboratory, Worcester, MA, 1971)). Jeremy Anderson, Roger Hart, Tom Saarinen, and many others used sketch maps in related ways.

81. Herlihy and Knapp, op. cit., explicitly cite the work in Chiapas of George Collier (*Fields of the Tzotzil: The Ecological Bases of Tradition in Highland Chiapas* (University of Texas Press, Austin, 1975)). I would also point to the work of Gary Gossen (*Chamulas in the World of the Sun: Time and Space in a Maya Oral Tradition* (Harvard University Press, Cambridge, MA, 1974), who actually asked Chamulas to draw maps. Also see Evon Vogt's *Aerial Photography in Anthropological Field Research Harvard* (Harvard University Press, Cambridge, MA, 1974)), the result of a conference (in which I happened to be a participant). Conklin's monument is the amazing *Ethnographic Atlas of Ifugao* (Yale University Press, New Haven, CT, 1980), capped by its practically obsessive large-scale maps of pond field parcels.

82. One of the things that makes the *Inuit Land Use and Occupancy Project* such a landmark is the detailed account of its methods. The most important predecessor, Joseph Sonnenfeld's *Changes in Subsistence Among Barrow Eskimo* (Project ONR-140, Arctic Institute of North America, Washington, DC, 1956, also submitted as Sonnenfeld's doctoral dissertation at Johns Hopkins), lacks a usefully detailed description of how he collected

the maps from community leaders. Not only does the *Inuit Land Use and Occupancy Project* detail its methods, but 1,600 Inuit contributed to its maps, an extraordinary number.

83. I've stitched together this description of Patsah's mapping from pp. 2–11 of Brody's very beautiful *Maps and Dreams,* op. cit., in which alternating chapters describe his work among the Beaver and their situation in Canada. It was a task he'd been asked to take on because of his work on the Inuit studies in both the Northwest Territories and Labrador. In fact, he contributed the chapter on Inuit perception to the *Inuit Land Use and Occupancy Project, Vol. 1,* op. cit., pp. 185–242. The second edition of *Maps and Dreams* (Douglas and McIntyre, Vancouver, 1988) has an impassioned new introduction. "A final genocide," Brody insists, "is not going to be achieved."

84. Brody, *Maps and Dreams,* op. cit., p. 177. A more recent take on this point is that of Charles R. Hale, in his "Activist Research v. Cultural Critique: Indigenous Land Rights and the Contradictions of Politically Engaged Anthropology (*Cultural Anthropology 21*(1), 2006, pp. 96–120): "By *activist research,* I mean a method through which we affirm a political alignment with an organized group of people in struggle and allow dialogue with them to shape each phase of the process, from conception of the research topic to data collection to verification and dissemination of the results" (p. 97). Hale refers to the mapping he and his colleagues do as "participatory ethnomapping."

85. Ibid., pp. 174–176. It also helped that each Inuit male who had independently hunted, trapped, or fished, whatever age, experience, or place of origin, was interviewed. There was no sampling. No one has contributed more to making the process "scientific" than Terry Tobias. See his *Chief Kerry's Moose: A Guidebook to Land Use and Occupancy Mapping, Research Design and Data Collection* (Union of British Columbian Indian Chiefs and Ecotrust Canada, Vancouver, 2000). Tobias acknowledges Peter Usher and Martin Weinstein as his mentors, especially Weinstein for having turned him onto Brody's *Maps and Dreams.*

86. See, for example, Mac Chapin and Bill Threlkeld's *Indigenous Landscapes: A Study in Ethnocartography* (Center for the Support of Native Lands, Arlington, VA, 2001).

87. While this is far from "twenty-six dollars and a bottle of booze," what is reinforced in the process is the authority of the British Crown to have made such determinations. For a detailed account of the negotiations, see André Légaré, "The Process Leading to a Land Claims Agreement and Its Implementation: The Case of the Nunavut Land Claims Settlement" (*Canadian Journal of Native Studies 16*(1), 1996, pp. 139–163).

88. The *Inuit Land Use and Occupancy Project* goals were explicit: "We seek to say in what way a certain piece of land was used by the local people. We do not attempt to determine whether that piece of land yielded a certain number of animals in a certain number of years, nor do we attempt a qualitative assessment of perceived 'usefulness' of that piece of land" (op. cit., *Vol. 2,* p. 47).

89. Here reference is made to the *Northern Land Use Information Series* maps published jointly by the federal Departments of Indian Affairs and Northern Development and Environment between 1972 and 1984 (Canada Map Office, Ottawa).

90. Rick Riewe, editor, *Nunavut Atlas* (Canadian Circumpolar Institute and the Tungavik Federation of Nunavut, Edmonton (Alberta), 1992).

91. For example, in 1975 the Department of Indian Affairs and Northern Development agreed to carry out a project for the Labrador Inuit Association based on that of the Inuit Land Use and Occupancy Project, which Carol Brice-Bennett and her colleagues describe in *Our Footprints Are Everywhere: Inuit Land Use and Occupancy in Labrador* (Labrador Inuit Association, Nain, Labrador, 1977); Brody published *Maps and Dreams,* op. cit., about his work with the Beaver; and Martin Weinstein published *What the Land Provides: An Examination of the Fort George Subsistence Economy and the Possible Conse-*

quences on It of the James Bay Hydroelectric Project (Grand Council of the Crees of Quebec, Montreal, 1977). On the other hand the Dene study, like many others, remains largely unpublished, the data being used at the discretion of the Indian Brotherhood of the Northwest Territories. The exception is a few exemplary maps published by Phoebe Nahanni in her "The Mapping Project" (in Mel Watkins, ed., *In Dene Nation: The Colony Within,* University of Toronto Press, Toronto, 1977, pp. 21–27), though Ellanna et al., op. cit., did collect descriptions of the methods from those involved.

92. This was a Special Map Supplement to the Society's *Research and Exploration* (Spring 1992). The map was revised in 1993. William Davidson was also credited with encouragement and assistance. With Melanie Counce, Davidson had recently mapped Central American Indians ("Mapping the Distribution of Indians in Central America," *Cultural Survival Quarterly 13*(3), 1989, pp. 37–40).

93. The ready availability of *Maps and Dreams* has made it *the* source for the Canadian work of the 1970s. Jefferson Fox, Krisnawati Suryanata, Peter Hershock, and Albertus Pramono are exemplary, opening their recent chapter, "Mapping Boundaries, Shifting Power: The Socio-Ethical Dimensions of Participatory Mapping" with "Since the publication of Hugh Brody's seminal work on mapping the lands of native Americans in the Canadian sub-Arctic" (in Michael Goodman, Maxwell Boykoff, and Kyle Evered, eds., *Contentious Geographies: Environmental Knowledge, Meaning, Scale* (Ashgate, London, 2008, pp. 203–217)).

94. All these projects are discussed in excruciating detail in *Indigenous Landscapes* (Chapin and Threlkeld, op. cit.). This purports to be a how-to manual, but it is so hobbled by its idiosyncrasies, its self-serving reflections, its internal disputes, that its value is doubtful. With Herlihy claiming that "I developed the first participatory research mapping (PRM) methodology in Latin America in 1992" (on his University of Kansas faculty Web page) and Chapin laboring to discredit him in various ways, it's easy to forget that in all essentials the methods had been worked out in Canada 20 years earlier by Milton Freeman, Hugh Brody, and others. Herlihy and Andrew Leake have published numerous papers on their Honduras work, and I've already cited Herlihy's paper with Gregory Knapp, "Maps of, by, and for the Peoples of Latin America." Legitimate how-to manuals include Tobias's *Chief Kerry's Moose,* op. cit., and Alix Flavelle's *Mapping Our Land: Community Mapping Handbook* (Lone Pine Publishing, Edmonton, 2003).

95. Behind this interest lay the growing realization on the part of environmental conservancy groups that to be successful their efforts had to take into account the needs, ancestral claims, and stewardship skills of indigenous inhabitats. See the glossy *The Law of the Mother: Protecting Indigenous Peoples in Protected Areas* with its foreword by Sir Edmund Hilary (Sierra Club Books, San Francisco, 1993).

96. About which see Ponciano Bennagen and Antoinette Royo's collection, *Mapping the Earth, Mapping Life* (Legal Rights and Natural Resources Center, Quezon City, Philippines, 2000). If success can be measured by prohibition, it's worth noting that since the 2001 passage of the "Land Surveyors Bill" by the Sarawak legislature, it's been against the law for anyone except licensed surveyors to do community mapping, this in response to the initial court victory of the Iban people of Rumah Nor for rights to their traditional territory.

97. For citations see the review in Chapin, Lamb, and Threlkeld's "Mapping Indigenous Lands," op. cit. These studies by no means share a common understanding of indigeneity, participation, or mapping.

98. Peter Poole edited this worldview survey: *Geomatics: Who Needs It? Cultural Survival Quarterly 18*(4), 1995.

99. Nancy Peluso, "Whose Woods Are These? Counter-Mapping Forest Territories in Kalimantan, Indonesia" (*Antipode 27*(4), 1995, 383–406).

100. Even larger than 1992's *The Coexistence of Indigenous Peoples and the Natural Environment in Central America,* this new map, similarly produced with Mac Chapin (now as Native Lands), is nonetheless roughly the same, minus the map of pre-Hispanic Panama, though now with a large natural-color photomosaic of the region on the poster side. Markedly enhanced is the articulation of the indigenous territories, which were all but lost among the vegetation layers on the earlier map. Nor is there any pretense of this being a supplement to a journal: this is a free-standing poster-map from the get-go.

101. Peter Herlihy and Gregory Knapp, eds., *Human Organization 62*(4), Winter 2003. *Human Organization* is the journal of the Society for Applied Anthropology.

102. Find the network at *www.nativemaps.org.*

103. Though compiled and edited by Jim Enote and Clay Scott, *Mapping Our Places* (Indigenous Communities Mapping Initiative, Berkeley, 2005), is essentially a collage of photographs and voices from the four Initiative communities—the Kashunamuit of Chevak in Alaska, the people of Santa Clara Pueblo in New Mexico, the Confederated Salish and Kootenai Tribes of the Flathead Nation in Montana, and the Native Hawaiian people of Hayena on Kaua'i. Unique in the literature, this is not a report about methods and land mapped, but Indigenous peoples' perspectives on their encounter with the mapping process.

104. Check out the Inuit Sea-Ice Use and Occupancy Project at its website. Claudio Aporta and Gita Laidler's proposal is hosted at *www.uaf.edu/anthro/iassa/ipyisip.htm.*

105. Nietschmann and others *were* committed to taking their efforts to sea. See Nietschmann's "Defending the Miskito Reefs with Maps and GPS: Mapping with Sail, Scuba, and Satellite" (*Cultural Survival Quarterly 18*(4), 1995, pp. 34–37).

106. Margaret Pearce and Michael Hermann, "Decolonizing Historical Cartography Through Narrative: Champlain's Travels Revisited," paper presented to the Association of American Geographers, Boston, 2008, p. 2.

107. Ibid., p. 8. Also see Pearce's persuasive "Framing the Days: Place and Narrative in Cartography (*Cartography and Geographic Information Science 35*(1), 2008, pp. 17–32) about her earlier experiment, the extraordinary *The Intricacy of These Turns and Windings: A Voyageur's Map,* that maps voyageur John MacDonell's first trip into the North American interior (Journey Cake, 2005); as well as the 2007 map Hermann made with James Francis, *The Thoreau-Wabanaki Trail Map* which, showing Thoreau's travels through Maine with his Native guides, exploits a powerful "tri-label" approach to add Wabanaki place names in Penobscot, in a literal translation, and in the English interpretation of the sound. For a *wholly* different approach, see David Turnbull, "Maps Narratives and Trails: Performativity, Hodology and Distributed Knowledges in Complex Adaptive Systems—an Approach to Emergent Mapping" (*Geographical Research 45*(2), 2007, pp. 140–149).

108. Toledo Maya Cultural Council and Toledo Alcaldes Association, *Maya Atlas: The Struggle to Preserve Maya Land in Southern Belize* (North Atlantic Books, Berkeley, CA, 1997), p. 140.

109. And Nietschmann went on: "Whereas maps like guns must be accurate, they have the additional advantages that they are inexpensive, don't require a permit, can be openly carried and used, internationally neutralize the invader's one-sided legalistic claims, and can be duplicated and transmitted electronically which defies all borders, all pretexts, and all occupations" ("Defending the Miskito Reefs," op. cit., p. 37).

110. He continued: "If you are mapped by those who desire to own or control your land and resources, their map will display their justifications for their claims, not yours," in *Maya Atlas,* op. cit., p. 149.

111. *Coral Reefs of the World,* National Geographic Society, Committee for Research and

Exploration (Terramar Initiative), in cooperation with the University of California's GeoMap, 1998. The large, two-sided map is no longer in print.

112. *Maya Atlas,* op. cit. In addition to the credit given the Toledo Maya Cultural Council and Toledo Alcaldes Association, other title-page credits include the Maya People of Southern Belize, Indian Law Resource Center, GeoMap Group, and the Society for the Preservation of Education and Research.

113. Ibid., p. 137.

114. After I'd completed this text, I was pleased to find my conclusions confirmed (if very much complicated) by Joel Wainwright's arguments in the sixth chapter of his *Decolonizing Development* (Blackwell, Oxford, 2008, pp. 241–281). This is a close reading of the *Atlas* by one who was very much involved in its making. Wainwright pursues the *Atlas*'s construction of the Maya—of Maya-ness—through the text, photos, maps, even layout.

115. This is from the inner fold of the cover. If Nietschmann didn't write it, he approved it. Wainwright is emphatic about the huge role Nietschmann played in writing the "Mayan" text, as he is about the dominance of Nietschmann's photography, drawing attention to Nietschmann's work for *National Geographic Magazine.*

116. The map being challenged by the *Atlas* was that of the government of Belize, which had let logging and oil concessions in Toledo Maya lands in contravention of Maya community property rights, and the production of the *Atlas* was coordinated with the development of land claims that 10 years later would be supported by the Supreme Court of Belize. See Maia Campbell and James Anaya, "The Case of the Maya Villages of Belize: Reversing the Trend of Government Neglect to Secure Indigenous Land Rights" (*Human Rights Law Review 8*(2), 2008, pp. 377–399).

117. Nietschmann, "Defending the Miskito Reefs," op. cit., p. 37.

118. The process has generated a fairly large literature. Again, see, Légaré, op. cit., but also Sally Weaver, *Making Canadian Indian Policy: The Hidden Agenda, 1968–1970* (Toronto University Press, Toronto, 1981) and Peter Usher, Frank Tough, and Robert Galois, "Reclaiming the Land: Aboriginal Title, Treaty Rights, and Land Claims in Canada" (*Applied Geography 12,* 1992, pp. 109–132). Almost all the relevant Department of Indian Affairs and Northern Development documents are available online.

119. I've drawn this account largely from the synopsis provided in Joel Wainwright and Joe Bryan's "Cartography, Territory, Property: Postcolonial Reflections on Indigenous Counter-Mapping in Nicaragua and Belize" (*Cultural Geographies,* forthcoming). But also see Campbell and Anaya, op. cit., for a perspective from the legal team in the latest Supreme Court case. For balance, with respect to Anaya's general strategy, see Will Kymlicka's "Theorizing Indigenous Rights," a review of Anaya's *Indigenous Peoples in International Law* (*University of Toronto Law Journal 49*(2), 1999, pp. 281–293).

120. To which Jane Kosek adds yet others: the notion of community as a bounded, easily definable unit of analysis; and the "hidden agendas" of the supporting NGOs (though she doesn't put it like that), that is, natural resource conservation. See her "Mapping Politics" (*Common Property Resource Digest 45,* May 1998, pp. 4–6). Again, see also Wainwright's *Decolonizing Development* for an insider's perspective.

121. Among other accounts see Fox, Suryanata, Hershock, and Pramono, op. cit.; Albertus Pramono, Ita Natalia, and Yohanes Janting, "Ten Year After: Counter-Mapping and the Dayak Lands in West Kalimantan, Indonesia," paper presented to the International Association for the Study of Common Property, Bali, 2006; Dorothy Hodgson and Richard Schroeder, "Dilemmas of Counter-Mapping: Community Resources in Tanzania" (*Development and Change 33*(1), 2002, pp. 79–100); and Peter Walker and Pauline Peters, "Maps, Metaphors, and Meanings: Boundary Struggles and Village Forest Use on Private and State Land in Malawi" (*Society and Natural Resources 14*(5), 2001, pp. 411–424).

122. Much to the distress of the Zapotec Indians whose communities he's been mapping. See the widely posted "Zapotec Indigenous People in Mexico Demand Transparency from U.S. Scholar" denouncing Herlihy's failure to mention the Army funding in his approach to them. The funding was well masked. Herlihy calls his project *México Indígena.* México Indígena is the prototype . . . *Bowman Expedition.* The Bowman Expeditions are the latest bid for relevance on the part of the American Geographical Society, and their initial funding—if not their entire inspiration—came through the *Radiance Corporation.* The Radiance Corporation administers contracts for the *Foreign Military Studies Office.* The Foreign Military Studies Office is the research and analysis center for the United States Army and is located at Ft. Leavenworth, Kansas, half an hour's drive from Lawrence where both Herlihy and American Geographical Society president, Jerome Dobson, are on the faculty at the University of Kansas. Go to *www.amergeog.org/newsrelease/bowmanPR-en.pdf* for Herlihy's defense. I'm less interested in the transparency than in the simple fact that an American geographer working with and for Indigenous peoples is being paid by the U.S. Army. Now, really: *why would the Army do that?*

123. The issue I'm poking at here is getting increasing attention in the more general Indigenous rights literature. For one take, see Tania Murray Li, "Articulating Indigenous Identity in Indonesia: Resource Politics and the Tribal Slot" (*Comparative Study of Society and History 42*(1), 2002, pp. 149–179). My concern is the way this indigeneity race is playing itself out in the evolution of mapping methods.

124. Marcus Colchester, "Maps, Power, and the Defense of Territory: The Upper Mazaruni Land Claim in Guyana" (in J. Peter Brosius, Anna Lowenhaupt, and Charles Zerner, *Communities and Conservation: Histories and Politics of Community-Based Natural Resource Management,* Altamira, Walnut Creek, CA, 2005, pp. 271–303), p. 298.

125. And of course they *can.* The Drafting/Computer Graphic Section of the Navajo Nation Land Department, for example, is wholly staffed—of course! why am I even bothering to say this?—by Navajos, all adept at churning out some of the most complicated maps you've ever seen (Navajo land exists in a bewildering number of categories) and at least when I dropped in (in 2000) without the benefit of cartographic training. One reason the data are dumped into the computers of the academics has to do with control of the data, that is, with publication, that is, with faculty tenure.

126. This theme is picked up below.

127. Mac Chapin, "Indigenous Land Use Mapping in Central America" (in Greg Dicum, ed., *Local Heritage in the Changing Tropics: Innovative Strategies for Natural Resource Management and Control, Yale School of Forestry and Environmental Studies, Yale University Bulletin Series 98* Yale University, New Haven, CT, 1995, pp. 195–208), p. 205.

128. Robert Rundstrom has been writing about the way maps bring a Newtonian worldview with them for a couple of decades now. See his pointed "Mapping, The White Man's Burden" (*Common Property Resource Digest 45,* May 1998, pp. 7–9).

129. Chapin's dissertation was *Curing among the San Blas Kuna of Panama* (University of Arizona, 1983). Given this, it's especially hard to believe he thinks space and time are "just technical stuff."

130. The Nietschmann again comes from "Defending the Miskito Reefs," op. cit., p. 37; Walker and Peters make their remark in their "Maps, Metaphors, and Meanings," op. cit., p. 412. The emphasis is mine.

131. Peluso, 1995, op. cit., p. 393. Despite her concerns, she does conclude that, "given the alternative futures—of not being on the map, as it were, being obscured from view and having local claims obscured, there almost seems to be no choice," to Indigenous mapping (p. 403).

132. What we do in maps, legal documents, and other scripted forms, *many* peoples express

in song, dance, and ritual. See Marina Roseman's "Singers of the Lanscape: History, and Property Rights in the Malaysian Rain Forest" (*American Anthropologist, New Series 100*(1), 1998, pp. 106–121), among many others, making this point. While these ought to be recognized by civil and common law courts as forms of title, they are not maps, and the use of the map *metaphor* obscures rather than clarifies essential distinctions. See further below.

133. The entire opinion of *Delgamuukw v. British Columbia* [1997] *3 S.C.R. 1010,* is online and worth reading. At the Gitxsan site devoted to the case, the Gitxsan note that "the trial before the B.C. Supreme Court began in 1987 and was unique in that Gitxsan and Wet'suwet'en elders took the stand to testify in their language about their distinctive culture and relationship to the land. In other similar trials, this evidence was provided secondhand through the eyes of non-Native 'experts' such as anthropologists." I note that they also translated their oral knowledge into a series of maps which, since the original trial judge understood them to be no more than a graphic version of the songs, he discounted. Read Matthew Sparke's subtle treatment of the original trial in his "A Map That Roared and an Original Atlas: Canada, Cartography, and the Narration of Nation" (*Annals of the Association of American Geographers 83*(3), 1998, pp. 463–495).

134. The decision, *James on Behalf of the Martu People v Western Australia [2002] FCA 1208 (27 September 2002),* was written by Justice Robert French and is online (I've quoted, however, from a report submitted to him, which he read into the record). He added that, "After making the determination I propose to make today, and before adjourning, I will invite Mr. Graeme Neate, the President of the National Native Title Tribunal to return the sand to the Martu People in a Piti or traditional wooden dish."

135. And it was a painting, not a map, though it could be seen as a sort of map by map-trained eyes. See Geraldine Brooks, "The Painted Desert: How Aborigines Turned Ancient Rituals into Chic Contemporary Art" (*New Yorker,* July 28, 2003, pp. 63–67), where I've quoted from p. 65. For the tradition of viewing Australian Aboriginal paintings as maps, see Turnbull's *Maps Are Territories,* op. cit., and Peter Sutton's two thoughtful chapters in Woodward and Lewis, op. cit., pp. 353–416.

136. I learned about them, as about so much else, in Aberly's *Boundaries of Home,* op. cit., 31–34.

137. Kim Leslie, ed., *Mapping the Millennium: The West Sussex Millennium Parish Maps Project* (West Sussex County Council, Chichester, 2001, p. 9). This was the catalogue for an exhibition of 66 Parish Maps mounted by the Worthing Museum, November 2001–February 2002. The quoted text was edited by Leslie from the Copthorne group's submission. The map is reproduced in full along with seven details in Leslie's *A Sense of Place: West Sussex Parish Maps* (West Sussex County Council, Chichester, 2006), pp. 67–70. I have more to say about this extraordinary atlas later.

138. From the Copthorne Preservation Society's website: *www.cps2008live.com/id7.html.* A number of relevant websites deal with Copthorne's affairs.

139. Leslie, *Sense of Place,* op. cit., p. 70. David Crouch, in his "Making Sense of Our Place: A Critical Review of Parish Maps" (in Sue Clifford and Angela King, eds., *from place to PLACE: maps and Parish Maps,* Common Ground, London, 1996, pp. 53–65), makes the point that most Parish Maps "have an edge that is telling a present day story also to influence someone else. These include fighting a gravel pit extension, safeguarding footpaths, turning round a Parish declined from ironstore working to confidence amongst people who live there, and with an outward message for tourists in industrial heritage" (p. 61).

140. From Common Ground's England in Particular website (*www.england-in-particular.info/gateway/gw-index.html*). The charity also maintains a website at *www.commonground.org.*

uk. I wrote about Common Ground and the Parish Map of Chideok in my article, "Memory, Love, Distortion, Power: What Is a Map?" (*Orion,* Spring 1994, pp. 24–33).

141. All from the Common Ground leaflet, *ABC: Learning to Read Your Locality* (Shaftesbury, Dorset, 2002).

142. Because Common Ground is a charity, it seeks funding for its projects from others, in this case, the Arts Council, which played a key role in selecting the artists. These maps are discussed at some length in one of the few academic articles out there, David Crouch and David Matless's "Refiguring Geography: Parish Maps of Common Ground" (*Transactions of the Institute of British Geographers, New Series 21*(1), 1996, pp, 236–255).

143. *The Parish Maps Project* (Common Ground, London, 1991). This is a 12-page brochure that also includes examples of noncommissioned parish maps.

144. In Clifford and King, op. cit., pp. 67–74.

145. Jane Whittle, "In Wiltshire and Wales: The Making of Two Maps, 1986–1996," in Clifford and King, op. cit., pp. 77–81. Interestingly, the Redlynch group discovered, thanks to a questionnaire delivered by the milkman to every home, that "the inhabitants of the original hamlets that had spread out to become Redlynch, felt that what they valued most had been lost during the expansion of brick and tarmac between the wars," and it was "largely the second wave of newcomers, hoping to resist the suburbanizing effects of a third wave, who responded" to the Parish Map Project (p. 77). Tom Greeves also wrote about Redlynch map in *Parish Maps: Celebrating and Looking after Your Place* (Common Ground, London, 1987, pp. 12–13). This was a little 20-page book Common Ground originally used to disseminate the parish map idea.

146. Greeves, op. cit., p. 12.

147. Christine Case, "Uplyme Parish Map," in Clifford and King, op. cit., pp. 83–85.

148. Leslie, *Sense of Place,* op. cit., p. vii. Crouch and Matless, op. cit., also write about this map, which they illustrate, drawing on Richard Arthur's *A Study of the Parish Maps of Charlbury, Standlake, and Cholsey in Oxfordshire in Relation to the Original Parish Map Ideology Formed by Common Ground and Its Geographical Roots* (Unpublished B.A. dissertation, School of Geography, Oxford University, 1993).

149. Leslie, ed., *Mapping the Millennium,* op. cit.

150. Crouch and Matless, op. cit., p. 250.

151. Crouch also writes about Atkinson's map in his "Making Sense of Our Place," op. cit., p. 60.

152. The first Viscount Cowdray, who'd been born Weetman Dickinson Pearson, took over the Pearson firm in 1880 from his grandfather. Initially focused on construction—it was while building a railroad across the Isthmus of Tehuantepec that the oil was discovered—the firm is better known today as a publisher, the largest in the UK, India, Australia, and New Zealand, and the second largest in Canada and the United States, you know, Penguin, Dutton, Dorling Kindersley, Viking, the Rough Guides, Addison-Wesley, Pearson Longman, Scott Foresman, Allyn & Bacon, *The Financial Times,* and so on, and so on.

153. For Said's complaint, see especially the essays "Narrative and Social Space" and "Jane Austen and Empire" in Said's *Culture and Imperialism* (Alfred A. Knopf, New York, 1993, pp. 62–80 and 80–96, respectively). Moretti grapples with Said in his *Atlas of the European Novel, 1800–1900* (Verso, London, 1998, especially pp. 24–29), "grapples" because Moretti doesn't buy Said's conclusion about the *dependence* of elite British wealth on the colonies, while admitting that they benefited from them. Moretti's point is that the allusion to colonial sources severed the link between the elite and the "multitudes of laboring *English* poor," thus "clearing" elite wealth: "Which is a wonderful thing to know, for heroines that want to marry into it—and even better, of course, in the decades of

the harshest class struggle of modern British history" (p. 27). Also see Moretti's *Graphs, Maps, Trees: Abstract Models for a Literary Theory* (Verso, London, 2005), especially, in the present context, his treatment of Mary Mitford's *Our Village* books, pp. 35–64. For what it's worth, the founding Pearson made his fortune in the north of England, but it's hard to imagine his grandson buying Cowdray without the Mexican oil money.

154. These were accessed July 30, 2008, as were those of Easebourne, below.

155. Leslie, *Sense of Place,* op. cit., p. 143. Lavant sold hundreds of copies—in the village and abroad—plowing the £2,000 profit into work on its Memorial Hall where the original of the map now hangs.

156. Copyright in the map is held by Haywards Heath Town Council, which is also unusual. As usual, however, the map did turn a profit.

157. In neighboring East Sussex, to give some indication, three dozen parishes in the Wealden District made maps for their own Mapping the Millennium Project. These were widely exhibited, and many can be bought in reproduction.

158. For an example of what's going on, visit *www.ecomusei.net*, navigate to *Piemonte ecomusei,* and there click on *Mappe culturali.* In addition to information about local projects, you can see work being done at the Ecomuseo del Paesaggio, including maps made by Italian school kids as part of the program leading to the Mappa della Comunitá Citta di Parabiago. There is a fully interactive version of this online, with music, narration, photos, and tons of links, or you can download a pdf.

159. Leslie, *Sense of Place,* op. cit., pp. xiii–xiv. Pictures of some of the literature the Italians have produced are on p. 289.

160. The idea was developed by George Henri Rivière and Hugues de Varine, who coined the term in 1971. The "éco" may be a shortened form of "écologie," but what it refers to is a more holistic interpretation of cultural heritage, as opposed to the usual attention given specific items and objects in more traditional museums. For more, see Peter Davis's *Ecomuseums: A Sense of Place* (London, Leicester University Press, 1999).

161. For example, there's a Japanese Ecomuseological Society, the Chinese are getting involved, and so on. OE—the Outlook on Ecomuseums or Osservatorio Ecomusei—is an Italian-based organization documenting and working with ecomuseums wherever they are. Their site is in both Italian and English, and it displays examples of ecomuseums in the OE network in Europe (Italy, France, Norway, Sweden, Portugal, Poland) and Africa. Find them at *www.osservatorioecomusei.net*.

Chapter Six

1. Ivan Illich, "Disabling Professions" (in Ivan Illich, Irving Zola, John McKnight, Jonathan Caplan, and Harley Shaiken, *Disabling Professions,* Marion Boyars, London, 1977, pp. 11–39).

2. Despite strenuous efforts to pass licensure laws for both these practices.

3. "Cartography Is Dead (Thank God!)," op. cit.

4. See Jerry Green et al., "The Enigmatic Enrolment Trend in U.S. Map-Interpretation Courses" (*Cartographic 43*(3), 2008, pp. 221–226). It's been declining since its historic high in 1985, so again, the creature was already dying when GIS came along. I don't know what's so enigmatic about it, though.

5. The session, organized by Timothy Lee Hawthorne, was called Participatory Geographic Information Systems. Rina Ghose gave "Politics of Scale," Wen Lin, "Scale and Networks," Hawthorne "Participatory GIS for Growth Management," and Hrishi Patel "Internet-Based Participatory GIS," despite the fact that the program said this last was being presented by John Krygier. Laxmi Ramasubramanian, also listed as presenting, did not.

6. Nancy Peluso has made this comparison as well. See her "Whose Woods Are These?", op. cit., p. 387.

7. The existence of URISA's GIS Certification Institute—GISCI—makes it clear exactly how far things have already gone. The institute certifies GIS Professionals—GISPs—and anticipates the day when certification will be a requirement for employment.

8. The field is fortunate to have the wonderful collection edited by William J. Craig, Trevor M. Harris, and Daniel Weiner, *Community Participation and Geographic Information Systems* (Taylor and Francis, London, 2002), 28 uniformly revealing papers, which I have taken as my mentor texts. In light of what follows, I think it revealing that the editors used the phrase "Community Participation" and not "Public Participation" in their title. (For their reasons see Trevor M. Harris and Daniel Weiner, "Implementing a Community Integrated GIS: Perspectives from South African Fieldwork," in *Community Participation*, pp. 246–258.) My old friend, Mark Salling, provided me with a valuable sampling of yet further literature, including the useful review by Marc Schlossberg and Elliot Shuford, "Delineating 'Public' and 'Participation' in PPGIS" (*Journal of the Urban and Regional Information Systems Association 16*(2), 2005, pp. 15–26).

9. This was the 4th Annual URISA PPGIS Conference (Cleveland, 2005) where, as the keynote speaker, I gave the paper from which this chapter is drawn.

10. For example, many at the AAG meetings in Boston, 2008, including those in the Subversive Cartographies sessions by William Cartwright, Patricia McKeever, Phil Jones, and Sarah Elwood.

11. This is fundamentally a rejection of the idea that that there's a continuum—the so-called public participation ladder—that moves from "right to know" to "public participation in final decision" (P. M. Wiedermann and S. Femers, "Public Participation in Waste Management Decision-Making: Analysis and Management of Conflicts," *Journal of Hazardous Materials 33*(3), 1993, pp. 355–368; Daniel Weiner, Trevor Harris, and William Craig, "Community Participation and Geographic Information Systems," in Craig, Harris and Weiner, op. cit., pp. 3–16; and Schlossberg and Shuford, op. cit.). Knowing and acting *are* related, but the right to know is no form of participation, and their linkage is a disservice to both sets of ideas, one indeed that fatally blurs the distinction between Arnstein's conceptions of tokenism and power (S. R. Arnstein, "A Ladder of Citizen Participation," *Journal of the American Institute of Planners 35*(4), 1969, pp. 216–224). I don't doubt there are different degrees of participation, but calling the right to know, or even mere financial support, participation is feel-good politics of the lowest order.

12. Liza Casey and Tom Pederson distinguish this as Public Records GIS—"the Internet distribution of data through GIS that a city or government body collects as part of their administration of policy and laws, and distribution of services," in their "Mapping Philadelphia's Neighborhoods," in Craig, Harris, and Weiner, op. cit., pp. 65–76, with Public Records GIS discussed on pp. 70–74 (the quoted passage is on p. 70). For an inspiring example that's not a Public Record GIS, see the Harris and Weiner paper cited earlier, where among other things the authors collected "mental maps" during workshops set up to compile local community information, which was then added to the database on an Internet-based GIS.

13. I mean, how many public*s are* there? 5? 5,000? Or does each of us constitute a public? It's undoubtedly easy to hypostatize the idea of the public as a whole, but *many times easier* to hypostatize the metastasizing public*s.* In saying this I have no interest in denying that the public *is* constituted of any number of vertically and horizontally structured overlapping groups operating at any number of scales through a bewildering range of processes over time. I *am* insisting that calling these groups "publics" does a terrible disservice to our already impoverished ability to make sense of any kind. At the very

least, I want "public" to convey *some* idea of large numbers of people from many kinds of groups (and of large numbers of people *each of whom* claims membership in *many* different groups) and to stand for an interest beyond that of any group. The danger that has led to the multiplication of publics is that of any group claiming to be *the* public, but this is harder to do when the number of groups is large. I'm struggling here (but so was Habermas), but I don't believe identity politics is any kind of answer for anybody. For further reflection on what, of course, is *not* a simple idea, see Stuart C. Aitken, "Public Participation, Technological Discourses, and the Scale of GIS" (in Craig, Harris, and Weiner, op. cit., pp. 357–366); Nancy Fraser, *Justice Interruptus: Critical Reflections on the "Postsocialist" Condition* (Routledge, New York, 1997); and of course Jürgen Habermas, *The Structural Transformation of the Public Sphere* (MIT Press, Cambridge, MA, 1989 [1962]); but also see the less fashionable work of Paul Goodman (especially *Growing Up Absurd* and *Communitas*), Wendell Berry, even Walt Whitman.

14. This is fundamentally a rejection of the "domains of public" continuum, which at least in Schlossberg and Shuford's rendition ends up excluding most of the public by including only those most affected by a decision (which typically reduces to adjacent property owners); those who can bring important knowledge to a decision (that is, experts, typically consultants and academics); and those who have the power to affect implementation (which, though Schlossberg and Shuford don't say so, typically comes to lobbyists) (Schlossberg and Shuford, op. cit., pp. 18–21). The central paragraph on their p. 18 elides stakeholder into public in a way that has to be read to be believed.

15. A classic example that has heated up lately is that of public access to beaches, where the public interest may be at odds not only with that of adjacent property owners, but with entire towns dominated by property interests. Access provides a useful lens on "public": when access is universal it's public; when it's restricted it's not. Giveaways do the same thing. When Ben and Jerry's offers free ice cream to anybody, that's a public offering. When Papa John's offers free pizza slices to students with valid IDs, that's not a public offering, it's one made to students. The distinction is pretty straightforward and almost unexceptionally made.

16. Casey and Pederson refer to this as Neighborhood Planning GIS, though presumably there could also be an Environmental or Green GIS, a Development or Native Peoples GIS, and so on. See their paper, op. cit., pp. 74–75.

17. Randolph T. Hester, Jr., published *Neighborhood Space: User Needs and Design Responsibility* (Dowden, Hutchinson, and Ross, Stroudsburg, PA, 1975; republished by Reinhold Van Nostrand as *Planning Neighborhood Space with People*), a number of other books, and most recently *Design for Ecological Democracy* (MIT Press, Cambridge, MA, 2006). Henry Sanoff published, among others, *Designing with Community Participation* (McGraw-Hill, New York, 1978); *Participatory Design, Theory and Techniques* (Bookmasters, Raleigh, NC, 1990); and *Visual Research Methods in Design* (Van Nostrand Reinhold, New York, 1991). Basil Honikman edited the sixth volume of the Environmental Design Research Association's proceedings, *Responding to Social Change* (Dowden, Hutchinson, and Ross, Stroudsburg, PA, 1975). Robin Moore, a principal proponent for involving children in environmental design, wrote *Childhood's Domain: Play and Place in Child Development* (Croom Helm, London, 1986). As the School's Associate Dean for Research, Graeme Hardie worked extensively with the School's Center for Universal Design.

18. I spent a year writing an ultimately unpublished text, *In Search of Form,* for the Dowden, Hutchinson, and Ross Community Development Series, on the interpretation of the *formal* content of user-generated maps and sketches. Two of its chapters later appeared as Denis Wood and Robert Beck, "Janine Eber Maps London: Individual Dimensions of Cognitive Imagery" (*Journal of Environmental Psychology 9*(1), March 1989, pp. 1–26); and Denis Wood and Robert Beck, "Tour Personality: The Interdependence of Environ-

mental Orientation and Interpersonal Behavior" (*Journal of Environmental Psychology 10*(4), December, 1990, pp. 177–207), among other works Beck and I published about mental maps in this context. Other environmental design work included an innovative application of personal construct theory to the public evaluation of North Carolina's courthouses (Greg Centeno, Basil Honikman, Bob Klute, William Lundin, John Tector, and Denis Wood, *Ten Courthouses in North Carolina,* North Carolina Administrative Offices of the Courts, Raleigh, 1976); work on playground design: Denis Wood, "Design Despite Information: The Case of Playgrounds" (*Industrialization Forum 8*(1), 1977, pp. 37–40), and Denis Wood, "Free the Children! Down with Playgrounds!" (*McGill Journal of Education 7*(2), Fall, 1977, pp. 227–242); an attack on Oscar Newman's ideas about defensible space in public housing (Denis Wood, "In Defense of Indefensible Space," in Paul and Patricia Brantingham, eds., *Urban Crime and Environmental Criminology,* Sage, Beverly Hills, CA, 1981, pp. 77–95); and work on neighborhood theory (including Denis Wood, "A Neighborhood Is to Hang Around," *Children's Environments Quarterly, 1*(4), Winter 1984, pp. 29–35), and my as yet unfinished Boylan Heights atlas project.

19. Which, again, is that there *is* an interest which exceeds that of every special interest. And, okay, maybe it is bullshit, but the sense was clear in this morning's paper where, in an article on the impact of overloaded trucks on the state's highway infrastructure, business interests were contrasted with public interests.

20. These terms may be familiar, but if not, Section 106 of the National Historic Preservation Act requires federal agencies to consider the effects of their actions on historic properties; while Section 4(f) of the Department of Transportation Act allows federal approval of a transportation project *despite* its impact on the environment if there is no prudent and feasible alternative, and all harm is minimized. An EA/FONSI is an Environmental Assessment/Finding of No Significant Impact, which means you can go ahead and build without concerning yourself with avoidance and mitigation efforts.

21. In the abstract for her presentation at the 4th Annual URISA PPGIS Conferene, "Design of a GIS-enabled Online Discussion Forum for Participatory Planning," with Jiangfeng Zhao. Another conference presenter, John Gallo, wrote, "An underlying normative goal of PPGIS is to improve the ways in which communities are able to build awareness of their surroundings and develop consensus for a better future," in "Mapping Uncertainty to Ease the Tension between PPGIS and Conservation Planning."

22. That they are so united, E. H. Carr called the myth of the harmony of interests. See his brilliant analysis in *The Twenty Years Crisis: 1919–1939* (Harper, New York, 1964 [1939], pp. 41–63).

23. John Krygier and Denis Wood, *Making Maps: A Visual Guide to Map Design for Geographical Information Systems* (Guilford Press, New York, 2005, pp. 29–32).

24. Michael Zeiler, *Modeling Our World: The ESRI Guide to Geodatabase Design* (ESRI Press, Redlands, CA, 1999, p. 8). This is easily the best exposition of maps as systems of propositions, even though Zeiler uses "representation" throughout. The book has a kind of luminous clarity that is nearly disarming enough to obviate the fact that he's describing the Beast (see further . . . the Book of Revelations).

25. Kain and Baigent, op. cit., p. 344.

26. Indeed, in the specific case, neighbors had been recruited to act as code enforcement deputies! The spirit of the event relates to that scene in the Western when the sheriff deputizes those who would otherwise be vigilantes to ride after the bad guys. See David S. Sawicki and Patrick Burke, "The Atlanta Project: Reflections on PPGIS Practice," in Craig, Harris, and Weiner, op. cit., pp. 89–100. The quotation appears on p. 95. See also Sarah Elwood's "The Impacts of GIS Use for Neighborhood Revitalization in Minneapolis," in Craig, Harris, and Weiner, op. cit., pp. 77–88, especially the section "Negative Impacts of GIS Use in Powderhorn Park," pp. 84–86, where residents com-

plain about the more bureaucratic tone in which discussions are framed thanks to the use of GIS and digital databases. Aitken, op. cit., picks up on these remarks as well, pp. 361–362.

27. In saying this, I echo the sentiment of architect and planner Frederick L. Akerman who *in 1919* attacked planners for becoming too concerned with "the right of the individual to use the community as a machine for procuring individual profit and benefits, without regard to what happens to the community," in "Where Goes the City-Planning Movement?" (*Journal of the American Institute of Architects 7,* December 1919, pp. 519–520).

28. Cheryl Parker and Amelita Pascual, "A Voice That Could Not Be Ignored: Community GIS and Gentrification in San Francisco," in Craig, Harris, and Weiner, op. cit., pp. 55–64. The quotation is on p. 62.

29. What Parker and Pascual, op. cit., said was, "Community arguments were now fact-based rather than grounded in emotion" (p. 63).

30. Paul Goodman, *Speaking and Language: In Defense of Poetry* (Random House, New York, 1971, pp. 146–147).

31. L. Casey and T. W. Pederson, "Urbanizing GIS: Philadelphia's Strategy to Bring GIS to Neighborhood Planning," 1995, *Proceedings of the Environmental Systems Research Institute User Conference, www.esri.com/library/userconf/proc95/to150/p107.html.* But also see their updated conclusions in Casey and Pederson, "Mapping Philadelphia's Neighborhoods," op. cit., where, noting that the things that make places unique "are not collected in the normal course of a city's record keeping," they stress the importance of local control of the GIS so that such material *may* be included.

32. There's a tendency today to hypostatize "information," but information is not end-use neutral and one man's information is another's man's noise. In discussing Dervin's sense-making approach, John Krygier has drawn attention to the way information is "made, confirmed, supported, challenged, resisted, and destroyed." See Krygier's "A Praxis of Public Participation GIS and Visualization," in Craig, Harris, and Weiner, op. cit., pp. 330–345.

33. Gwendolyn Warren, "About the Work in Detroit," op. cit., pp. 10–16. "The whole thing about the rat region of Detroit" is on pp. 11–12, while her paper, "No Rat Walls on Berwick," with its maps, runs on pp. 25–35. The map, "Region of Rat-Bitten Babies," is in William Bunge and Ronald Bordessa, *The Canadian Alternative: Survival, Expedition, and Urban Change* (Department of Geography, Atkinson College, York University, Toronto, 1975, p. 326).

34. The Ad Hoc Committee on Relations with the Detroit Geographical Expedition and Institute, "Report to the Council of the Association of American Geographers" (*Field Notes: Discussion Paper No. 3,* op. cit., pp. 1–3). The ad hoc committee recommended giving the Expedition the maximum possible grant without restraints. The school redistricting study was published as *Field Notes: Discussion Paper No. 2: School Decentralization* (Detroit Geographical Expedition and Institute, Detroit, 1970). Geographers assisting in the redistricting study included John Shepherd, Ronald Horvath, John Nystuen, Donald Deskins, Richard Morrill, and others. I want to draw attention to the way the Detroit Expedition addressed the "educational component" Krygier identified "as central to the development of PPGIS applications," and indeed made it central to the Expedition's praxis (Krygier, "Praxis," op. cit., p. 331).

35. Computers *were* used to calculate the effects of alternative school redistricting plans, and here the Expedition's use of the computer was innovative.

36. W. Bunge, *Field Notes: Discussion Paper No. 1: The Detroit Geographical Expedition* (Society for Human Exploration, Detroit, 1969, p. 38).

37. Ibid.

38. Ibid.

39. Ibid., p. 39.

40. Bunge writes about the firing off and on in a lot of places, but his "Statements from Prisoner #4753" is particularly rich (*Transition 16*(1), 1986, pp. 18–22).

41. William Bunge, *Fitzgerald: Geography of a Revolution* (Schenkman, Cambridge, 1971). This is an exciting, crazy, radical book.

42. Bunge and Bordessa, op. cit. Practically none of the routes pioneered in this amazing book have been followed by more than a handful of intrepid human geographers.

43. This aspect of the structure was fairly constant from Expedition to Expedition, but others changed. Bunge wrote 12 "field manuals" for the Toronto Geographical Expedition, only some of which made it into *Canadian Alternative.*

44. Ingrid Wood and I were directly inspired by the "first call" to launch our project, A Geography of Caserio Children, early in 1970 while living across from a housing project in Barranquitas, Puerto Rico. The kids were everywhere, we had ample time (I'd been fired from my job at Inter-American University), and while we were never funded, we didn't need a lot of money. I've issued reports over the years, the first "To Catch the Wind" in 1980 (about kite flying), the most recent, "Kids and Space in the Highlands of Puerto Rico" (*The Geographical Review 96*(2), April 2006, pp. 229–258). Someday it'll be a book. Later the Expedition was a constant reference point in my work on the Raleigh neighborhood of Boylan Heights.

45. Bunge's essay "From 'Fun' to 'Necessity'" takes up most of *Second Call: The Society for Human Exploration: Field Notes 5* (Canadian-American Geographical Expedition, October 1977, pp. 4–20). Here Bunge argues for expeditions as popular front humanism and vehemently against Dick Peet's determinedly academic take on the development of "radical" geography. For other reactions, see Ronald Horvath's "The 'Detroit Geographical Expedition and Institute' Experience" (*Antipode 3,* 1971, pp. 73–85); Derek Stephenson's, "The Toronto Geographical Expedition" (*Antipode 6,* 1974, pp. 98–101); and Andy Merrifield's "Situated Knowledge through Exploration: Reflections on Bunge's 'Geographical Expeditions'" (*Antipode 27*(1), 1995, pp. 49–70). Sebastian Cobarrubias tries to give all this some kind of historical perspective in "The Academy in Activism and Activism in the Academy: Collaborative Research Methodologies and Radical Geography" in the online *Euromovements Newsletter,* December 2003, *www.euromovements.info/html/radical-geography.htm.*

46. Bunge and Bordessa, op. cit., p. iii.

47. William Bunge, *Theoretical Geography: Lund Studies in Geography Ser. C. General and Mathematical Geography No. 1* (Department of Geography, Royal University of Lund, Sweden, 1962; there is a second edition of 1966). The book was a revision of his doctoral dissertation at the University of Washington, which at the time was a hotbed of theoretical geographers. Sections had been published in 1959 as *Discussion Paper 25* (*Metacartography*) and *30* (*Advanced Theoretical Geography*) by the Washington Department of Geography, and in 1960 the Washington State Department of Commerce and Economic Development published Bunge's *The Economic Base of the Puget Sound Region, Present and Future* with its innovative maps. Throughout the Expedition period Bunge remained engaged by these topics, though the subject matter gradually shifted from "Blight Producers in the Puget Sound Region" to the concern with nuclear weaponry that would produce the *Nuclear War Atlas,* op. cit.

48. Gwendolyn Warren and William Bunge, *Field Notes: Discussion Paper No. 2: School Decentralization* (Detroit Geographical Expedition and Institute, Detroit, 1970, p. i).

49. Ibid., p. 22.

50. Jacques Bertin, *Graphics and Graphic Information Processing* (de Gruyter, Berlin,1981, p. 16).

51. While Benjamin here (in *Charles Baudelaire: A Lyric Poet in the Era of High Capitalism* (Verso, London, 1983, p. 69), is actually quoting Baudelaire (who is describing the qualities of a poetic prose capable of catching urban life in a letter to his friend, Arsène Houssaye, that Baudelaire would publish as an introduction to his *Paris Spleen* [New Directions, New York, pp. ix–x]), Benjamin, like Baudelaire, was wholly wrapped up in the exploration of the city of dreams, an obsession that was "above all a child of the experiences of the giant cities, of the intersecting of their myriad relations," hallucinatory, lyrical, evocative. At the heart of this was his unfinished *Passagen-Werk* or *Arcades Project.* For attempted reconstructions see Susan Buck-Morss, *The Dialectics of Seeing: Walter Benjamin and the Arcades Project* (MIT Press, Cambridge, MA, 1989) and Peter Buse et al., *Benjamin's Arcades: An Unguided Tour* (Manchester University Press, Manchester, UK, 2006).

52. For capsule histories, see Peter Wollen's important "The Situationist International: On the Passage of a Few People through a Rather Brief Period of Time," collected in his *Raiding the Icebox: Reflections on Twentieth-Century Culture* (Indiana University Press, Bloomington, 1993, pp. 120–157); and Simon Sadler's *The Situationist City* (MIT, Cambridge, MA, 1998). For a sympathetic traversal of postwar Surrealism, see Alyce Mahon, *Surrealism and the Politics of Eros: 1938–1968* (Thames and Hudson, New York, 2005), and almost anything about Surrealism by J. H. Matthews.

53. With respect to the spelling, Letterist, Lettrist, or Letterisme, see Jean-Paul Curtay's *Letterism and Hypergraphics: The Unknown Avant-Garde, 1945–1985* (Franklin Furnace, New York, 1985); but also see the collection Stephen Foster edited in *Letterisme: Into the Present* (*Visible Language 17*(3), 1983). William Rubin illustrated Lemaître's *Document on a Woman of My Life* (1966) in *Dada, Surrealism, and Their Heritage* (Museum of Modern Art, New York, 1968, p. 55), commenting, in an endnote, that, "Inspired at the outset by Tzara, the Letterists, led by Isidore Isou and Maurice Lemaître, were primarily concerned with the formation of a poetry and theater based purely on the sound of individual letters—as opposed to the nonsense syllables favored by most Dada phoneticians" (p. 191), and while an indicative summary, Rubin didn't know much about Letterism.

54. For a perspective from the period, see Aldo Pellegrini, *New Tendencies in Art* (Crown, New York, 1966). In hindsight, especially after May 1968, Guy Debord has emerged as the principal figure, thanks especially to his *The Society of the Spectacle* (Zone, New York, 1995 [1967]). The literature on the Situationist International is immense and growing.

55. As, of course, did Letterism, and before either, Surrealism. I've quoted here from Simon Sadler, op. cit., p. 3.

56. In "Introduction to a Critique of Urban Geography" (*Les Lèvres Nues 6,* 1955). I've quoted from Ken Knabb's translation in his *Situationist International Anthology* (Bureau of Public Secretes, Berkeley, CA, 1981, pp. 5–8). It's worth keeping in mind that psychogeography was but a *part* of the Situationists' program.

57. Ibid.

58. This is mostly a paraphrase of Sadler, op. cit., p. 77. In 1967 psychogeography was independently invented at Clark University when David Stea accepted a joint appointment in the psychology and geography departments. This was a development in "perception studies" in geography and in environmental psychology in psychology. Among other things, Clark psychogeography was strongly influenced by Kevin Lynch's work on mental maps published in *Image of the City,* op. cit. In all three cases—Situationist psychogeography, Clark psychogeography, and Lynch's mental maps—this tension between the subjective and objective was in play. For more on psychogeography at Clark, see the "Special Clark University Issue" of the *Journal of Environmental Psychology 7*(4), December 1987, the entire issue.

59. See Sadler, op. cit., p. 78. Debord describes the dérive in "Théorie de la dérive" (*Les lévres nues* 9, Brussels, November 1956). This was reprinted in *Internationale situationniste 2,* Paris, December 1958, and translated by Knabb, op. cit., as "Theory of the dérive," pp. 50–54.

60. Thomas De Quincey, *Confessions of an English Opium-Eater* (Dover Publications, 1995 [1821], p. 41). De Quincey's description of his walks, among the poor, and into veritable "terrae incognitae" that had not "yet been laid down in the modern charts of London," is the high point of the *Confessions.* André Breton, *Nadja* (Grove Press, New York, 1960 [1921], p. 32, as translated by Richard Howard). André Breton, *Mad Love* [*L'Amour fou*] (University of Nebraska Press, Lincoln, 1987 [1937], p. 44), as translated by Mary Ann Caws. Both books were illustrated. *Nadja*'s 44 photographs, largely of Parisian street scenes, added a dimension to the book that would have appealed to Debord in spite of everything.

61. As quoted by Greil Marcus, *Lipstick Traces: A Secret History of the Twentieth Century* (Harvard University Press, Cambridge, MA, 1989, p. 181). Bernstein was married to Debord.

62. In his *Walkscapes: Walking as an Aesthetic Practice* (Editorial Gustavo Gili, Barcelona, 2002, pp. 68–84), Francesco Careri makes a great deal of this visit in the pouring rain by, among others, Breton, Éluard, Péret, and Aragon. The projected sites included others that would become the focus of Surrealist attention, especially the Parc de Buttes-Chaumont.

63. Robert McNab, *Ghost Ships: A Surrealist Love Triangle* (Yale University, New Haven, CT, 2004, p. 24), quoting from Pierre Naville *Le temps de surréel* (Editions Galilée, Paris, 1977, p. 70). McNab's is a study of the trip Paul Éluard, his wife Gala, and Max Ernst took to Southeast Asia, but en route McNab considers early Surrealist walks, excursions, and journeys in general.

64. Aragon's *Le Paysan de Paris* was translated into English by Simon Watson Taylor as *Paris Peasant* (Jonathan Cape, London, 1971 [1926]). "The first seeds of the *Arcades* were sown when Benjamin read Louis Aragon's surrealist work *Le Paysan de Paris.* . . . The initial effect was corporeal shock: 'I could never read more than two or three pages in bed at night before my heart started beating so strongly I had to lay the book aside'" (Peter Buse et al., op. cit., p. 51).

65. André Breton, *Free Rein* [*La Clé des champs*] (University of Nebraska Press, Lincoln, 1995 [1953], p. 222, as translated by Michel Parmentier and Jacqueline d' Amboise). The essay in question, "Pont Neuf," had appeared early in 1950. I find it hard to imagine that Debord hadn't read this either then or in 1953 when *La Clé des champs* was published. Careri, op. cit., pp. 85–86, cites this passage, but he's quoting Mirella Bandini whose interesting-sounding article on Surrealist references in Situationist notions of the dérive and psychogeography I have yet to lay my hands on.

66. All the quotations in this paragraph are from "Theory of the Dérive," as translated by Knabb, pp. 50–51.

67. Sadler, op. cit., p. 70.

68. Literally a railway turntable, or hinge.

69. *Guide Psychogéographique de Paris: Discours sur les passion de l'amour,* par. G.-E. Debord, Édité par le Bauhaus Imaginiste, printed in Denmark by Permild & Rosengreen, 1956. In addition to the title it says, "pentes psychogeographiques de la dérive et localisation d'unites d'ambiance," or "psychogeographic slopes of the drift and the location of unities of ambiance." The best readily available reproduction is that in Robert Storr, *Mapping* (Museum of Modern Art, New York, 1994, p. 33), which is large enough to make out, sharp and in color (although misdated to 1957). The recent reproduction in Denis Cosgrove, "Maps, Mapping, Modernity: Art and Cartography in the Twentieth

Century" (*Imago Mundi 57*(1), 2005, pp. 35–54), p. 40, is larger, but black and white (more accurately, gray), and fuzzy. The best readily available reproduction of *The Naked City: Illustration de l'hypothése* [sic] *des plaques tournantes en psychogeographique* [sic], 1957, is in Sadler, op. cit., p. 60. This was a screenprint signed by G.-E. Debord, but it and the Guide were made with Asger Jorn. At one time Debord promised three other psychogeographic maps: *Paris sous la niege, The most dangerous game,* and *Axe d'exploration et échec dans la recherche d'un Grand Passage situationiste,* but if he made them no one's ever seen them (see Sadler, footnote 48, p. 182, and David Pinder, personal communication). Other collages that Debord made with maps found their way, suitably splattered with paint by Jorn, into Guy-Ernest Debord, *Mémoires, structures portantes d'Asger Jorn,* published in 1959 under the imprimatur of the Situationist International and printed in Copenhagen by Permild and Rosengreen. A recent facsimile is bound with reproductions of some of the original Debord collages as well as Debord's sources for the *detourned* phrases that appear in *Mémoires* (Editions Allia, Paris, 2004). Debord also illustrated the second volumes of his autobiography with a number of maps (Guy Debord, *Panegyric, Volumes 1 & 2* (Verso, London, 2004 [1989, 1997]).

70. Peter Wollen, "Mappings: Situationists and/or Conceptualists," in Michael Newman and Jon Bird, eds., *Rewriting Conceptual Art* (Reaktion, London, 1999, pp. 27–46, with the quotation on pp. 30–31).

71. David Pinder, "'Old Paris Is No More': Geographies of Spectacle and Anti-spectacle" (*Antipode 32*(4), 2000, pp. 357–386, the quotation is from p. 372), where Pinder reproduces two of Khatib's maps.

72. Debord, "Introduction to a Critique of Urban Geography," op. cit., p. 17.

73. Sadler, op. cit., p. 61.

74. Will Self, *Psychogeography* (Bloomsbury, London, 2007). Even without Steadman there's a strong whiff of Hunter S. Thompson about Self, and while he's consequently a very engaging writer, his book—indeed books—are a measure of how far psychogeography has slipped from its Situationist moorings.

75. More earnest than his English contemporaries—Self, Iain Sinclair, Stewart Home—Coverley tries to present a simple sketch of the Situationists and their heirs (Pocket Essentials, Harpenden, England, 2006). Sometimes included in this company are the comic book writer/artists Alan Moore and Grant Morrison. This is really a stretch, though Moore's *Big Numbers* (with Bill Sienkiewicz), of which only the first two issues were ever completed, handily passes the test.

76. If they wanted to hear *me* at all. Meehan, Shiraishi, and Takahashi were the draw. We did hand out booklets containing my "Shadowed Spaces," paper which is consequently "first published" in Scotland 2007, despite the fact that I wrote and began distributing mimeographed copies of it back in 1978. A *very different* form of the paper was published as "In Defense of Indefensible Space," op. cit. For the tour, pictures, and excerpts from performances in Cumbernauld, Edinburgh, and Easterhouse in Glasgow, go to *www.arika.org.uk* and click on Shadowed Spaces.

77. Rebecca Solnit, *Wanderlust: A History of Walking* (Penguin, New York, 2001); *A Field Guide to Getting Lost* (Viking, New York, 2005).

78. Rachel Lichtenstein and Iain Sinclair—they write alternating chapters—*Rodinsky's Room* (Granta, London, 1999); Iain Sinclair, *London Orbital* (Granta, London, 2002); *London: City of Disappearances* (Penguin, London, 2008). There's a whiff of Thompson about Sinclair too. But see David Pinder's "Ghostly Footsteps: Voices, Memories and Walks in the City" (*Ecumeme 8*(1), 2001, pp. 1–19). Debord is not even mentioned in this treatment of three walking-artists—Janet Cardiff, Lichtenstein, and Sinclair—but his spirit is everywhere implied. Indeed, Pinder opens and closes his paper with quotations from Breton's *Nadja*.

79. All of these organizations have active presences on the Web. Even those no longer functioning have Web presences, often including full archives.

80. For last year's Conflux go to *confluxfestival.org/2008.* John Krygier and I were invited to participate in the 2006 Conflux where I presented "Lynch Debord: About Two Psycho-geographies," at the Black Cat Café. Find out about ProvFlux at *pipsworks.com.*

81. *The City Formerly Known as Cambridge,* 2008 (the Institute for Infinitely Small Things, with map base and cartography, 2008, Hedberg Maps). Design was by Studio InFlux at the Art Institute of Boston. The quoted texts are from the front, or map, side. The back is occupied by what might be called a narrative index.

82. This section is heavily dependent on John Krygier's "Jake Barton's Performance Maps: An Essay" (*Cartographic Perspectives 53,* Winter 2006, pp. 41–50, 79–82). Though John wrote it, he and I worked on it together.

83. Visit the site at *cityofmemory.org.*

84. Quotations from Barton come from his website, from materials provided by Barton, or from conversations I had with Barton.

85. The museum's informative website is at *tenement.org.*

86. The Coalition's website is at *sitesofconscience.org.* This is an important site, well worth spending time at.

87. Visit the District Six Museum at *districtsix.co.za.* This powerful site is continuously evolving as the museum participates in the consuming effort to define postapartheid communities.

88. Memory Maps was created by Jake Barton and Nancy Nowacek for CityLore and the Smithsonian Folklife Festival. For more on this and other projects of Barton's, check out *www.localprojects.net.* He has a *lot* of interesting projects in hand.

89. See especially Lynch's *Image of the City,* op. cit, which spawned a huge and still growing literature on people's images of the places they live in; but see also my paper, "Lynch Debord," comparing the parallel work of these really very different people.

90. This is reproduced in Michael and Susan Southworth, *Maps: A Visual Survey and Design Guide* (Little, Brown, Boston, 1982, p. 186). Many maps like this were produced during the 1960s and 1970s in planning documents prepared by Lynch, Appleyard, the Southworths, and others.

91. Lynch reproduced this in his *Managing the Sense of a Region,* op. cit., pp. 158–159.

92. Ibid., p. 114.

93. Ibid.

94. For a detailed discussion of PDPal, see the online paper I did for the Walker Art Center "PDPal," archived at *gallery9.walkerart.org.* Search for "Wood," and click on PDPal.

Chapter Seven

1. Ellen Sung, "Charting Worlds of Ideas" (*News and Observer,* February 6, 2005, pp. 1G, 6G). Sung was especially interested in Kozloff's early role in the Pattern and Decoration movement of the 1970s, and she provided a guide to a number of Kozloff's public-art sites.

2. Joyce Kozloff, *Boys' Art* (Distributed Art Publishers, New York, 2003). There was a limited edition of 55 copies with a hand-tinted, collaged etching. Robert Kushner wrote the neat introduction.

3. Kozloff included the Han dynasty map because it helped universalize her subject, but in the first place, hers is a redrawing of a *reconstruction* of a "garrison map," and in the second place, authoritative descriptions of this artifact are laced with phrases such as "is thought to represent," "is thought to have military applications," and "have been interpreted as." See Cordell Yee's cautious assesment in "Reinterpreting Traditional

Chinese Geographical Maps" (in *Harley and Woodward 2.2,* op. cit., pp. 41–46), an account with which I am largely in accord.

4. In Lippard's essay for the catalogue to Kozloff's 2007 show, *Voyages,* at DC Moore, unpaginated, but p. 1. Some of this earlier work is reproduced in Harmon, *You Are Here,* op. cit., pp. 60, and 160–161. Also see Gayle Cleman's essay on Kozloff in Harmon's more recent book, *The Map as Art: Contemporary Artists Explore Cartography* (Princeton Architectural Press, New York, 2009, pp. 34–41). In what follows I'll refer to this as Harmon, *Map as Art.*

5. The show was called *Knowledge: An Ongoing Frescoe Project.* Janet Koplos reviewed it in "Revisiting the Age of Discovery" (*Art in America,* July 1999, pp. 86–87).

6. See the catalogue by Susan Bender and Ian Berry, *The World According to the Newest and Most Exact Observations: Mapping Art and Science* (Tang Teaching Museum, Skidmore College, Saratoga Springs, NY, 2001). Kozloff's work is on pp. 42–43. Some of my own work was included in this exhibition as well.

7. Also with future wars. The maps can be appreciated in the full body of her work in Joyce Kozloff, *Co-ordinates* (Trout Gallery, Dickinson College, Carlisle, PA, 2008), where the *Tondi* are illustrated, pp. 102–111. This is the sumptuous catalogue of an exhaustive retrospective curated by Phillip Earenfight for the Trout Gallery. Unfortunately I didn't get my hands on it—for which I thank Joyce Kozloff—until I'd finished my text.

8. Sung, op. cit., p. 6G.

9. Höch's *Schnitt mit dem Küchenmesser Dada durch die Letzte Weimarer Bierbauchkulturepoche Deutschlands* (c. 1919–1920) is big for a photomontage, 44 7/8 inches by 35 7/16 inches. It's owned by the National Gallery, Berlin. On Höch see Peter Boswell et al., *The Photomontages of Hannah Höch* (Walker Art Center, Minneapolis, 1996), and Maud Lavin, *Cut with the Kitchen Knife: The Weimar Photomontages of Hannah Höch* (Yale University Press, New Haven, CT, 1993). The De Chirico is owned by the Tate.

10. For a general introduction to the origins of photomontage, see Dawn Ades, *Photomontage, revised edition* (Thames and Hudson, 1986 [1976], pp. 18–39). On this priority dispute, see Brigid Doherty's treatment in her "Berlin" in Leah Dickerman et al., *Dada: Zürich, Berlin, Hanover, Cologne, New York, Paris* (National Gallery of Art, Washington, DC, 2005, pp. 90–99).

11. Indeed, it's altogether possible that Grosz has glued a map onto the chin and forehead of *Ein Opfer der Gesellschaft* (A Victim of Society), later titled *Remember Uncle August, the Unhappy Inventor* (1919), but even zoomed in enough to see the weave in the canvas, I can't be certain (at *www.nga.gov/exhibitions/2006/dada/images/artwork/202-095.shtm*).

12. As Hans Richter put it in his *Dada: Art and Anti-Art* (Thames and Hudson, New York 1997 [1964], p. 116): "Berlin added a new dimension [to Zürich] collage: the 'alienation of photography.'"

13. You can see this photo of Höch and Hausmann in Ades, op. cit., p. 28, or more beautifully reproduced and 10 times the size in Rudolf Kuenzli, ed., *Dada* (Phaidon, New York, 2006, p. 109). In either case, *Cut*'s to his right, *Brain* and *Tatlin* to her left. All three photomontages are reproduced in both books and widely online.

14. *Cut* last hung in the United States in the big Dada show at the Museum of Modern Art in New York in 2006.

15. Huelsenbeck reproduces a photograph of himself and Hausmann standing side by side in Huelsenbeck's *Dada Almanach* (Erich Reiss Verlag, Berlin, 1920, p. 8). His *Dada siegt: Eine Bilanz des Dadaismus* (Malik Verlag, Berlin, 1920) can be downloaded from The International Dada Archive at the University of Iowa Libraries, a truly great example of how to make archives like this accessible in the Internet age. What Huelsenbeck (or Charles Hulbeck as he was calling himself when I had the great pleasure of hearing

him speak at the Cleveland Museum of Art) might have thought about it is another story.

16. Why Prague? Because it had been a stop on the 1920 Dada Tour undertaken by Hausmann, Johannes Baader, and Huelsenbeck. See Dickerman et al., op. cit., pp. 440–441. *391* was first published by the poet and artist Francis Picabia in 1917 before he even knew about Dada, but it became a bridge between the Zürich Dadaists, Barcelona, French Surrealists, Marcel Duchamp and others.

17. See Matthew Brio's "Raoul Hausmann's Revolutionary Media: Dada Performance, Photomontage, and the Cyborg" (*Art History 30*(1), 2007, pp. 26–56). There's a full-page reproduction on p. 43, and a discussion on p. 46. *Tatlin* is widely reproduced. About the map Hausmann himself asks, "Wouldn't this man also wish to travel? There is the map of Pomerania, on the wall to the left" (as quoted by K. G. Pontus Hultén, *The Machine as Seen as the End of the Maechnical Age* (Museum of Modern Art, New York, 1968, p. 111).

18. Ibid., p. 34. The caption to the reproduction in Kuenzli, *Dada,* op. cit., p. 96, identifies the map fragment in the upper right as of Harrar, Ethiopia, "former address of poet Arthur Rimbaud." Two other small maps are global perspectives. The collage as a whole is constructed as a self-portrait of Hausmann as a Dada at the precise time that Dada energy was being dissipated.

19. This was the first piece Ray made on his arrival in France. It's reproduced in Harriet Janis and Rudi Blesh, *Collage: Personalities, Concepts,* Techniques (Chilton, Philadelphia, 1962, p. 52); and larger, in color, in Jennifer Mundy, ed., *Duchamp, Man Ray, Picabia* (Tate, London, 2008, p. 141).

20. Die *heilige Sattlermappe* is in the Collection of Claude Berri. It's online in the National Gallery of Art's Dada site (*www.nga.gov/exhibitions/2006/dada/artwork/index-main.shtm*) where it can be blown up enough to examine the map.

21. In his *Collage: The Making of Modern Art* (Thames and Hudson, New York, 2004), Brandon Taylor discusses these Czech developments at some length, pp. 60–65 and 77–82, illustrating *Souvenir* on p. 63. See *Pozdrav* in Kuenzli, op. cit., p. 164. For more details on Teige, see Eric Dluhosch and Rostislav Švácha, eds., *Karel Teige/1900–1951: L'Enfant Terrible of the Czech Modernist Avant-Garde* (MIT Press, Cambridge, MA, 1999); on Jindřich Štyrský, see Karel Srp, *Jindřich Štyrský* (Torst, Prague, 2001, in Czech and English). Incidentally, Teige was a friend of and was influenced by Roman Jakobson who was also a member of the Devětsil Group.

22. Dada made quite a splash in Japan too, but I've found no maps in the few Japanese photomontages I've had the opportunity to see.

23. Ball founded the Cabaret Voltaire with Hans Arp, Tristan Tzara, and Marcel Janco in February 1916, where they were soon joined by Huelsenbeck who came from Berlin. See Ball's *Flight Out of Time: A Dada Diary by Hugo Ball* (University of California Press, Berkeley, 1996), which has a useful chronology, p. xlvii.

24. Ibid., p. 67.

25. As quoted by Kuenzli, op. cit., p. 20.

26. The Tzara is from his "Proclamation without Pretension" (*Tristan Tzara: "Approximate Man" and Other Writings* (Wayne State University Press, Detroit, 1973, p. 157, the translation by Mary Ann Caws); the Grosz and Heartfield from the sign they held at the International Dada Fair in Berlin in 1920, "Die Kunst ist tot/Es lebe die neue/Maschinenkunst/Tatlins," a photo of which with the sign being held by Grosz and Heartfield is in Pontus Hultén (*Machine,* op. cit., p. 112), or on the wall to the left of Hannah Höch in the photo in Kuenzli, op. cit., p. 109.

27. Walter Benjamin, "The Work of Art in the Age of Mechanical Reproduction" (in Han-

nah Arendt, ed., *Illuminations* (Schocken, New York, 1969 [1955], pp. 217–251), p. 224. The essay was originally published in 1936.

28. Kuenzli, op. cit., p. 26.

29. There is no reason to believe that Picasso, Gris, Severini, or another early Cubist didn't use map fragments in some yet to be noticed piece, which could push map art's beginning back to 1913–1914 or so, with Malevich and Tatlin mining similar veins in Russia; and as the decade waned, with Rodchenko and Klustis making actual photomontages. For a good introduction to this ferment, see the opening chapters of Taylor's *Collage,* op. cit.

30. Matthew Josephson, *Life among the Surrealists* (Holt, Rinehart and Winston, New York, 1962, p. 177).

31. *Le monde au temps des Surréalists,* op. cit., published as a double-page spread in a special issue, *Le Surréalisme en 1929,* of the Brussels journal, *Variétés,* June 1929, pp. 26–27. This issue of *Variétés* was reprinted in 1994 in the Collection Fac-Similé from Didier Devillez Editeur, Brussels. Incidentally, in my "Map Art" (*Cartographic Perspectives,* no. 53, Winter 2006, 5–14), I claimed that the map was published without a neatline, as indeed Patrick Waldberg reproduced it in his *Surrealism* (Thames and Hudson, London, 1965, p. 24) and as I reproduced it the original edition of this book (p. 183). I was wrong. The map in *Variétés* very much had a neatline.

32. I originally advanced this argument in Denis Wood, "A Map Is an Image Proclaiming Its Objective Neutrality: A Response to Mark Denil" (*Cartographic Perspectives 56,* Winter 2007, pp. 4–16).

33. André Breton and Louis Aragon were also involved.

34. Éluard, his wife Gala, and Ernst comprised a ménage à trois, and Éluard's trip had been an attempt to resolve, or at least sort out, what was going on. Éluard had taken off for the Far East, Ernst and Gala followed together, and they all met in Saigon. There they fell apart and the Éluards proceeded home together, while Ernst stayed to explore Angkor Wat. Ultimately Gala would desert Éluard for Dalí, while Éluard and Ernst remained friends. There was no perspective from which this trip was trivial. For the whole story, see McNab, *Ghost Ships,* op. cit.

35. This map, *Les Cinq Parties du Monde, Planisphère, Comprenant toutes les Possessions Coloniales* (A Taride Editeur, 18–20 Boulevard St. Denis, Paris), with Eluard's route marked by himself in ink, is currently in the possession of the Musée d'art et d'historie, in Saint-Denis (Paris). While the conclusion that Eluard may have authored *Le monde au temps des Surréalists* is mine, the grounds for thinking so are all to be found in McNab, op. cit. McNab reproduces *Les Cinq Parties* on p. 58, and *Le monde au temps des Surréalists* on p. 211, once again without the neatline.

36. In his "Preface" to McNab's *Ghost Ships,* op. cit., p. ix (my emphasis). For the last two lines I have substituted the translation by Russell Stockman from Spies's article, "Max Ernst in America: 'Vox Angelica'" (in Werner Spies and Sabine Rewald, eds., *Max Ernst: A Retrospective* (Metropolitan Museum of Art, New York, 2005, pp. 66–79), p. 74. (The source of the quoted remark is "La révolution d'aboard et toujours," from *La révolution surréaliste 5,* 1925.) Spies is the world's reigning expert on Ernst.

37. For some reason rarely reproduced, at a little better than 3 by almost 5 feet, this amazing map isn't small. The best reproduction—the only one with decent color rendition—is that in the Spies's article I just cited, with the reproduction on p. 69. Bigger images can be seen online.

38. In Storr's "Past Imperfect, Present Conditional," in Spies and Rewald, op. cit., pp. 51–65, the quotation on p. 62.

39. This is from Paul Hammond's "L'Âge d'Or," in Rob White and Edward Buscombe, eds., *British Film Institute Film Classics 1* (Taylor & Francis, London, 2003, pp. 115–137,

with the quotation on p. 117). The film, banned by the police shortly after its release in Paris, and unseen anywhere between 1933 and 1979, may now be watched on YouTube in its entirety.

40. Spies, "Ernst in America," op. cit., p. 77.

41. An excerpt from Ernst's *Écritures* in Edward Quinn's *Max Ernst* (New York Graphic Society, New York, 1977)—where the painting is misdated to 1934—reads, "During the shooting of Buñuel's *L'Âge d'Or* at the Billancourt studios, I had noticed some plywood panels irregularly covered with paint and plaster, which were used for representing walls in the film. So I found myself confronted once again with Leonardo da Vinci's famous wall, which had played such an important role in my visions of half-sleep. I persuaded Buñuel to let me have those panels, and they appeared as the background in *Europe After the Rain*." Quinn's editor has sited this quotation directly below a double-page spread of *Europe After the Rain II* (1940–1942) which was *not* painted on these panels, but exploited decalcomania as a "visual irritant." The two paintings are frequently confused, though the earlier is a map, the latter a landscape painting.

42. McNab, *Ghost Ships,* op. cit., connects these "sea routes" with the route Éluard traced across *Les Cinq Parties du Monde,* a map Éluard would certainly have shared with his best friend; and so McNab sees *Europe After the Rain* as no less a memory of their travels to Southeast Asia than *Le monde au temps des Surréalists.* See the extended endnote 270 in McNab, p. 250.

43. Quinn, op. cit., also quotes U. M. Schneede as saying, "In the year of Hitler's takeover of power came the first version of *Europe After the Rain.* The continent is deformed, laid waste, all traces of civilization are wiped out. What remains after the destruction is scarcely identifiable. When Joyce saw the picture, he found a play on words which acts as a verbal equivalent: 'Europe—Purée—Pyorrhée,'" p. 201.

44. *Le Jardin de la France* is also widely reproduced, but both it and *Configuration No. 16* can be found in Quinn, op cit., pp. 332–333 and 421.

45. *La Casamiento de Buster Keaton* (1925) consists of two sheets of paper, with elements of the solar system on the first, and map fragments—the Sea of Japan, Greece—on the second, together with a diagram of sea breezes. See Ian Gibson et al., *Salvador Dalí: the Early Years* (South Bank Center, London, 1994) where it appears on p. 124. The indications are that, except for newspaper clippings related to Keaton, all the elements came from a geography text. Apparently, the collage accompanied a letter to Federico García Lorca, and it seems that Dalí wanted to include it in the *Book of Putrefaction* he and Lorca had planned to publish (see Gibson et al., op. cit., p. 137). Dalí opposed putrefaction and astronomy.

46. For an image see Charles Stuckey, "The Persistence of Dalí" (*Art in America,* March 2005, pp. 114–123, 149, with the image on 117). Stuckey writes: "While the transformative overpainting of a sentimental chromolithograph is the basis for the piece (hence its relationship to mass culture), far more significantly, the final image ranks among Dali's most extreme and perverse ideas for object sculptures, incorporating the head of a blond child as a desktop globe of the world. Moreover, the paranoiac-critical revelation of the map of Africa, erupted on the child's milky cheek as the double image of some unwholesome rash, brings to mind Breton's worries about Dali's possible racism in the late 1930s" (p. 120). But then what to say about the *revelation of the map of Europe* on the child's forehead?

47. Murphy, heir to the Mark Cross leather-goods fortune, and his wife Sara, an even wealthier heiress, were models for the Drivers of F. Scott Fitzgerald's *Tender Is the Night.* Murphy only painted 14 paintings, and *Bibliothèque* is one of seven that survive. The globe and other objects had been in his father's library. *Bibliothèque* is less connected to

the Surrealism of Murphy's friend Man Ray than to the Purism of Amédee Ozenfant and Le Corbusier. See David Ebony, "The Sun-Baked Avant-Garde" (*Art in America,* March 2008, pp. 153–157 and 197, *Bibliothèque* illustrated on p. 157); and for a great deal more, Deborah Rothschild, ed., *Making It New: The Art and Style of Sara and Gerald Murphy* (University of California Press, Berekely, 2007).

48. These are all reproduced in the lovely *Joseph Cornell: Shadowplay Eterniday,* with essays by Lynda Roscoe Hartigan and others (Thames and Hudson, London, 2003). The rather *lush* Cornell literature is growing by leaps and bounds.

49. This appeared on the cover of an issue of *VVV.* The Duchamp literature is out of control, but to enter it via the *Allégorie,* see Bonk et al., *Joseph Cornell/Marcel Duchamp . . . in Resonance* (The Menil Collection/Philadelphia Museum of Art, Houston/Phila-delphia, 1998, pp. 145–147 and 256–257), where the *Allégorie de genre* proper—if I can call it that—is accompanied by variants in Joseph Cornell's *Duchamp Dossier,* as well as by a preliminary piece in the version of the *Boite-en-valise* (Series A, XI/XX) that was initially owned by Orin Raphael (see the note under 1944 [Spring] on page 287 of the chronology). Cornell himself probably assembled this copy of the *Boite.* It's also repro-duced in Mundy's *Duchamp, Man Ray, Picabia,* op. cit., p. 142, where, bizarrely enough, it claims to be previously unpublished.

50. At least it's the year he made the most commonly reproduced version. This is also often reproduced. See Storr, *Mapping,* op. cit., p. 9. The date of 1934 given on p. 133 in Har-mon, *You Are Here,* op. cit., may be incorrect, since Torres-García has dated the version illustrated there "43" just to the right of his initials in the lower left of the drawing. The earliest version I've found is dated "36" and apparently originally appeared in *Círculo y cuadrado No. 1,* May 1936. But see Cecilia de Torres, *El Taller Torres-García, The School of the South and Its Legacy* (University of Texas Press, Austin, 1992).

51. Here I'm quoting from Hal Foster et al., *Art Since 1900: Modernism, Antimodernism, Postmodernism* (Thames and Hudson, New York, 2004, p. 391).

52. Several pages from this metagraphic, including the one with the maps, are illustrated in Jean-Paul Curtay's *Letterism and Hypergraphics,* op. cit., unpaginated, but like halfway through.

53. From Thomas Crow's "Southern Boys Go to Europe: Rauschenberg, Twombly, and Johns in the 1950s" (in Stephanie Barron and Lynn Zelevansky, eds., *Jasper Johns to Jeff Koons: Four Decades of Art from the Broad Collections* (Los Angeles County Museum of Art, Los Angeles, 2001, pp. 52–53, with a detail of the map on p. 53)).

54. According to Roberta Smith (*4 artists and the map: image/process/data/place,* Spencer Musuem of Art, University of Kansas, Lawrence, 1981, p. 8), Rauschenberg "brought him several 8- by 11-inch mimeographed maps of North America which outlined only the 48 contiguous states." See also Kirk Varnedoe, *Jasper Johns: A Retrospective (*Museum of Modern Art, New York, 1996, p. 191); and the article by Calvin Tomkins, "Every-thing in Sight: Robert Rauschenberg's New Life" (*The New Yorker,* May 23, 2005, pp. 68–77), especially the quotation from Johns on p. 75.

55. The story is often told. See the account in Crow, op. cit., pp. 45–51.

56. This is rarely reproduced but see Smith, *4 artists,* op. cit., p. 8. On this and the rest of Johns's maps, see also David Shapiro, "Imago Mundi" (*Art News 70*(6), October 1971, pp. 40–41, 66–68).

57. The Johns literature is enormous, and the maps were widely reproduced; but all the early map paintings except the first are well reproduced in Varnedoe, op. cit., which also includes shots of Johns working on the Fuller and as it was installed in Montreal. Storr, op. cit., reproduces a preliminary study for the Expo mural, p. 8. The idea for the mural seems to have been stimulated by John Cage, who was a personal friend of both Fuller and Johns. See, for example, the Varnedoe entries for December 8, 1966 and

January 18, 1967, p. 230. After Johns saw the mural in Montreal he decided to repaint it, and worked on it into 1971. Later he painted another *Two Maps* and made a drawing, *Two Maps* (both 1989). Seven paintings, two lithographs, and two drawings were included in the 1989 Gasgosian show, *Jasper Johns: The Maps.*

58. See Elizabeth Armstrong, "Pop, Post-Pop, and Beyond" (in *Tyler Graphics: The Extended Image* (Walker Art Center, Minneapolis, 1987, pp. 121–159), the Oldenburg discussion on pp. 136–138. There's a good-size monographic literature.

59. For Fahlstrom's *World Map* see Harmon, *You Are Here,* op. cit., pp. 112–113; for *Garden,* Storr, op. cit., p. 29.

60. The missile map is discussed and reproduced in Dalia Varanka, "Interpreting Map Art with a Perspective Learned from J. M. Blaut" (*Cartographic Perspectives 53,* 2006, pp. 15–23 and 70–75, the discussion on p. 19, the reproduction on p. 72); and across two full pages in the vapid, John O. E. Clark, ed., *100 Maps: The Science, Art and Politics of Cartography Throughout History* (Sterling, New York, 2005, pp. 188–189).

61. Thomas Crow, "Saturday Disasters: Trace and Reference in Early Warhol" (in Annette Michelson, ed., *Andy Warhol,* MIT Press, Cambridge, MA, 2001, p. 60); and Hal Foster, "Survey" (in Mark Francis and Hal Foster, eds., *Pop* (Phaidon, London, 2005, pp. 14–41), Warhol quotation on p. 30.

62. Two of Ruscha's recent map paintings can be seen in Harmon, *You Are Here,* op. cit., p. 136. The tendency to see maps in the early photobooks is exemplified by their (far from unusual) inclusion in the map show Ian Berry curated for the Tang Teaching Museum at Skidmore College in 2001 (Bender and Berry, op. cit., pp. 72–73).

63. Mark Francis, "Preface," in Francis and Foster, eds., *Pop,* op. cit., 11, where he goes on to add, "This is then treated in a relatively uninflected manner so that the resulting work is capable of sustaining complex, even contradictory readings."

64. On Fluxus see Foster et al., *Art Since 1900,* op. cit., especially pp. 456–463; Elizabeth Armstrong and Joan Rothfuss, eds., *In the Spirit of Fluxus* (Walker Art Center, Minneapolis, 1993); Owen Smith, *Fluxus: The History of an Attitude* (San Diego State Univesity Press, San Diego, 1998), and Hannah Higgins's *Fluxus Experience* (University of California Press, Berkeley, 2002).

65. I've quoted this from Wollen, "Mappings: Situationists and/or Conceptualists," op. cit., pp. 42–43, where he discusses *Map Piece* in the context of Conceptualist and Situationist mapmaking. Later Ono map pieces include "Draw a map to get lost" and "Draw maps of your dreams."

66. Higgins, op. cit., p. 121, discusses *Spatial Poem No. 1 (word event)* (1965) (illustrated on p. 122); Wollen writes about *Spatial Poem No. 1* and *No. 2* in the context of Conceptualist and Situationist mapmaking (in "Mappings," op. cit., p. 43); and Midori Yoshimoto, who recently interviewed Shiomi at length, sets the series in another context in her *Into Performance: Japanese Women Artists in New York* (Rutgers University Press, New Brunswick, NJ, 2005, especially pp. 155–167). She discusses Shiomi's name change in a footnote on p. 276.

67. I've taken the wording from a photograph of the actual instruction card in Yoshimoto, p. 156, silently correcting "participants," as Wollen does. Higgins has, "Please tell me the word and the place, which will be edited on the world map" (p. 121). Were there multiple versions of the instructions?

68. This form was the source of heated disagreement between Shiomi and Maciunas, who originally wanted Shiomi to record the responses in a "newspaper." Maciunas also made prototypes for Shiomi's version, but fitted into a wooden box; and later made editions of the "object poems" with cork or fiberboard (Yoshimoto, p. 156). Though both come from the Gilbert and Lila Silverman Fluxus Collection, the examples of *Spatial Poem No. 1* (1965) reproduced by Higgins (p. 122) and Yoshimoto (p. 157) are

quite different. But then if each participant got one, Shiomi made at least 80 of them and Fluxus edition sizes could be substantial.

69. Wollen, "Mappings," op. cit., p. 41.

70. *FLUXU.S. Island* is reproduced in Wollen, p. 42; *Superhighway* in Richard Leslie, *Pop Art: A New Generation of Style* (Todtri, New York, 1997, p. 108).

71. Sol LeWitt, "Paragraphs on Conceptual Art" (*Artforum,* June 1967, pp. 79–83).

72. There's a nice description in Peter Osborne, ed., *Conceptual Art* (Phaidon, London, 2002, p. 93, with photos of other "date paintings," pp. 2–3). For more, see On Kawara, *10 Tableaux and 16,952 Pages* (Dallas Museum of Art, Dallas, 2008).

73. Discussed in Wollen, p. 36; and in Osborne, p. 93, where there are decent, color reproductions of two of the maps. Thirty-one of the maps are reproduced in color and full-size (or something very like it) in Kawara, *Tableaux,* op. cit., pp. 83–114.

74. Published by Éditions Michèle Didier, Brussels, 2007, in an edition limited to 90 numbered and signed copies and 10 artist's proofs. Michèle Didier has also published *I Met* and *I Got Up,* each in 12 volumes.

75. The best source is Long's own *Richard Long: Walking the Line* (Thames and Hudson, New York, 2002). This is, as Anne Seymour says at the end of her foreword, "a unique primary source of information on the career of one of the greatest living artists" (p. 10). It's also an exquisite book.

76. Osborne, op. cit., pp. 76–77, with the documentary photo reproduced full-page.

77. See Long's remarks on the home page of his official website at *www.richardlong.org.*

78. This work exists in three states: (1) the original working version in three sheets (which the Tate owns); (2) signed photographs of these three sheets (now in the Kunsthaus, Zürich); and (3) the definitive version with reprinted photographs mounted on board (also in the Tate). This last can be seen online at *www.tate.org.*

79. All in Long, op. cit., pp., 90–91; 108–09; 122–23.

80. The piece is dated 1994. See Long, op. cit., p. 84.

81. Good about Boetti, Luca Cerizza's *Mappa* (Afterall Books, London, 2008) is definitive about Boetti's map work.

82. As reproduced by Cerizza, p. 11, the 12 copper plates, each editioned as 12 silkscreened prints, are all but impossible to see. Six of them are clearly reproduced in Osborne, p. 110.

83. The embroidery was done by his then-wife, Annemarie Sauzeau.

84. During this period Boetti also made *City of Turin* (1968), a photocopied map of the city with the residences of Turin's artists known to Boetti indicated with a line and the artist's name. See Wollen, op. cit., p. 43.

85. Huebler's statement continued: "More specifically, the work concerns itself with things whose interrelationship is beyond direct perceptual experience. Because the work is beyond direct perceptual experience, awareness of the work depends on a system of documentation. This documentation takes the form of *photographs, maps, drawings, and descriptive language*" (emphasis mine). From the unpaginated catalogue for *January 5–31, 1969,* an exhibition of the work of Huebler, Robert Barry, Joseph Kosuth, and Lawrence Weiner that Seth Siegelaub curated in vacant office spaces at 44 East 52nd Street in New York. This is widely regarded as the first Conceptual art exhibition.

86. Douglas Huebler, "Location Piece no. 14, Global Proposal*," in Jeffrey Kastner and Brian Wallis, eds., *Land and Environmental Art* (Phaidon, London, 1998, p. 272).

87. Ibid.

88. See a decent full-color shot of *Windham College Pentagon* at *www.tate.org,* as well as the discussion in Wollen, pp. 36–38.

89. The illustrations in Kastner and Wallis, op. cit., include the map with the instructions, and six of the postal receipts, pp. 176–177.

90. Wollen, pp. 38–39.

91. Smith, *4 artists and the map,* op. cit., pp. 6–7.

92. All the earthworks artists made *rafts* of maps. See the numerous examples in Kastner and Wallis, passim; Storr, op. cit., examples by Holt (on p. 39), Smithson (on p. 49), and Piper (on p. 51); Lucy Lippard, *Overlay: Contemporary Art and the Art of Prehistory* (Pantheon, New York, 1983), especially the chapter "Time and Again: Maps and Places and Journeys," pp. 121–158 (maps by Long, Smithson, and others); and so on. Kastner and Wallis often illustrate the work itself, too, as does John Beardsley, *Earthworks and Beyond* (Abbeville, New York, 1984) (plus on p. 38 there's a reproduction of one of James Turrell's meticulous maps). There is a huge monographic literature on many of these artists.

93. See Stephen Bann on this mapmaking as an art practice in "The Map as Index of the Real: Land Art and the Authentication of Travel" (*Imago Mundi 46,* 1994, pp. 9–18) (substantially excerpted in Kastner and Wallis, op. cit., pp. 243–244).

94. *The Gates Map,* which carries a mini-history of Christo and Jeanne-Claude's work as well as reproductions of numerous Christo drawings related to *The Gates,* bears the Central Park Conservancy logo but was copyright 2004 by United Arts Group. About *The Gates* see Jonathan Fineberg, Christo and Jeanne-Claude, *On the Way to The Gates, Central Park, New York City* (Metropolitan Museum of Art, New York, 2004). There's a huge Christo literature.

95. Two catalogues of Smithson's library have been published: Valentine Tatransky's (in *Robert Smithson* (Museum of Contemporary Art, Los Angeles, 2004, the catalogue of Smithson's first comprehensive retrospective)) and Anne Reynolds's (in her *Robert Smithson: Learning from New Jersey and Elsewhere* (MIT Press, Cambridge, MA, 2003)). I've relied on Tatransky's, pp. 258–260.

96. "Mapscapes or Cartographic Sites" concluded Smithson's article "A Museum of Landscape in the Vicinity of Art," in Jack Flan, ed., *Robert Smithson: The Collected Writings* (University of California Press, Berkeley, 1996), p. 386.

97. Unpublished during his lifetime, and perhaps only a draft, "Hidden Trails in Art" is in ibid., pp. 78–94, the "Mapscapes" section, pp. 91–94. The piece was first published in *Art International,* March 1968.

98. These are all widely reproduced, but they're also all online at *www.robertsmithson.com.*

99. Gary Shapiro, *Earthwards: Robert Smithson and Art after Babel* (University of California Press, Berkeley, 1995), pp. 69–72. See also Robert Hobbs, *Robert Smithson; Sculpture* (Cornell University Press, Ithaca, NY, 1981), p. 14.

100. For full-page illustrations of these pieces, see Smithson, op. cit., pp. 156–161.

101. In Flan, op. cit., p. 249. Also see Shapiro, pp. 73–76.

102. Shapiro, p. 190. He writes what amounts to a mini-essay about Smithson and maps on pp. 185–190.

103. There's a really nice article from the time, Robert Arn's "The Moving Eye . . . Nancy Graves Sculpture, Film, and Painting" (*artscanada,* Spring 1974, pp. 42–48); but also see Smith, op. cit., *4 artists and the map,* pp. 11–13 and 24–31; Harmon, p. 71; and Storr reproduces one of Graves's drawings, p. 40. Margret Dreikausen writes about Graves's work from the perspective of *Aerial Perception: The Earth as Seen from Aircraft and Spacecraft and Its Influence on Contemporary Art* (Art Alliance Press, Cranbury, NJ, 1985), pp. 55–59). For the whole enchilada, see Thomas Padon, *Nancy Graves: Excavations in Print: A Catalogue Raisonne* (Abrams, New York, 1996).

104. For a beautiful example of a dream map see Harmon, op. cit., pp. 40–41, but for a photograph of the dreamers in their sleeping bags among the fairy circles, see Lippard, *Overlay,* op. cit., p. 161.

105. The best source here is Denes's own totally amazing *Isometric Systems in Isotropic Space:*

Map Projections from the Study of Distortions Series, 1973–1979 (Visual Studies Workshop Press, Rochester, NY, 1979). For a broader perspective see Jill Hartz, ed., *Agnes Denes* (University of Washington Press, Seattle, 1993).

106. *On Maps and Mapping* (*artscanada,* Spring 1974).

107. Most of what I know about these shows I read in Peter Frank's catalogue for the 1981 ICI show (see below), but Harmon, *Map as Art,* op. cit., p. 255, reports that Janet Kardon published an essay, *Artists Maps,* in conjunction with the Philadelphia show.

108. There were two parts to this exhibition, an historical selection from the collection of the American Geographical Society, and then the modern art. An extensively illustrated catalogue was promised in a handout, but I can't locate a copy. WorldCat catalogues the title—*Cartography: An Historical Selection of Maps, Globes, and Atlas: 1452–1978* (Sheboygan, 1980) but lists no holdings.

109. The four artists were Johns, Graves, Roger Welch, and Long. Smith also wrote the essay for the thoughtful catalogue. It may be worth noting that Smith's father was Thomas Smith, a map historian on the Kansas geography faculty.

110. At the time Independent Curators *Incorporated.* The show played Colorado Art Galleries, Boulder; Arkansas Art Center, Little Rock; Huntington Art Gallery, University of Texas, Austin; and Toledo Museum of Art. It was accompanied by a valuable little catalogue, *Mapped Art: Charts, Routes, Regions.*

111. Namely, Christo, Denes, the Harrisons, Holt, Oppenheim, Smithson, Cage (who used maps as scores), Fahlström, Fuller, Huebler, LeWitt, Oldenberg, Rauschenberg, and Wiley.

112. The show was accompanied by an exquisite and intelligent catalogue, *Atlas* (for which I thank Sara Knelman), and was reviewed at length by Deborah Carter Park, "Metaphysical Continetal Drift: Fictions of Place and Space" (*The Operational Geographer 10*(1), April 1992, pp. 3–6, for which I thank Ed Dahl).

113. Storr, op. cit., p. 23. Like Storr I can say that while I was writing the original version of what has become this chapter (for *Cartographic Perspectives*), unbeknownst to me the late Denis Cosgrove was writing "Maps, Mapping, Modernity: Art and Cartography in the Twentieth Century" (*Imago Mundi 57*(1), 2005).

114. Frances Colpitt, *Mapping* (UTSA Art Gallery, University of Texas at San Antonio, 1994).

115. Though the gallery brochure for my own *Power of Maps* exhibition two years earlier, designed by Pentagram, was maybe the first map show to do so.

116. I thank Greg Knight for providing me with a copy of the brochure.

117. *Maps Elsewhere* was accompanied by a neat catalogue called *Map* (Institute of International Visual Arts, London, 1996) that contained historical texts relevant to "maps elsewhere" and that illustrated in color the work of 40 artists (none of them in the show). The artist-curators refer to this as an "atlas of artists' maps."

118. Žielimir Koščević, ed., *Cartographers: Geo-gnostic Projection for the 21st Century* (MoCA Zagreb, 1997), with nine essays and a full checklist. Traveling, 1997–1998, from Zagreb to Warsaw, Budapest, and Maribor, *Cartographers* was published in four separate editions in Croatian, Polish, Slovenian, and Hungarian, each with a parallel text in English. The essay on critical cartography, by Irit Rogoff, includes a lengthy traversal of the most salient points raised by the first edition of *The Power of Maps.* Lize Mogel intially brought this to my attention and in general has been a terrific resource.

119. Paolo Bianchi and Sabine Folie, eds., *Atlas Mapping I: Artists as Cartographers, Cartography as Culture* (Verlag Turia and Kant, Vienna, 1997). See online documentation at the Kunsthaus Bregenz website.

120. Robert Silberman, ed., *world views: Maps and Art* (University of Minnesota, 1999, distributed by the University of Minnesota Press).

121. Naomi Miller, *Mapping Cities* (University of Washington Press, Seattle, 2000). It includes a comprehensive checklist and a gallery of color plates organized around the seven cities that were the focus of the show. Each city was represented by a portfolio of maps, most concluding with a piece of contemporary map art, Jane Hammond, Joyce Kozloff, and David Booth.

122. This was accompanied by an attractive and extremely valuable catalogue, of the same name, published by England & Co. in 2001.

123. *The World According to the Newest and Most Exact Observations: Mapping Art and Science* was published and distributed by the Tang Teaching Museum at Skidmore College, 2001. It included four preliminary drawings by me and my students for the Boylan Heights atlas project, all in 1982.

124. This was a collaborative presentation of the City of Los Angeles Cultural Affairs Department, the Los Angeles Municipal Art Gallery, and the Southern California Institute of Architecture. They published a brochure—folded like a map—that had brief essays by the curators and Denis Cosgrove, together with artist biographies. There was also a related symposium at which Cosgrove, Matt Coolidge, Mogel, Norman Klein, I, and others spoke.

125. This was a continuation of the map art exhibition mounted in 2001. It too was accompanied by an extremely valuable catalogue, of the same name, published by England & Co. in 2002.

126. This showed 10 artists (Julie Mehretu, Kathy Prendergast, Lordy Rodriguez, Mark Lombardi, and others).

127. Which included a complete checklist.

128. No catalogue was prepared for the show, which hung an equal number of contemporary map art pieces and antique maps. The gallery provides a useful checklist.

129. With another illustrated catalogue, called *The Map Is Not the Territory iii.*

130. The checklist and press release for the Julie Saul show are available at the gallery's website; *Topographies* came with a catalogue and essays by Moss, Steve Dietz, and others.

131. The useful catalogue came folded up like a map. I gave the inaugural lecture, "Map Art," which in fact was the original version of what became my paper "Map Art" in the Winter 2006 map-art issue of *Cartographic Perspectives,* which is to say, the first draft of this chapter. You can watch me deliver the lecture, online, at *www.clarku.edu/offices/mediaservices/videoarchive/playvideo.cfm?id=42.*

132. Johnson's checklist catalogues 33 works by 19 artists from across the United States.

133. In place of a catalogue, the gallery provided postcards and a press release.

134. Richard Klein, *Global: Twenty Artists Utilize the Globe* (Westport Art Center, Westport, CT, 2006).

135. A small booklet, it devoted a lovely page to each artist.

136. *International Waters* came with a valuable book; North House Gallery provides a checklist for *On the Map* online; so does the Gertrude for *Terra Incognita.*

137. Massimiliano Gioni, ed., *Get Lost* (New Museum, New York, 2007). Gioni was the museum's director of special exhibitions.

138. Both shows were accompanied by full-color catalogues, the Cork show with three commissiomned essays, and both treating both the antique maps and those of the map artists. The Cork catalogue is a gorgeous, oversized, hardbound book.

139. Lize Mogel and Alexis Bhagat, eds., *An Atlas of Radical Cartography* (Journal of Aesthetics Press, Los Angeles, 2007). A Spanish edition will come out in 2010.

140. There was no catalogue, or even brochure. This was Publico's last show. It did my *Atlas* proud. It looked spectacular the way they hung it. There's an installation shot online at *makingmaps.wordpress.com/2008/01/10/denis-wood-a-narrative-atlas-of-boylan-heights.* Much of the completed atlas can be seen on the Making Maps blog John Krygier

maintains: *makingmaps.wordpress.com/2008/01/10/denis-wood-a-narrative-atlas-of-boylan-heights.*

141. Courtney Gilbert, *Lines in the Earth: Maps, Power and the Imagination* (Sun Valley Center for the Arts, Ketchum, ID, 2007). I want to thank Courtney for her help.

142. There's extensive online documentation. Search for *zoomandscale.*

143. Again, I thank Greg Knight for providing me with a copy of the brochure.

144. And thanks to Vandana Jain for the brochures. The show was apparently planned in 2003.

145. Rhoda Rosen, *Imaginary Coordinates* (Spertus Press, Chicago, 2008). It's beautifully imagined and illustrated. Book and show both stage a "conversation" between Israeli and Palestinian artists. Again, see the next chapter.

146. *L(A)ttitudes* hung for the first half of 2008. There was no catalogue, but Ferguson prepared a valuable text that more than suffices, and the show is completely online at *washingtondcjcc.org/center-forarts/gallery/lattitude.html.* I have to thank Wendy for providing me with her text. I'll have more to say about this show in the next chapter too.

147. Again, there was no catalogue, but a nonetheless useful duo-fold brochure. I gave the accompanying lecture on map art.

148. The gallery produced a full-color piece that folded up more or less like a map, for which I have Courtney Biggs to thank. See Ara Merjian's useful review in *Modern Painters* (July/August 2008, p. 83).

149. There was no catalogue but the gallery provided a handout that served as introduction, essay, and guide. I thank the Institute for the handout, and Courtney Gilbert of the Sun Valley Center for the Arts for bringing this show to my attention.

150. Texts and catalogue for the Bucharest show were published as a special two-volume issue of *Pavilion 12*(1&2), 2008, *Being Here: Mapping the Contemporary.* Both volumes can be downloaded as PDFs from the Bucharest Biennale 3 site.

151. The gallery produced a full-color, 16-page booklet.

152. There was no catalogue, but the gallery produced a postcard, and Courtney Wendroff sent me the press release and biography packages on each of the artists.

153. Nato Thompson, ed., *Experimental Geography: Radical Approaches to Landscape, Cartography, and Urbanism* (ICI and Melville House, Brooklyn, 2008).

154. Need I say there was no catalogue?

155. Adam Katz and Brian Rosa, eds., *Tattered Fragments of the Map,* the limits of fun, Los Angeles, 2009. It opens with a long interview Adam did with me, but otherwise collects a provocative bunch of pieces 'round about maps. There's more at *www.tatteredfragments.info.*

156. Sayaka Akiyama is a Japanese artist who exhibits internationally; Joshua Neustein is an Israeli/American artist who exhibits internationally; Greg Colson has been exhibiting his map constructions since the late 1980s; Cusick uses maps to make collage-paintings . . . of Robert Moses, Sitting Bull; Natsios posts her work to a brilliant website (*www.cartome.org,* and more about her work in the next chapter), Dykhuis is a Canadian who exhibits nationally. Examples of most of this work can be found in Harmon, *Map as Art,* op. cit.

157. Janet Abrams and Peter Hall, eds., *Else/Where: Mapping/New Cartographies of Networks and Territories* (University of Minnesota Design Institute, Minneapolis, 2006) has so much more than map art in it, yet so much of what is treated *is* or overlaps map art. Pinder's "Cartographies Unbound" reviews *ElseWhere: Mapping, You Are Here* (see below), John Pickles's *A History of Spaces,* and the special *Cartographic Perspectives* issue on map art (in *Cultural Geographies 14*(3), 2007, pp. 453–462).

158. Harmon, *You Are Here,* op. cit., and Harmon, *Map as Art,* op. cit. Both are handsome books, the latter gorgeous. Kitty Harmon has been a *valuable* resource.

159. Denis Wood, compiler, "Catalogue of Maps Artists" (*Cartographic Perspectives 53,* Winter 2006, pp. 61–67). The omissions, even at the time, were egregious. The catalogue needs to go online as a wiki.

160. Woodward, *Art and Cartography,* op. cit., especially his introduction, and particularly pp. 4–5; Cosgrove, "Maps, Mapping, Modernity: Art and Cartography in the Twentieth Century," op. cit.

161. Dalie E. Varanka, *An Analysis of Contemporary Map-like Art* (Master's thesis, University of Illinois at Chicago, 1987).

162. Marie Cieri, *Irresolvable Geographies* (Doctoral dissertation, Rutgers University, 2004); James Alan Ketchum, *Journey to the Surface of the Earth: The Geoaesthetic Trace and the Production of Alternative Geographical Knowledge* (Doctoral dissertation, Syracuse University, 2005).

163. Admittedly 30 years after *artscanada* did!

164. Joyce Kozloff too asks the question, "Why is it in the air?" Then she says, "For starts, it's one of the ways that we receive information in today's world" (Kozloff, *Co-ordinates,* op. cit., p. 57).

165. In a typical week the daily *News and Observer* will print a couple of world maps, a dozen U.S. maps, another dozen or so maps of North Carolina, another dozen of the local region, a half dozen of Raleigh, and 12 dozen maps of local roadwork, crime, and event sites, together with advertising locator maps. The mix varies, and some weeks are especially map heavy, others map light. That is, each subscriber gets about 175 maps a week. Through the period the paper's circulation has been about 170,000. It's printing a lot of maps. Or *was.* In the middle of 2008 the paper fell into a precipitous decline from which I can't imagine it ever recovering.

166. For a less anecdotal treatment see Mark Monmonier, "Maps in *The New York Times,* 1860–1980: A Study of Journalistic Cartography" (*Proceedings of the Pennsylvania Academy of Science 58,* 1984, pp. 79–84), and "Maps in *The Times* (of London) and *The New York Times,* 1870–1980: A Cross-National Study in Journalistic Cartography" (*Proceedings of the Pennsylvania Academy of Science 59,* 1985, pp. 61–66). More generally, see Monmonier's *Maps with the News* (University of Chicago Press, Chicago, 1984).

167. See Wood and Fels, *Natures,* op. cit., Chapter 7.

168. Colin Cherry, *On Human Communication* (MIT, Cambridge, MA, 1957, p. 306). Cherry was Reader in Telecommunications at Imperial College, University of London, and he wrote *On Human Communication* to introduce the MIT Press's series "Studies in Communication." The idea is fundamental to all social theories of communication.

169. Ibid., p. 135.

170. Brian Wallis, ed., *Hans Haacke: Unfinished Business* (MIT Press, Cambridge, MA, 1986), pp. 92–97). This famous piece was the reason the Guggenheim notoriously canceled a scheduled Haacke exhibition in 1971.

171. To quote Eleanor Heartley's recent article about Richard Prince, "The Strategist" (*Art in America,* March 2008, pp. 144–151), p. 145. For a brief introduction to "appropriation art," see Foster et al., op. cit., pp. 580–589.

172. See Thompson, op. cit., pp. 86–89. Or listen to the breaths being taken on the iKatum website: *www.ikatun.org/kanarinka/it-takes-154000-breaths-to-evacuate-boston.*

173. Smith, *4 artists,* op. cit., p. 8.

174. Actually, as many commentators say the map Rauschenberg gave Johns was printed as say it was mimeographed. Frankly, you can't make out the original under the encaustic (not in the rare reproductions I've seen), and since it's been glued down on canvas, the back can't be inspected either. Supply houses offered teachers both packets of the printed maps *and* mimeo masters.

175. Varnedoe, *Jasper Johns,* op. cit., pp. 231–232.

176. Shapiro, "Imago Mundi," op. cit., p. 67; Storr, *Mapping,* op. cit., p. 15.

177. LAMOCA bought *Map* (1999) in 2001. An earlier *Map* was made for Hatoum's one-person exhibition at the Kunsthalle Basel in 1998. For an extended treatment of Hatoum's map piece, *Present Tense,* 1996, about the territorial divisions of Palestine reached under the Oslo Accords, and made with glass beads and soap, see the next chapter and Rogoff, op. cit., pp. 86–91. Later, Hatoum made *Continental Drift* (2000) for the Tate, another enormous map constructed from iron filings emphasizing the map's . . . contingency. See Mona Hatoum, *The Entire World as a Foreign Land* (Tate Gallery Publishing, London, 2000), with its documentation and essays by Edward Said and Sheena Wagstaff.

178. John Baldessari, *California Map Project, Part I: CALIFORNIA* (1969). He describes the work as follows: "Photographs of letters that spell CALIFORNIA and of the map used for locating the site for each letter [it's a National Geographic map]. The letters vary in scale from one foot to approximately one hundred feet, and in materials used. The letters are located as near as possible within the area occupied by the letter on the map. . . . It was an attempt to make the real world match a map" (as quoted in Kastner and Wallis, op. cit., pp. 178–179, where you can see the map and the letters).

179. *Untitled* [Burning Child] (1984) (in Amy Scholder, ed., *Fever: The Art of David Wojnarowicz,* Rizzoli, New York, 1998, p. 16). Wojnarowicz worked with maps regularly, collaging them onto a fiberglass shark, also *Untitled* [Shark] (1984); a skull, also *Untitled* [Skull with Demons] (1984); and into numerous paintings, such as *Fuck You Faggot Fucker* (1984) and *Something from Sleep II* (1987–1988).

180. Nina Katchadourian, *Handheld Subway* (1996), on the cover of Bender and Berry, op. cit., and pp. 40–41.

181. See *www.ikatun.com* for iKatun, The Institute for Infinitely Small Things, and kanarinka.

182. I cited this in a footnote to the first chapter. It's published by Sal Randolph's Free Press project in Göteborg, Sweden, and copyright, 2004, by the Institute for Infinitely Small Things. It's manufactured by Lulu.

183. "Map-recipes and Body-Ovens: Entries for a Psychogeographic Dictionary" (*Cartogaphic Perspectives 55,* Winter 2006, pp. 24–40, 76–78); the Elsevier *Encyclopedia* is forthcoming.

184. Visit *www.countercartographies.org/zoomify/color_side.htm* for a navigable and zoomable image of the map. I reviewed the map in *Cartographic Perspectives* (*58,* Fall 2007, pp. 52–53). For the 3Cs, go to *www.countercartographies.org.*

185. The quotations are from unpublished materials Rosenthal has prepared for exhibitions of her pieces in a variety of venues.

186. It's probably worth noting that slavick was Rosenthal's thesis adviser.

187. The quotation comes from an interview conducted by Catherine Lutz in elin o'Hara slavick, *Bomb after Bomb: A Violent Cartography* (Charta, Milan, 2007, p. 97), the rest of the information from pp. 88–95. slavick insistently uses her maps to draw attention to the facts.

188. In her essay, "Blossoming Bombs," in *Bomb after Bomb,* pp. 13–33, 15.

189. A point also made by former World War II bombadier, Howard Zinn, in his foreword to *Bomb after Bomb,* pp. 9–11.

190. Ibid., p. 100.

191. For more on this dimension of both sisters' work, see the catalogue, *Flesh and Blood,* for a show curated by Petra Fallaux for the Hewlett Gallery at Carnegie Mellon (1997) in which they exhibited together with two other sisters, Sarah Slavick and Madeleine Marie Slavick, especially Carol Mavor's essay, "Too Close to See."

192. Slavick, from an unpublished annotation of selected slides.

193. I wrote about these artists in "Some Things Lilla LoCurto and William Outcault Have to Say about Maps" (*Cartographic Perspectives 56,* Winter 2007, pp. 81–88).

194. Lilla LoCurto and William Outcault, *selfportrait.map* (University of Washington Press, 1999). This was the catalogue for a show that toured widely, 1999–2002. The full-color book contains useful articles, a chronology, and beautiful reproductions of the work.

195. See it at *www.simonelvins.com/silent_london.html.* The first image is a print of the digital file Elvins used to make the map, the second a portion of the map, the third the film used to create the etching. At 735 × 500 mm, *Silent London* isn't small. It's in an edition of 10.

196. See *www.simonelvins.com/FM.html.* Elvins printed the map in an edition of 20.

197. Find Holloway at *www.tomkae.com.*

198. Set in Optima Dante and printed in a first edition on Somerset Velvet at Peter Koch, Printers on the occasion of the 2007 Pecha Kucha of the North American Cartographic Information Society. Forty letterpress copies are signed and numbered by the author. Download the broadside at *www.tomake.com/future/mapmaking.html.*

Chapter Eight

1. The memorial was designed by Yahalom-Zur, 1978–1992 (Lippa Yahalom and Dan Zur). In his *Dreaming Gardens: Landscape Architecture and the Making of Modern Israel* (Center for American Places, Harrisonburg, VA, 2002)—a book it was my privilege to edit—Kenneth Helphand devotes serious attention to the site, pp. 148–152. The structure of the maze is said to derive from European geography.

2. Of course, *all* of West Jerusalem, indeed all of Israel, is built on Palestinian land: see Arnon Golan's "Redistribution and Resistance: Urban Conflicts during and Following the 1948 War" (*Modern Jewish Studies 1*(2), 2002, pp. 117–130); and more generally his "The Spatial Outcome of the 1948 War and Prospects for Return" (in Eyal Benvenisti, Chaim Gans, and Sari Hanafi, eds., *Israel and the Palestinian Refugees* (Springer, Berlin, 2007, pp. 41–57).

3. The massacre was a front-page story in the *New York Times,* April 10, 1948, where the headline read "200 Arabs Killed, Stronghold Taken/Irgun and Stern Groups Unite to Win Deir Yasin." The lead paragraph said, "In house-to-house fighting the Jews killed more than 200 Arabs, half of them women and children." The massacre has been the subject of bitter debate ever since—the literature's enormous—but see Saleh Abdel Jawad, "Zionist Massacres: The Creation of the Palestinian Refugee Problem in the 1948 War," in Benvenisti, Gans, and Hanafi, op. cit., pp. 59–127. As I wrote these words in January 2009, Israelis were raining bombs on Gaza, killing Palestinians right and left. It has never stopped.

4. From *Palestine-Family.net.* For other stories search under "Ein Karem." What really emptied the village was the example, 1,400 meters away, of Deir Yasin.

5. The buildings were not destroyed but were taken over by the invaders.

6. Ethnic cleansing is the compulsory transfer of a population to achieve political ends, in this case, a Jewish—that is, a religious—state.

7. Salman Abu-Sitta, *The Atlas of Palestine 1948* (Palestine Land Society, London, 2004).

8. Although you'd never know this from the laughable, if lovely, *Maps of the Holy Land: Images of* Terra Sancta *through Two Millennia* by Kenneth Nebenzahl (Abbeville Press, New York, 1986). While I don't blame Nebenzahl for the statement "For two thousand years [the Holy Land] has been the consuming obsession of cartographers, who have mapped the territory more frequently than any other place on the planet"—which appears on the front flap of the dust-jacket, and not a word of which is true—I do blame him for opening the book with two Ptolemaic maps whose captions would encourage

you to believe were made in the second century instead of the 15th century, when they *were* made; and for following this with a map attributed to St. Jerome (!) and the fourth century, which was in fact made in the 12th; and so on. This wishful thinking masquerading as history negates any value the lovely reproductions themselves might have. *Holy Land in Maps,* edited by Ariel Tishby, is not much better, though at least it brings the history up to 2000. (Israel Museum/Rizzoli Publishers, Jerusalem/New York, 2001).

9. *Atlas of Israel* (Survey of Israel, Ministry of Labor, Jerusalem, and Elsevier Publishing, Amsterdam, 1970, pp. I/1). This was the second edition of this national atlas. Avi-Yonah's essay, which opens the atlas, was drawn from his *The Madaba Mosaic Map* (Israel Exploration Society, Jerusalem, 1954). Contemporary thinking can be found in Michele Piccirillo with Eugenio Alliata, *The Madaba Map Centenary, 1897–1997: Traveling through the Byzantine Umayyad Period* (Proceedings of the International Conference Held in Amman, April 7–9, 1997, Studium Biblicum Franciscanum, Jerusalem, 1999).

10. Part of the problem is that much of the mosaic has been lost, and so what it might have been originally is a matter of some conjecture.

11. P. D. A. Harvey, *The History of Topographical Maps: Symbols, Pictures, and Surveys* (Thames and Hudson, London, 1980, p. 55). His source is Avi-Yonah's *Madaba Mosaic Map.*

12. As translated and cited by G. W. Bowersock, *Mosaics as History: The Near East from Late Antiquity to Islam* (Harvard University Press, Cambridge, MA, 2006, p. 17). I thank Arthur Krim for this book.

13. Ibid., the first quotation, pp. 18–19; the second, p. 25.

14. Ibid., p. 115.

15. Ibid., p. 122.

16. For the demolition, ibid., p. 18; for the hope, Harvey, *Topographical Maps,* op. cit., p. 55.

17. Most of these are well reproduced in Nebenzahl, op. cit., though again his text is full of unsupportable supposition, for example, "The lost manuscript map was probably centered on . . . " where there is no reason to believe there was a manuscript map to be lost.

18. Harvey, *Topographical Maps,* op. cit., p. 58. My summary is also indebted to Harvey's "Local and Regional Cartography in Medieval Europe," in Harley and Woodward, *History of Cartography, Vol. 1,* op. cit., the subsection headed, "Maps of Palestine and Its Cities," pp. 473–476. He speculates there, and elsewhere, about a Chinese connection vis-à-vis the grid on the Vesconte map.

19. Ahmet Karamustafa, "Introduction to Islamic Maps" (in Harley and Woodward, *History of Cartography, Vol. 2/1,* op. cit., pp. 3–11), p. 7.

20. While Palestine disappeared as an official administrative unit under the Ottomans, being incorporated into one *vilayet* (or province) after another, and divided among three in the 19th century, as Neville Mandel points out in his *The Arabs and Zionism before World War I* (University of California Press, Berkeley, 1976), "Despite these administrative divisions and changes, the concept of a *geographic* area called 'Palestine' was used by the three main parties figuring in the book: the Ottoman Government, the Arabs, and the Jews" (p. xx, emphasis in the original). Indeed, the Ottoman government used variants of the phrase "*Arz-i Filistin,*" that is, "Land of Palestine," in official correspondence throughout the 19th century, and the name enjoyed widespread popular and semiofficial use.

21. Again, lovely, large reproductions of most of these can be found in Nebenzahl, op. cit.

22. Search Goffart's *Historical Atlases,* op. cit., index under Holy Land for descriptions of historical atlases devoted to the topic; see Haim Goren, "Sacred, but Not Surveyed: Nineteenth-Century Surveys of Palestine" (*Imago Mundi 54,* 2002, pp. 87–110) for a

description of August Plarr's proposal for a "Christian campaign to conduct a detailed triangulation of Palestine," p. 92–53; and so on.

23. Ahmet Karamustafa, "Military, Administrative, and Scholarly Maps and Plans" (in Harley and Woodward, *History of Cartography, Vol. 2/1,* op. cit., pp. 209–227), p. 209; Dov Gavish, *A Survey of Palestine under the British Mandate, 1920–1948* (RoutledgeCurzon, London, 2005), pp. 12–13).

24. Mitia Frumin, Rehav Rubin, and Dov Gavish, "A Russian Naval Officer's Chart of Haifa Bay (1772)" (*Imago Mundi 54,* 2002, pp. 125–128), where references can lead you more deeply into the 18th-century regional-charting activities of the Russian navy.

25. The survey was carried out in the first half of 1799 during an abortive effort to forestall Ottoman forces from confronting the French in Egypt. The survey was wholly in support of military objectives, which is why only a coastal strip was triangulated. On the mapping generally see Anne Godlewska, *The Napoleonic Survey of Egypt: A Masterpiece of Cartographic Compilation and Early Nineteenth-Century Fieldwork, Cartographica 25*(1 & 2), 1988, Monograph 38–39; and for its broader context, her "Napoleon's Geographers (1797–1815): Imperialists and Soldiers of Modernity" (in Anne Godlewska and Neil Smith, eds., *Geography and Empire* (Blackwell, Oxford, UK, 1994, pp. 31–53). For an even broader picture see Josef Konvitz, *Cartography in France 1660–1848* (Chicago University Press, Chicago, 1987). Know that Konvitz's focus is France itself, and Godlewska's Egypt proper. Less has been written about the actual mapping of Palestine, but see Joseph Elster, "Jacotin's Map," in the *Atlas of Israel,* op. cit., pp. I/4, with its sumptuous reproduction of one of the sheets; Yehuda Karmon, "An Analysis of Jacotin's Map of Palestine," *Israel Exploration Journal 10,* 1960, pp. 155–173 and 244–253; and Haim Goren's "Sacred, but Not Surveyed," op. cit., pp. 87–110.

26. A useful summary is Dov Gavish's "200 Years of Topographic Mapping, 1799–2000," in Tishby, *Holy Land in Maps,* op. cit., pp. 108–115.

27. See Joseph Elster's "Map of the Palestine Exploration Fund," in the *Atlas of Israel,* op. cit., pp. I/5; Goren, op. cit., pp. 103–106; and Gavish, *Survey of Palestine,* op. cit., especially pp. 10–12.

28. For a detailed discussion of these, with period maps, see Abu-Sitta, op. cit., pp. 4–10.

29. Here's the second paragraph from the preamble of the text establishing the Mandate:

> Whereas the Principal Allied Powers have also agreed that the Mandatory should be responsible for putting into effect the declaration originally made on November 2nd, 1917, by the Government of His Britannic Majesty, and adopted by the said Powers, in favor of the establishment in Palestine of a national home for the Jewish people, it being clearly understood that nothing should be done which might prejudice the civil and religious rights of existing non-Jewish communities in Palestine, or the rights and political status enjoyed by Jews in any other country.

The whole text is online at Yale's Avalon Project at *avalon.law.yale.edu/20th_century/ palmanda.asp.*

30. Gavish's *Survey of Palestine* is the essential—and endlessly detailed—source for this history of the Survey.

31. By limiting themselves to "settled" areas, the British were writing the Bedouins out of the future. Since they weren't "settled," the Bedouin lacked tenure anywhere, especially after the British had "reformed" the land regime in Palestine. The story of the Bedouin is particularly horrendous since most of them ended up in Israel, which has never known what to do with them. See Avinoam Meir's *Nomadism Ends: The Israeli Bedouin of the Negev* (Westview Press, Boulder, CO, 1997). The plight of the Bedouin who ended up in the West Bank may even be more parlous, especially those living in shipping containers in the vicinity of Ma'ale Adumim who face ongoing forced displacements.

32. Martin Bunton, *Colonial Land Policies in Palestine, 1917–1936* (Oxford University Press, Oxford, UK, 2007, p. 85). The immediate context, in this case, was actually British concern for the *protection* of the tenancy of Arab cultivators, though this was only because British policies had already created a growing—and terrifying—problem of Arab landlessness. See also Roza El-Eini's *Mandated Landscape: British Imperial Rule in Palestine, 1929–1948* (Routledge, London, 2006), which attempts to view Mandatory Palestine as an integral part of the British Empire, not some exceptional piece.

33. See Amos Nadan's interesting, *The Palestinian Peasant Economy under the Mandate: A Story of Colonial Bungling* (Harvard Center for Middle Eastern Studies, Cambridge, MA, 2006) in which, based on expanded source materials, he reverses the assessment of his dissertation that the economy of the rural Arab had been enhanced (pp. xxxv–xxxvi).

34. Geremy Forman, "Settlement of Title in the Galilee: Dowson's Colonial Guiding Principles" (*Israel Studies* 7(3), 2002, pp. 61–83), p. 61. That the British believed they were protecting Arab tenancy, or allowed themselves to believe they were doing so, only highlights the magnitude of their cultural arrogance.

35. Brian Harley drew this connection in the opening lines of his essay on "New England Cartography and the Native Americans," where he wrote, "*Victims of a Map* is the title of a book of poems by the Palestinian poet Mahmud Darwish and others. Like the modern tragedy of the dispossessed Palestinian people, the much older tragedy in American history saw the map as an instrument through which power was exercised to destroy an indigenous society" (Harley, *The New Nature of Maps,* op. cit., p. 171).

36. Gavish, op. cit., p. 28, but all recent histories of the period foreground the confusion of purposes that bedeviled British control.

37. Meron Benvenisti, *Sacred Landscape: The Buried History of the Holy Land since 1948* (University of California Press, Berkeley, 2000, pp. 12–13).

38. Ibid., p. 13, emphasis mine.

39. Ibid., p. 2.

40. Ilan Pappé, *The Ethnic Cleansing of Palestine* (Oneworld Publications, Oxford, 2006, p. 253). Pappé marshals unassailable archival evidence of the ethnic cleansing.

41. Ibid., pp. 11–12. The contribution of archeologists to this process is documented in Nadia Abu el-Haj's *Facts on the Ground: Archeological Practice and Territorial Self-Fashioning in Israeli Society* (University of Chicago Press, Chicago, 2001).

42. Widely available, but see Pappé, p. 288.

43. Benvenisti, op. cit., p. 2.

44. Pappé, op. cit., p. 144. The diaries are in the Ben-Gurion Heritage Institute of the Ben-Gurion Research Institute for the Study of Israel and Zionism at Ben-Gurion University of the Negev in Beer Sheba. The diaries cover Ben-Gurion's political activity in the Yishuv and Israel from early in the 20th century until December 1973.

45. For photographs taken by official Israeli photographers between 1948 and 1951 of "abandoned" Palestinian villages as new Jewish immigrants were being settled in them by the Israeli government—photographs in Israeli government archives—see Rona Sela, "Presence and Absence in 'Abandoned' Palestinian Villages" (*History of Photography* 33(1), 2009, pp. 71–79). I thank Arthur Krim for bringing this important article to my attention. My uncle, Gabriel Kolko, describes the "radicalizing" experience of "the countless Arab villages and homes [he] saw destroyed" during his visit to Israel in 1949 in "Israel: A Stalemated Accident of History" in his *World in Crisis: The End of the American Century* (Arbeiter Ring, Winnipeg, 2009, pp. 86–110, quotation on p. 86). I thank my uncle, David Manning, for bringing this article of Gaby's to my attention.

46. Benvenisti, op. cit., pp. 30, 41.

47. This would soon be merged with the Jewish National Fund Naming Committee.

48. Benvenisti, op. cit., p. 12.

49. Ibid., p. 14.

50. These in turn spawned the plethora of material artifacts—erasers, refrigerator magnets, postcards—referencing the new map of Israel so well documented in the Spertus Museum's *Imaginary Coordinates* exhibit.

51. Benvenisti, Ibid., p. 47.

52. From the first page of the unpaginated "Preface," *Atlas of Israel,* op. cit. The first edition, in Hebrew, had been published in parts during 1956–1964, by the Department of Surveys, Ministry of Labor and the Bialik Institute, the Jewish Agency. A smaller, third edition appeared in 1985, this time with Macmillan, concentrating on dynamic phenomena or data that had become available since 1970. The area mapped in this third edition includes the Sinai, even though it had already been returned to Egypt (in 1982). Some maps in the first edition also had borders along the Jordan.

53. These come from Benvenisti, pp. 26–33. There are dozens of similar remarks. Indeed, so strident was the claim to righteousness it's plain that there was immense doubt about it.

54. *Let's Go Travel Guide, Israel and the Palestinian Territories* (St. Martin's Press, New York, 2003, p. 342).

55. Ibdaa has a website: *www.ibdaa194.org/culturalexchange/index.html.* It's not very elaborate, but even so there's plenty there.

56. Benvenisti, op. cit., p. 43.

57. This is also the earliest use of the term *counter-map* that I know of. Edward Said, "Facts, Facts, and More Facts," *Peace and Its Discontents: Essays on Palestine in the Middle East Peace Process* (Vintage Books, New York, 1996, pp. 26–31), p. 26 and pp. 27–28. The essay originally appeared in *Al-Hayat,* December 10, 1993, after the Oslo Accords had been signed but while the detailed negotiations were in full swing. In his acknowledgments, Abu-Sitta refers to Said's encouragement and moral support, p. iii.

58. *www.ochaopt.org/?module=displaysection&section_id=96&edition_id=&format=html* is the site you want to go to. These OCHA/oPt maps are all free.

59. I have especially to thank Majed Abu Kubi and Charles Perring for their time. And for the work they're doing.

60. A new atlas in this mode, one whose publication has been postponed month by month for a number of years but is now promised for early 2010, is Malkit Shoshan's *Atlas of the Conflict: Israel-Palestine* (010 Publishers, Rotterdam). It claims that its over 500 maps "give a neutral, apolitical overview of the protracted conflict."

61. Annelys de Vet, ed., *Subjective Atlas of Palestine* (010 Publishers, Rotterdam, 2007). "Subjective," of course, does not mean false, and though the cover, a detail from Yasan Khalili's manipulated photograph, "Color Correction," *is* a kind of chromatic fantasy, everything else in the atlas is as "factual" as anything in the other atlases. The viewpoint, however, is personal. That's what "subjective" means here.

62. As Rashid Khalidi has observed, "The quintessential Palestinian experience, which illustrates some of the most basic issues raised by Palestinian identity, takes place at a border, an airport, a checkpoint: in short, at any one of those many modern barriers where identities are checked and verified." In Khalidi, *Palestinian Identity: The Construction of Modern National Consciousness* (Columbia University Press, New York, 1997, p. 1).

63. Again see Luca Cerizza's *Mappa,* op. cit., pp. 12–16.

64. On these and others doing Israeli-Palestinian map art, see Gannit Ankori, "Israelishe und palästinensische Kunst: Punkte der Berührung, Punkte des Gegensatzes," in

Gabriele Heins ed., *Wohin?   Israelisch-Palästinenische Kunstausstelung* (Hamburg, 1995, pp. 10–24). There's an English translation online.

65. Maps of Druksland have been widely reproduced. See Harmon, *You Are Here,* op. cit., p. 33, for *Druksland Physical and Social.* Sarah Kent wrote about the pieces in her catalogue, *Ambiguous Definitions: An Exhibition of Works by Michael Druks* (Institute of Contemporary Arts, London, 1978).

66. In her *Terra Infirma,* op. cit., Rogoff writes about Neustein, pp. 94–104, but he's a fairly prominent international artist, and there's a small monographic literature.

67. For these artists see Gannit Ankori's *Palestinian Art* (Reaktion Books, London, 2006, p. 150).

68. I thank my uncle, David Manning, for sharing his copy of Reeb's *Let's Have Another War* (M Publishers, Tel Aviv, 1997) with me. For color reproductions and a discussion of the use of maps by both Reeb and Neustein, see Susan Tumarkin Goodman, ed., *In the Shadow of Conflict: Israeli Art, 1980–1989* (Jewish Museum, New York, 1989, pp. 25–28, 33, 36, 39–41).

69. On Glotman see Rogoff, op. cit., pp. 83–85.

70. See Ankori, op. cit., pp. 84 and 150–151, and for reproductions, pp. 14 and 84. Anything not found there comes from an interview Sherwell granted me in Ramallah, 2009, where she now runs the International Academy of Art Palestine.

71. See the interview with Michael Archer in Michael Archer, Guy Brett, and Catherine de Zegher, *Mona Hatoum* (Phaidon, London, 1997, pp. 26–29). This is variously excerpted by Rogoff, op. cit., pp. 86–89, and by Ankori, op. cit., pp. 151–152. There are a couple of great pictures of *Present Tense* in Hatoum, *Entire World as a Foreign Land*, op. cit., pp. 37–38.

72. Ankori, p. 152.

73. On Kozloff, see the discussions in the last chapter, but also the entry in Ferguson's text for the *L(A)ttitudes* show, pp. 13–14. It's worth recalling that this show is online at *washingtondcjcc.org/center-forarts/gallery/lattitude.html.* The best place to see and read about Gur-Lavy is her website at *www.gurlavy.com.* Natsios's portfolio is available online at her website *www.cartome.org*; it's also been been fully published in Michael Sorkin, ed., *The Next Jerusalem: Sharing the Divided City* (Monacelli Press, New York, 2002, pp. 152–169). Chin's *Render* was widely reviewed (*New York Times, Art in America*); his website is *www.melchin.org,* and there's an extensive monographic literature. Originally Biaussat's *Green(er) Side of the Line* was an artist-in-residence project with the Al-Mamal Contemporary Art Foundation in Jerusalem (*Al-Ma'mal Foundation for Contemporary Art,* Jerusalem, 2008, pp. 22–25). *Greener Side* been exhibited internationally and was included in *L(A)ttitudes.* Francis Alÿs was profiled by Gregory Volk in "Walkabout" (*Art in America,* February 2008, pp. 122–129, 167). There's an extensive monographic literature devoted to Alÿs too. Nikolas Schiller's always interesting blog can be found at *www.nikolasschiller.com.* He shows increasingly widely.

74. For a sharp analysis of this border space just north of the Damascus Gate, see Wendy Pullan, "Locating the Civic in the Frontier: Damascus Gate" (in Markus Miessen and Shumon Basar, eds, *Did Someone Say Participate? An Atlas of Spatial Practice* (MIT Press, Cambridge, MA, 2006, pp. 109–122).

75. Israeli gave me a tour of the work in the spring of 2009, when a photographic version was simultaneously being exhibited at the Shay Ayre Gallery in Tal Aviv. Visit Israeli's website at *www.unateazy.com* for more.

76. Volk, "Walkabout," op. cit., pp. 129 and 167. The film's soundtrack consists of the comments made by a member of the Israeli Knesset, a Palestinian anthropologist, an Israeli activist, and Palestinian journalist while watching the film.

77. This is the subject of *Stateless Nation: An Exhibition on the Frontiers of Citizenship,* an ongoing project of Sandi Hilal and Alessandro Petti who observe that "the Occupied Palestinian Territories are the place to investigate and observe the new relations between territory, state, and populations." First exhibited at the Venice Biennale in 2003, it has been displayed widely in Palestine and elsewhere, and while not map art it's definitely art about the essential subject of the map.

Index

About the Authors

Denis Wood is a writer and artist living in Raleigh, North Carolina. From 1974 to 1996 he was Professor of Design in the School of Design at North Carolina State University in Raleigh. In 1992 he curated the award-winning Power of Maps exhibition for the Cooper-Hewitt National Museum of Design in New York (remounted at the Smithsonian in Washington, DC, in 1994), for which he wrote the bestselling *The Power of Maps* (1992). Dr. Wood is the author of *Home Rules* (with Robert Beck, 1994), *Seeing Through Maps* (with Ward Kaiser, 2001), *Five Billion Years of Global Change* (2004), *Making Maps* (with John Krygier, 2005), and *The Natures of Maps* (with John Fels, 2008).

John Fels has worked as a professional cartographer with the Ontario Ministry of Natural Resources and as a freelance cartographic designer and consultant. He developed and taught the core design curriculum in the Cartography Program at Sir Sandford Fleming College in Ontario, and is currently Adjunct Associate Professor in the Graduate GIS Faculty at North Carolina State University. Dr. Fels is the author of the *North Carolina Watersheds* map and also coauthor (with Denis Wood) of *The Natures of Maps.*

John Krygier is a geographer with teaching and research interests in cartography, geographic information systems (GIS), and environmental and human geography. He teaches at Ohio Wesleyan University. Dr. Krygier's book *Making Maps: A Visual Guide to Map Design for GIS* (coauthored with Denis Wood) was published in 2005, with a new edition to be published in 2011.