

Maps Work by Serving Interests

A cornucopia of images, bewildering in their variety: this is the world of maps. Sticks and stones, parchment and gold leaf, paper and ink . . . no substance has escaped being used to frame an image of the world we live in. Like the birds and bees we have danced them in the gestures of our living; since the birth of language we have sketched them in the sounds of our speech. We have drawn them in the air and traced them in the snow, painted them on rocks and inscribed them on the bones of mammoths. We have baked them in clay and chased them in silver, printed them on paper . . . and tee-shirts. Most of them are gone now, billions 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 Kentucky Fried Chicken boxes and the paper 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 that very piece of paper which not only described that world, but endowed it with a *reality* we have all accepted.

A Reality Beyond Our Reach

And this, essentially is what maps give us, *reality*, a reality that exceeds our vision, our reach, the span of our days, a reality we achieve 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 that the map gives us, transmuting it into everything it is not . . . *into the real*. This month's *Life* leaps at me from the checkout counter: "Behold The Earth," it says. "Startling new pictures show our planet as we've never seen it before." Inside, below the heading "This Precious Planet," the copy promises "Striking new views from near space show us more than we could ever have guessed about our fragile home."¹

Outside in the parking lot I am not struck by the preciousness of the planet, much less by its fragility. Instead, I am overwhelmed by the solidity and apparent indestructibility of everything I see around me. Only the pictures—let us think about them as maps for the moment—convince me of the reality the captions evoke. "Behold the Earth": it is as if we had never done so before, and indeed . . . *apparently we haven't*. "New pictures"; "never seen it before"; "new views"; "show us more": each phrase insists on the fact that indeed 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 convention center, that neighborhood, the thin traverse of the tour bus, the road from the airport home. It is 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 looking 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!"²

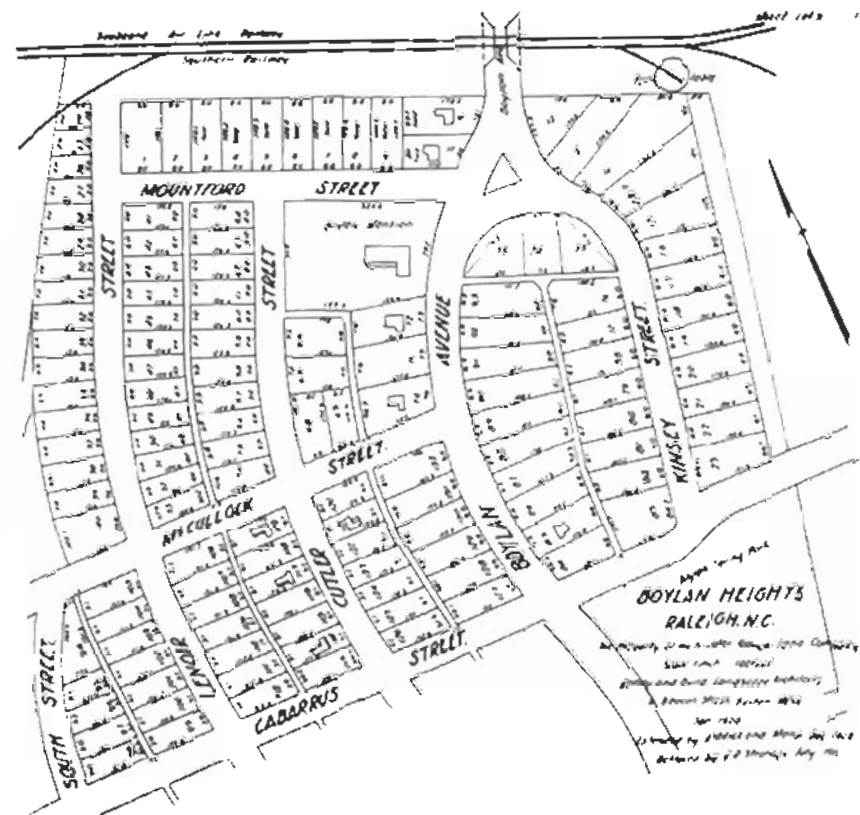
Why should it be otherwise? The sphericity of the globe is not something that comes to us as seeing-hearing-sniffing-tasting-feeling animals, is not something that comes to us . . . *naturally*. It is a residue of cultural activities, of watching ships come to us up out of the sea for *eons*, of thinking about what that might mean, of observing shadows at different locations, of sailing great distances, of contemplating all this and more at one time. It is hard won knowledge. It is *map* knowledge. As such it is something that little kids have to learn, not something they can figure out for themselves. "Educators are living in a dream world if they

floor based on radar altimeter measurements of the sea surface that mimic the topography of the ocean floor. Now, that's a stretch from the sandy bottom beneath our feet, or even from the (now) old-fashioned sonar readings we used to have to rely on. But here's another map, the first in *The New State of the World Atlas*.⁵ It looks like a political map of the world, and that's what it is. But just because it's easy for us to say this doesn't mean that conceptually it's not a stretch. Once you start to think about it, you realize that conceptually it's a lot more of a stretch than the map of the ocean floor. In fact, once you start to think about it, you realize that it's very difficult to say what this is actually a map of or to describe how it came to be. The concept of a gravity anomaly may or may not pose a conceptual difficulty, but the idea of a satellite bouncing radar off the ocean surface to map subtle variations in its height is straightforward; and the idea that these variations might reflect subtle variations in the gravitational field of the ocean floor that might in turn relate to variations in its topography is not too convoluted either. One can imagine the sensing system, can cope with the idea of its data being turned into this image.

But with the political map, this straightforward quality vanishes. National boundaries are not sensible. If variations in land use (as between Haiti and the Dominican Republic), or the gauge of railroad track (as between Russia and China), or the orientation of mailboxes (as between Vermont and Quebec), indicate the presence of an otherwise insensible border, no less often there is no difference to mark such a boundary through the rain forest (between Bolivia and Brazil), or across the desert (between Oman and Saudi Arabia), or in Los Angeles (between Watts and Compton). Or, the opposite situation, there is a chain link fence dripping with concertina wire and guard posts establishing the rhythm of a certain paranoia, and this border, which is more than sensible, is *not the border*, the border is contested, the neighbors disagree, there are binding United Nations' resolutions that are ignored, atlases show the border . . . *somewhere else*.⁶ Here the stretch between the sensible and the mapped is close to the breaking point: what is being mapped?

Every map constitutes such a stretch, those of the big world no more than that of the lot our house sits on, whose description reads as follows on the deed to our property:

Beginning at a stake marking the northeastern corner of the intersection of West Cabarrus Street and Cutler Street and running thence along the eastern line of Cutler Street North 3° 17' West 50 feet to a stake, the southwestern corner of Lot 125 as shown on map reference to which is hereinafter made; runs thence [and so forth and so on] to the place and point of Beginning, and being Lot Number 126 of Boylan Heights according to map recorded in Book of Maps 1885, page 114, Wake County Registry.



The map, from the *Book of Maps 1885* (p. 114). Wake County Registry, on which lot number 126 is recorded.

But there is no stake, there are no stakes, there is nothing to see; or where there is, all acknowledge that the fence does not follow the property line but veers across it; the only reality is the map, the map recorded on page 114 of the *Book of Maps 1885*. Here is the stretch—there is nothing in the trees or grass, on the sidewalk or street to mark the ownership the map grants us (the *land* is there: it is the *property* the map creates)—and here again is this *activity of another world*—the past in which control of this land was seized by the English Crown and granted to those who sold or gave it to those who sold or gave it to those who sold or gave it to those who sold it to us—made present in the map so that it could be made part of our living . . . here . . . now.

How does the map do this?

It does it by connecting us through it to other aspects of a vast system similarly brought forward from the past and embodied, not in

maps, but in codes, laws, ledgers, contracts, treaties, indices, covenants, deals, agreements, in pledges, in promises, in words given and oaths taken. Through this map, for instance, the ownership of the property it grants us—whose limits it describes, whose limits it makes real for us—is tied to a hierarchy of tax codes. The owners of Lot 126—described in *Book of Maps 1885*, page 114—have obligated themselves, through their purchase, to pay taxes to the county (itself a creature of another set of maps). Through these in turn they have linked themselves to the local school district (endowed with reality by yet another map) where their children attend school (in an attendance zone defined by still another map). Through their purchase, they have similarly obligated themselves to observe a set of restrictions on the use of their property that are embodied in zoning maps (they cannot rent out, for instance) as well as in an historic district overlay (they must receive approval from an appearance commission before they can paint their house any color other than white). Others, connected to the owners of Lot 126 through their own enmeshment in this hierarchy of nested maps, have identical and reciprocal obligations. They have agreed not to dump trash on Lot 126, or set their pup tents on it, or use it for a playing field, or as a shortcut; they have agreed to help pay for the garbage collection from the alley behind the Lot, and to help pay for the water and sewerage, fire and police protection, and other services . . . *that come with the territory.*

Maps Link the Territory with What Comes with It

It is this ability to link the territory with *what comes with it* that has made maps so valuable to so many for so long. Maps link the territory with taxes, with military service or a certain rate of precipitation, with the likelihood that an earthquake will strike or a flood will rise, with this or that type of soil or engineering geology, with crime rates or the dates of first frost, with parcel post rates or area codes, with road networks or the stars visible on a given date. Maps link land with all these and with whatever other insensible characteristics of the site past generations have been gathering information about for whatever length of time. The University Museum at the University of Pennsylvania has a property map subserving some of these functions that is three thousand years old. It was incised with cuneiform characters on a clay tablet in Mesopotamia,⁷ but no subsequent society of any size has long failed to make property maps in a variety of media. Ancient Egyptians drew them and Roman *agrimensores* surveyed them; the Japanese had them made as long ago as 742 AD, and there is an Aztec map of property ownership in the Library of Congress dated to 1540.⁸ With the passage of the Land Ordinance of 1785 in the United States, and the cadastral mapping of France set in

motion 1807 by Napoleon, increasingly enormous swaths of the planet were entered into this huge atlas of proprietorship, until now it is hard to imagine there is a square inch left whose ownership has not been staked out, squabbled over, bought, sold or killed for, each *transaction* . . . recorded someplace, on a map in a land office.

Such maps account for but a single layer in the great bundling of boundaries with which we have tied up the planet: maps of treaty organizations and national borders; maps of provinces, territories and states; maps of boroughs, counties, parishes and townships; maps of towns and cities, neighborhoods and subdivisions; maps of water and soil conservation districts; maps of garbage collection routes and gas service districts; fire insurance and land-use maps; precinct maps; tithing maps; congressional district maps; maps of the jurisdiction of courts . . . There is no reason to end this list here—or anywhere—for there are as many different kinds of—what to call these? boundary maps? power projection maps?—as there are ways of holding sway upon the earth.

And such boundary maps constitute but a single entry in the vast ledger maps keep. To open any thematic atlas is to—here, these are the plate titles, that is, the names of the things in the world the maps point to, from the “world thematic maps” section of *Goode’s World Atlas*: Political, Physical, Landforms, Climatic Regions, Surface Temperature Regions, Pressure, Winds, Seasonal Precipitation, Annual Precipitation, Ocean Currents, Natural Vegetation, Soils, Population Density, Birth Rate, Death Rate, Natural Increase, Urbanization, Gross National Product, Literacy, Languages, Religions, Calorie Supply, Protein Consumption, Physicians, Life Expectancy, Predominant Economies, Major Agricultural Regions, Wheat, Tea, Rice, Maize, Coffee, Oats, Barley—well, it goes on for pages.⁹ Or here, a *totally* different selection from *The New State of War and Peace* atlas: The Dove of Peace (a map of cease-fires and reductions in armed forces, 1988–90), The Dogs of War (a map of states in which wars took place, 1989–90), Unofficial Terror, Nuclear Fix, Killing Power, The Killing Fields, Bugs and Poisons, The Armourers, The Arms Sellers, The Butcher’s Bill (the number of deaths attributable to war), The Displaced (the number of refugees), Sharing the Spoils, The Martyred Earth . . . and this too goes on for pages.¹⁰ Zoom in? In the 57 maps of *The Nuclear War Atlas* we can subject the Nuclear Fix map of the *The New State of War and Peace* atlas to a kind of microscopic inspection. For example, here is a map showing the destruction of Hiroshima during World War II, and here another showing the sweep of debris around the world from the fifth Chinese nuclear detonation, and here a third showing the portions of the United States that would receive more than 100 rems of radiation in a nuclear war. There are 54 more where these came from.¹¹

Zooming out allows us to take in what cartographers refer to as general reference maps, images establishing a relatively indiscriminate

reality, at least by the standards of the *Nuclear War Atlas*, the *Atlas of Landforms*¹² or *The World Atlas of Wine*.¹³ In Goode's these comprise most of the maps in its "regional section" where they go under the name of "physical-political reference maps," that is, maps that pay attention to selected aspects of the physical environment—topography and major water features—and to a few of what are called "cultural features"—political boundaries, towns and cities (of certain sizes), roads, railroads, airports, dams, pipelines, pyramids, ruins and . . . caravan routes.¹⁴ Granted . . . it's hardly *general* reference, but it's about as close as maps come to portraying a world that we might see, especially at really large scales where, when the relief is shaded, the maps begin to suggest pictures of the world as it might be seen from an airplane . . . sort of. The map is always a stretch. It is never "the real thing" we walk on or smell or see with our eyes:

Big Tiger had never had a map in his hand before, but he pretended to know all about maps and remarked airily: "I can't read the names on this one because they're in English." Christian realized he would have to show his friend how to read a map. "The top is north," he said. "The little circles are towns and villages. Blue means rivers and lakes, the thin lines are roads and the thick one railways." "There's nothing at all here," said Big Tiger, pointing to one of the many white patches. "That means it's just desert," Christian explained "You have to go into the desert to know what it looks like."¹⁵

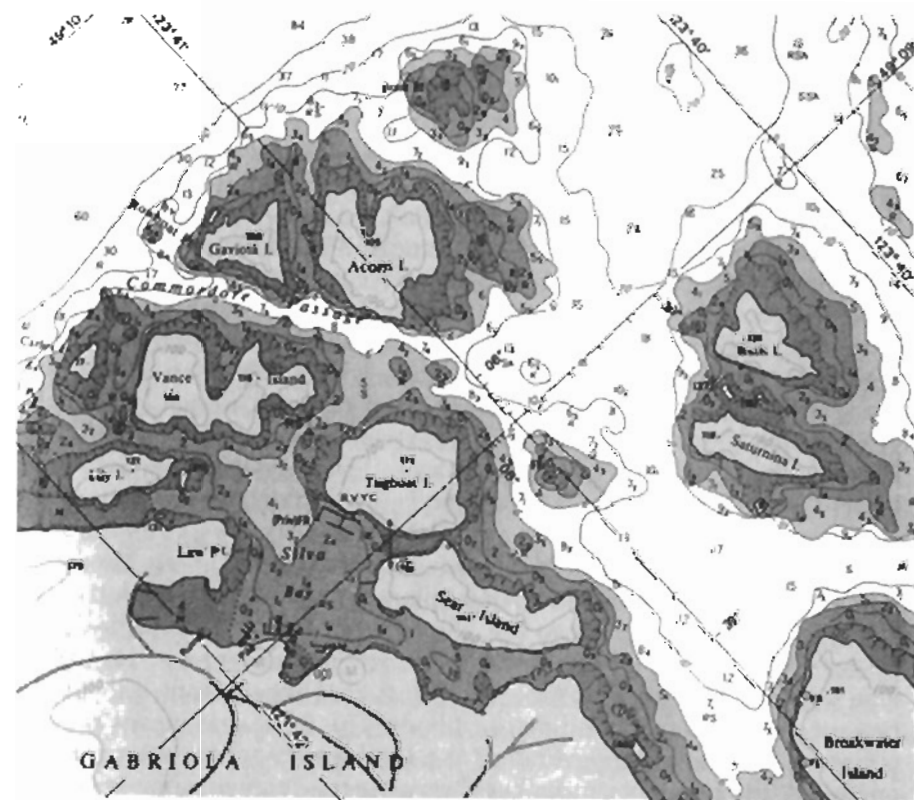
Exactly. This is the very point of the map, to present us not with the world we can see, but to point toward a world we might know:

"That's a fine map," said Big Tiger. "It's useful to be able to look up beforehand the places we reach later." "Are there really bandits about here?" asked Christian. "Perhaps it's written on the map," Big Tiger ventured. "Look and see."¹⁶

And if caravan routes . . . *why not bandits?*

Maps Enable Our Living

Here is the difference between a property map and a general reference map: one nails us to the territory, the other merely points it out. We might use a property map (and the maps to which it points) to answer *beforehand* questions about school districts and crime rates, but the way such a map usually *works* is to make these connections effective in the ongoingness of our daily living. The general reference map . . . is a *less involved observer*. The difference is that between parents saying "Wash these!" as they point to the dirty dishes—the property map—and saying



A detail from "Porlier Pass to Departure Bay," the fourth of four sheets which together make up Chart 3310—Gulf Islands: Victoria Harbour to Nanaimo Harbour.

"Your grandmother gave us those" as they wave in the general direction of the china cupboard. The indexicality is none the less, but the way that other world is made part of our living is less *well defined*, is less *enforceable*. This suggests that we can distinguish among maps not merely on the basis of what they show, but on the basis of the different livings into which that knowledge is incorporated. Spread before me is "Porlier Pass to Departure Bay," the fourth of four sheets that taken together comprise "Chart 3310—Gulf Islands: Victoria Harbour to Nanaimo Harbour."¹⁷ It's a skinny chart about four feet long by maybe a foot and a half high, folded, meant to be used—that is, *consulted*—in sections, though when unfolded it's pretty enough, and more than one of these is hanging behind glass somewhere, decorating a wall and making a connection to the territory. The sheet is sprinkled with black numbers and furrowed with blue lines indicating the depth of the water in fathoms (under 11

fathoms in fathoms and feet). A cabala of other marks differentiates 46 aids to navigation (permanent lights, whistle buoys, fog signals), eight different qualities of seabed (gravel, mud, shells), and 44 other objects of interest (drying rocks with heights, kelp, wrecks, abandoned submarine cables).¹⁸ Now, the living into which all of the labor that resulted in the production of this chart is incorporated is different from the living taking advantage of another map, say, this one, the *Geologic Map of Region J, North Carolina*, which shows in black and red the location of igneous, sedimentary, metasedimentary and metavolcanic rocks, various strikes and dips, and mineral resources, including, among other things, sites of potentially economic mineral deposits of crushed stone, iron and ruby corundum. Indicative of the living into which this map might be incorporated is the title of the booklet it accompanies, *Region J Geology: A Guide for North Carolina Mineral Resource Development and Land Use Planning*.¹⁹ This allows us to imagine planners—as opposed to pilots—consulting this map in their struggle to make land-use decisions, as, for example, where to locate a low-level radioactive waste dump.

Conventionally we have been asked to think about these as different uses of maps—navigation, planning—but both exploit the maps' inherent indexicality to link the territories in question with what comes with them, here perhaps shoal water, there perhaps an active fault. The uses are less different than the livings that incorporate into their present the endless labor all maps embody. This is what it means to use a map. It may look like wayfinding or a legal action over property or an analysis of the causes of cancer, but always it is this incorporation into the here and now of actions carried out in the past. This is no less true when those actions are carried out . . . entirely in our heads: the maps we make in our minds embody experience exactly as paper maps do, accumulated as we have made our way through the world in the activity of our living. The deep experience we draw upon, for example, whenever we select from the myriad possibilities *this route* for our trip to the movies is no less a product of work than was a medieval *portolan*, incorporating as it did in its making the accumulated knowledge of generations of mariners (and others) in the carefully crafted web of rhumb lines, the fine details of the coasts.²⁰ Onto the simple schemata with which we came into the world, our early suckling and crawling and grasping and peek-abooing all mapped a web of simple topological relations. This provided a substrate for the etching—as we moved out into the school yard and the neighborhood, as we explored the woods behind grandma's house or the meadows down beyond the creek—of spatial relations invariant under changes in point of view. Once we coordinated these, we could begin the construction of systems of reference invariant under changes in location, we could begin making . . . maps,²¹ which we do, wherever we go, whenever we go, out of our movement on foot and in car, in boat and in

plane, out of pictures we see and movies we watch, out of the things we read in the newspapers and hear on the radio, out of the books we read, the maps we consult, out of the atlases we flip through . . . out of the globes we spin. It is all labor, it is all work, the construction of these mental realms; and when we draw on them—for even the most mundane activity—we are bringing forward into the present this wealth we have laid up through the sweat of our brows.

To what end? To the same end, to—through the map—link all this elaborately constructed knowledge up with our living. Say we want to go to a movie. What do we do? We look it up in the newspaper, and read "Six Forks Station (daily at 2, 4:30, 7 and 9:30). Tower Merchants (nightly at 7, 9:30)." To choose which theater to go to, *much less how to get there*, we have to organize all the relevant bits of information into some kind of structure. For the moment let's call this structure a mental map, and let's think about it as a board sort of like a Paris metro map but covered with a trillion tiny light bulbs. When I think of Six Forks Station, a string of these bulbs lights up. This isn't the image I get, of course, any more than the activity of the computer I'm typing this on displays for me the machine processes in which it is engaged. The string of bulbs lights up, and I have a sense of Raleigh and a route to the theater, where it is (does my body sort of turn toward it?), what kind of roads will take me there (there may be many alternatives), the level of traffic at the time we want to go, other things. I don't know if this sense is displayed in my head as a map image. I know I can externalize it this way, but my feeling is that the mental maps I consult are less . . . *straightforward*. Sometimes the string won't be complete, I'll sense a gap in my knowledge, a little uncertainty, I'll say, "Do you know how to get there?" "Don't you?" "Umm . . . sort of." Maybe there's a red bulb at the end of one of the strings that makes me realize that I'll have to ask around when I get there, but that this won't be a problem. Or maybe there's a blue bulb that lets me know I could easily get lost. Of course this is only a map. There are no guarantees. I could get lost no matter the color bulb. The same thing happens for Tower Merchants. Among the alternatives for the two theaters, I select a couple to compare (do some routes glow more brightly than others?). Then the board goes black, and only these two routes light up again. One comes on in pink (heavy traffic), another in blue (road construction). In the end—this all takes milliseconds—I say, "What about Tower Merchants at 7?" and off we go.²²

Of course a mental map is not a board with a bunch of lights on it, but the neurological activity underwriting this kind of decision is clearly related to the way we use paper maps to make decisions. Certainly the similarities increase once we begin to externalize these maps, to share them with each other. "What? Why would you go that way?" "Because it's shorter." "No, no, it's shorter if you take St. Mary's to Lassiter Mill—"

"Oh, and then go out Six Forks to Sandy Forks?" "Yeah." Here the maps, in separate heads, are being consulted almost as if they were paper maps open on the table, linking knowledge individually constructed in the past to a shared living unfolding in the present.

One Map Use—Many Ways of Living

For these many maps then, only one use (aside from swatting flies or wrapping presents in them), and that is this connecting up what-we-have-done (money we have exchanged, surveys we have carried out, walks we have taken) *through the map*—property or mental, thematic or general reference—with what we want to do or have to do, with what we find is pressing. But if only one use . . . many livings. Perhaps this is the problem with the many taxonomies of maps that have been attempted, they end up taxonomies not of maps, but of the ways we view the world and the many ways we make our way within it. Take this simple-looking scheme from *The Map Catalogue*.²³ Since its subtitle reads *Every Kind of Map and Chart on Earth and Even Some Above It*, we should be able to anticipate a certain . . . comprehensiveness. But what we find are three types of maps, of *land*, of *sky* and of *water*. This apparent simplicity—itsself an illusion—disintegrates immediately. Under "Land Maps" are listed: Aerial Photographs, Agricultural Maps, Antique Maps, Bicycle Route Maps, Boundary Maps, Business Maps, Census Maps, CIA Maps, City Maps, Congressional District Maps, County Maps, Emergency Information Maps, Energy Maps, Foreign Country Maps, Geologic Maps, Highway Maps, Historical Site Maps, History Maps, Indian Land Maps, Land Ownership Maps . . . But already I'm exhausted with this inventory, there is no rhyme or reason to it, it is a melange, a potpourri . . . and it doesn't stop. Here, another one, this from a special issue of *The American Cartographer* (Journal of the American Congress on Surveying and Mapping) containing the *U.S. National Report to ICA, 1987*.²⁴ With all this we should be able to expect a certain . . . authoritativeness. Again, we have three fundamental divisions, hut this time into *government mapping*, *business mapping* and *university cartography*. Again, the apparent simplicity is delusional (all the universities are state universities, under the latter we find "Limited Edition Maps for Corporate Cartography"), the divisions are not real, or they have to do with making money not maps, and, again, the whole dissolves into a chaos ordered only by the type on the page: "Cartographic Programs and Products of the U.S. Geological Survey," "NOAA Map and Chart Products," "Defense Mapping Agency Redesign Studies," "Maps for Parklands," "An Experimental 1:100,000 Ground/Air Product." A third example, this from the fifth edition of the textbook in the field, Robinson, Sale,

Morrison and Muehrcke's *Elements of Cartography*.²⁵ Again, we have three divisions: "In order to provide a basis for the appreciation of the similarities and differences among maps and cartographers, we will look at maps from three points of view: (1) their scale, (2) their function, and (3) their subject matter." There is the imputation that these are independent, but again the classification collapses on inspection, this time into . . . *the vague*. Scale turns out to distinguish between *the large* and *the small*. Function discriminates among *the general*, *the thematic* and *the chart*. Under subject matter—after a nod toward cadastral mapping and plans—we find that "there is no limit to the number of classes of maps that can be created by grouping them according to their dominant subject matter." This leads to the conclusion that "cartography is independent of subject matter," thus rendering moot the point of making it the basis of a classification in the first place.

Hall gives us *four* divisions (violent novelty)—"Planetary Landscapes, Ours and Others," "The Animate Landscape" (maps of the body, brain, gamete, genes and DNA), "Probabilistic Landscapes, Atomic and Mathematical" (atomic surfaces, particle interactions, the fractal mapping of pi), and "Astronomical and Cosmological Landscapes".²⁶ So does *Goode's*, though all four of *Goode's*—world thematic maps, major cities maps, regional sections and ocean floor maps²⁷—would get lost in a single division of Hall's. Southworth and Southworth, both designers, give us eight in a veritable explosion of map types: Land Form; Built Form; Networks and Routes; Quantity, Density and Distribution; Relation and Comparison; Time, Change and Movement; Behavior and Personal Imagery; and Simulation and Interaction. Bizarrely enough, they refer to these as "mapping techniques," including what others call map types within them (thus: embossed map, relief map, route map, diagrammatic strip map, pictographic map, cartoon map, military map, geologic map, pictorial map, insurance map) but making no effort to systematize these.²⁸

Maps Construct—Not Reproduce—the World

These disparate efforts have in common precisely what the maps they so desperately attempt to sort have in common. Both are driven and shaped by the uses that connect the maps *through* them—*through* the taxonomies—to the livings that demanded and produced them. The crude impulse to produce a book produced the crude taxonomy of the *The Map Catalogue* with its land, sky and water world arbitrarily decomposed according to the order of the letters in the alphabet. The cartography journal, written by and for people who *make* maps, followed the cleavages of production. Hall, a journalist on the prowl for "newly charted realms,"

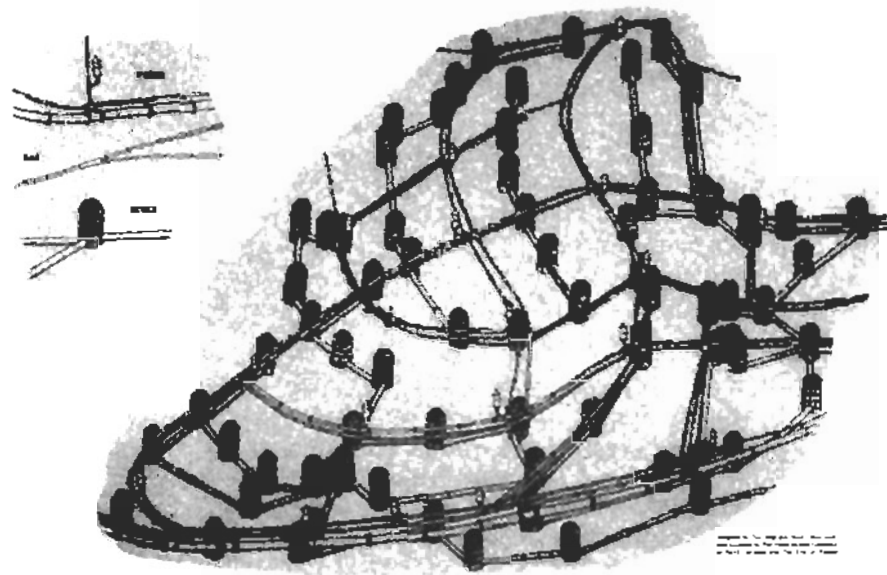
found them in the sub- and supraterrrestrial, and from these he generated a taxonomy of spectacle. The Southworths produced—as designers might be expected to—a more formal partitioning. But for all this, little taxonomy . . . of maps. One would not be difficult to imagine. Here: at the level of the kingdom, *material maps* and *mental maps*. Within the kingdom *material*, phyla distinguish among substances: *paper maps*, *cloth maps*, *clay maps*, *metal maps*. Within these, subphyla and classes, by size and weight; orders and families, by age and place of production; genus and species, by projection and . . . Well, at least it's a taxonomy of maps, instead of the earth or of mapmakers or the elements of Aristotle. But it is immediately evident how . . . *uninteresting* these classifications are, how . . . *irrelevant*. Not that the size and weight of the map don't matter—you can't read the *Times Atlas* in bed; a map you're going to steer by needs to fold up into small sections—but that these characteristics are subsumed in the more general, more powerful, more . . . *meaningful* question of how the map will link its readers to the world it embodies. Thus: bicycle map, blueprint, book illustration, topo sheet, historical atlas, wall map, logo . . .

Again: caught in the net of the living. Better simply . . . *to admit it that knowledge of the map is knowledge of the world from which it emerges*—as a casting from its mold, as a shoe from its last—isomorphic counter-image to *everything* in society that conspires to produce it. This, of course, would be to site the source of the map in a realm more diffuse than cartography; it would be to insist on a *sociology* of the map. It would force us to admit that the knowledge it embodies was *socially constructed*, not tripped over and no more than . . . *reproduced*. But then no aspect of the map is more carefully constructed than the alibi intended to absolve it of this guilt. In his effort to understand why historians make so little use of maps, Brian Harley argues that it follows from the way they see them:

The usual perception of the nature of maps is that they are a mirror, a graphic representation, of some aspect of the real world. The definitions set out in various dictionaries and glossaries of cartography confirm this view. Within the constraints of survey techniques, the skill of the cartographer, and the code of conventional signs, the role of a map is to present a factual statement about geographic reality. Although cartographers write about the art as well as the science of mapmaking, science has overshadowed the competition between the two. The corollary is that when historians assess maps, their interpretation is molded by this idea of what maps are supposed to be. In our own Western culture, at least since the Enlightenment, cartography has been defined as a factual science. The premise is that a map should offer a transparent window on the world.²⁹

What is achieved in this way? Precisely the pretense that what the map shows us is . . . *reality*. Were it not reality, why then it would just be

. . . opinion, somebody's *idea* of where your property began and ended, a good guess at where the border was, a *notion* of the location of the hundred-year flood line, but not the flood line itself. What is elided in this way is precisely the social construction of the property line, the social construction of the border, the social construction of the hundred-year flood line, which—like everything else we map—is not a line you can see, not a high water mark drawn in mud on a wall or in debris along a bank, but no more than a more-or-less careful extrapolation from a statistical storm to a whorl of contour lines. As long as the map is accepted as a window on the world, these lines must be accepted as representing things in it with the ontological status of streams and hills.³⁰ But no sooner are maps acknowledged as social constructions than their contingent, their conditional, their . . . *arbitrary* character is unveiled. Suddenly the things represented by these lines are opened to discussion and debate, the *interest* in them of owner, state, insurance company is made apparent. Once it is acknowledged that the map *creates* these boundaries, it can no longer be accepted as *representing* these "realities," which alone the map is capable of embodying (profound conflict of interest).³¹ The historian's problem is everybody's problem: our willing-



The social construction of this map—of the gas, water and sewer mains below the neighborhood in which Lot 126 is located—is hard to overlook, since, underground, it is impossible to see. (Drawn by Carter Crawford.)

ness to rely on the map is commensurate with our ability to suspend our disbelief in its veracity, but this amounts to a willingness to accept the map as an eye where the eye too no more than selectively brings into being a world that is socially construed.³²

The temptation here always is to illustrate the truth of these assertions with outrageous examples. The effect is to protect the alibi by poking in it only . . . *the most obvious holes*. By parading egregious instances of map bias, the vast corpus that underwrites our daily living is allowed to evade inspection. A story in this morning's paper is classical. A local high school, Cardinal Gibbons, isn't where its address—and most maps—say it is:

But the confusion about Gibbons doesn't stop there. Some maps show the school west of Avent Ferry Road, resting between Fraternity Court and Western Boulevard. "Every map that I've seen has us about a half a mile west of here," Kockx said. "No wonder we haven't grown. Nobody can find us."

The implication is that everything else on the maps is where it's supposed to be, that except for this bewildering—but explainable—error, maps really are windows on the world. This is the exception that proves the rule. When isolation won't serve, miraculous sleight of hand: our attention is turned to "propaganda maps" whereby the innocence of other maps is protected by blinding us to all but a small corpus of maps in which everyone can see—and happily acknowledge—the social construction of the image.³³ Or, a big deal is made about the failures of maps in the past to reflect the "real world." This leads to much self-righteous indignation over the loss of the learning during the dark ages when the lamp of learning was extinguished,³⁴ and endless froth over the placing of elephants for want of towns on the uninhabited downs of Jonathan Swift, thereby permitting contemporary maps to appear as the windows they have—presumably by dint of hard effort and the "scientific" attention to standards—triumphantly become³⁵:

The stations of this network are normally located 25 to 100 km (15 to 60 miles) apart and will have NAD 83 (North American Datum of 1983) horizontal positions, with differential positions accurate locally at the 1–3 cm level and absolute positions relative to the NAD 83 coordinate system accurate to the 5–10 cm level. Since GPS is three-dimensional, these stations also will have a vertical coordinate (ellipsoid height) associated with them. These ellipsoid heights can be converted to orthometric heights, the quantity obtained from leveling surveys, using geoid height information. NGSD currently publishes such geoid information from the high resolution geoid height model known as GEOID90. This geoid can provide 1 cm accuracy between points 10 km apart.³⁶

Only by the slimmest margins does the map fail to be a window on the world, margins which, because we can control and understand them, no more interfere with our vision than does a sheet of window glass.

All you have to do is ignore the frame.

All you have to do is ignore the way the window isolates this view at the expense of another, is open at only this or that time of day, takes in only so much terrain, obligates us to see it under this light . . . or that. This is the sleight of hand: if you're paying attention to the glass, you're not paying attention to what you're seeing through the window. Not that accuracy is not worth achieving, but it was never really the issue, only the cover. It is not precision that is at stake, but precision with respect to what? What is the significance of getting the area of a state to a square millimeter when we can't count its population?³⁷ Who cares if we can fix the location of Trump's Taj Mahal with centimeter accuracy when what would be interesting would be the dollar value of the flows from the communities in which its profits originate? What is the point of worrying about the generalization of roads on a transportation map when what is required are bus routes? Each of these windows is socially selected, the view through them socially constrained no matter how transparent the glass, the accuracy not in doubt, just . . . *not an issue*.³⁸

Look: here's Plate 86 in the *Times Atlas* with the Suez Canal running right up the gutter. Here's Israel and here's Jordan and running around through them in place of the usual international boundary line symbol is a string of purple dots and dashes: "Armistice Line 1949" and "Cease-Fire Line June 1967."³⁹ What is at stake here? Certainly it is not the *location* of the lines represented by these dots which everyone agrees . . . *are where they are*. What is at stake is not latitude and longitude, measured to whatever degree of fineness imaginable, but . . . *ownership*: this is what is being mapped here. This is what the fight is about. And the fighting was just as ferocious—maybe more so—before Harrison's chronometer beat its first second and long before we had Global Positioning Systems. With our total station we can get a satellite fix where we're standing at 31.31 N and 35.07 E; and whether we call it Hebron or Al Khalil, we will all agree that it's 31.31 N and 35.07 E. But because the map does not *map locations* so much as *create ownership at a location*, it is the ownership—or the ecotone or the piece of property or the population density or whatever else the map is bringing into being, whatever else it is making real—that is fought over, in this case, to the death.

Here, a second example, from the morning paper, *completely explicit*. The headline reads: "Raleigh neighbors don't want place on city's map." Here again the question is one of annexation, in this case to justify another annexation:

What Raleigh really has its eye on is part of the lucrative Centennial Campus that stretches across 1000 acres next door. State law requires that annexed land have a certain number of residents—something the new campus doesn't have . . . The 340 people who live next door would fulfill those requirements as part of a package annexation deal.⁴⁰

The objection is that because the city won't be maintaining the neighborhood's narrow, private streets, the residents will be paying for services they won't be getting, resulting in a kind of multiple taxation: "We're being taxed almost three times—by the county, by the city and by our homeowners' dues," complained one resident. Again, there is no question where any of these things are: city, county, subdivision, campus. All exist as property, thanks to the agency of maps, whose accuracy again is not in question, because maps do not so much record locations as connect them to a living. County, city? The role of the map, *which will be to establish this connection, to make it real in the lives of the residents* (and through their mutual enmeshment in the hierarchy of nested maps real as well in the lives of the rest of the city residents), will pass unobserved by all but the guy who wrote the headline.

Every Map Has an Author, a Subject, a Theme

"Mirror," "window," "objective," "accurate," "transparent," "neutral": all conspire to disguise the map as a . . . reproduction . . . of the world, disabling us from recognizing it for a social construction which, with other social constructions, brings that world into being out of the past and into our present. Preeminent among these disguises is the general reference map, the topographic survey sheet, the map, which without a point of view, gives us the world . . . as it is. Is any myth among cartographers more cherished than that of this map's dispassionate neutrality? So surely is this the north toward which cartographers point that they take its presence for granted, as though the neutrality of the general reference map were a fact of nature, a common truth like "all men are created equal" or "everyone's out for himself." Like these, its truth is little debated. It is just there, lodestone for a time of doubt. In most cartographic texts, the general reference map does a brief turn in the opening, where its existence, like that of the Virgin Birth, is blandly announced.⁴¹ An undefined term, it then disappears, though like a palsied hand, its presence is sensed in every line. "We all know how a map works, right? Good. Then let's get down to business." It is like a cookbook: what does it matter what a cake is? Follow these instructions and you will be able to *make* one. Compile and scribe, proof and print: *that's* a general reference map. If you can hold it in your hands is there any need to discuss it? Or, the general reference map is brought on stage to

clarify what something else is not. Fleeting, like the conjurer's hat, it is spun through the discussion: magically, from its empty interior, materializes the rabbit of the thematic map.⁴² This is claimed, in contradistinction to the general reference map, to have a subject or a theme. Or could I have that backwards? A map without a subject . . . would that be like a song without a melody?

What would a map be of that lacked a subject, unless the horror of the empty mirror? Of nothing, it would be nothing. It would not be. Unless it were to pop up in another universe, that of the mathematician perhaps, as an empty grid; or in that of the linguist as a crippled language, a grammar without words to embody it. A map is always of something, always has a subject, even when that something is a fiction alive exclusively in the map that is of it.⁴³ It refers out from itself to another map, to the world, to the Nature of which it is not. Of something (its



It is not just maps like this, from a manuscript in a library in 12th-century Turin, which embody their authors' prejudices, biases, partialities, art, curiosity, elegance, focus, care, attention, intelligence, and scholarship: *all* maps do.

subject), it is also through someone (its author), for its presence in the world is ever a function of the representing mind, and as such—it needs repeating—prey to all the liabilities (and assets) of human perception, cognition and behavior.⁴⁴ This is no more than to say that the map is *about* the world in a way that reveals, not the world—or not just the world—but also (and sometimes especially) the agency of the mapper. That is, maps, all maps, inevitably, unavoidably, necessarily embody their authors' prejudices, biases and partialities (not to mention the less frequently observed art, curiosity, elegance, focus, care, imagination, attention, intelligence and scholarship their makers' bring to their labor). There can be no description of the world not shackled (or freed—for this too is a matter of perspective) by these and other attributes of the describer. Even to point is always to point . . . *somewhere*; and this not only marks a place but makes it the subject of the particular attention that pointed there instead of . . . *somewhere else*. The one who points: author, mapmaker; the place pointed: subject, location; the particular attention: the aspect attended to, the theme—nothing more is involved (and nothing less) in any map. For example, a cartographer (the author, the one who points) maps the vegetation (the theme, the focus of attention) of Europe (the subject, the place pointed to).⁴⁵

Seen this way, it is not that the general reference map lacks a theme, but that it has *too many*, or that they are too deeply interwoven, that the map is more subtle than simple, too complex to bare in a single word—which words therefore are dispensed with altogether, as great novels today get along without the subtitles that adumbrated the themes of earlier ones, *Candide ou L'Optimisme*, *Emile ou L'Education*. Thus, not *Europe or the Vegetation*, *Transportation*, *Topography*, *National Boundaries*, *Cities and Points of Interest*, but simply (and more grandly) *Europe*, as we say *Ulysses* or *Love in the Time of Cholera*, with respect to which, simply because they are not itemized, we do not assume any lack of "themes." Perhaps the issue is essentially one of euphony, that on first hearing, "Vegetation Map" sounds reasonable, whereas "Vegetation-Physical-Political-Urban Map" sounds silly and cumbersome. Whereas it is a form of snobbery to prefer the seemingly elegant ("Vegetation Map") to the merely utilitarian ("Vegetation-Physical-Political-Urban Map"), it is a form of madness to confuse the titles with the content, and so come to mistake the "Vegetation Map" for a map of vegetation, or the map of "Europe" (elegant cover for "Vegetation-Physical-Political-Urban Map") for a map of Europe. The former is to mistake the theme for the subject; the latter to take the map for the subject itself, as though it were possible to have a map purely of its subject, of Europe, not of the *vegetation* of Europe, or the *topography* of Europe, or the *cities* of Europe *today*, but, you know, of *Europe itself*, as it is, once and forever, warts and all.

But sooner this hallucination than a cacophonous title, even if such self-deception should result in the articulation of a class of maps founded, not on content, but on names: those called by their themes (vegetation, urban, climate) and presumptively partial (*the thematic map*); and those named after their subjects (Europe, North America) and presumptively impartial (*the general reference map*). That such nominal classification bears but the slightest relationship to the subject of its attention (the maps) is but a trivial sign of panic, sad, but innocuous. The poison lurks in the ascription to the maps named after their subjects (the general reference maps) of, initially, literal impartiality; that is, not being partial (as thematic maps are), to either vegetation or national boundaries or topography; and since not partial in this way, literally impartial (that is, *comprehensive*, as general reference maps are supposed to be). Soon, however, impartial, ceases being heard as not partial but comes to be heard, figuratively, as impartial; that is, as fair, free from bias, disinterested; as in John Dewey's "impartiality of the scientific spirit," that is, as objective, dispassionate, even neutral; until ultimately purely and totally of the subject, without mediation, *transparent*.

Cartographers talk as if this were all well understood. The editors of *Goode's World Atlas*, to exemplify, are nicely outspoken. As they write in their introduction, "Because a well-drawn map creates an aura of truth and exactness, the cartographer should caution the reader against interpreting the generalized data too literally,"⁴⁶ but frequently they do not mean what they say, they rarely practice what they preach, and have managed to order their maps so as to preserve the implications of transparency for the general reference section. Most of all they are handicapped by the ferocious power of the maps to speak for themselves. The effect is to have created an artifact that says one thing wrapped in words that claim it is something else.

To illustrate: in their introduction to the "regional section," these editors write of their "environment maps" that their boundaries "as on all maps are never absolute but mark the center of transitional zones between categories."⁴⁷ One wants to applaud: *wonderful sentiment*. But that's all it is, a sentiment. For certainly it is not true, as stated, in the general case (unless we are to exorcize maps of their cadastral and political content), and is adhered to in no other, for where the idea of the *zone* has merit, there is invariably a fine black line (as that separating Mediterranean agriculture—in a stippled yellow-green—from deciduous forest—in tan); and where the idea of the *line* has merit there is invariably a *zone*—depending on the scale, up to 20 miles thick—engulfing a very broken line (as between Germany and France). It is a kind of nominalism which, having insisted that a boundary is not a line, feels perfectly free to draw it as nothing else.

Suspended Between Faith and Doubt

What is its cost? At public meetings citizens peer at small-scale maps on which city planners have scrawled road proposals in markers wide enough to be seen from the back of the council chamber and then, during a break, have heart attacks when they go up close to find the road on top of their homes. Reassured about their homes by careful explanations of the road's actual width, they nevertheless continue to accept the inevitably and accuracy of the rest of the map . . . including the proposed road. Why shouldn't they? Doesn't the map merely . . . *reproduce reality*? If it does, everything on the map is real. If it doesn't, nothing is. Not only would the proposed road be open to debate, but so would the course of *this* stream and *that* political boundary. But if they *are* real, then—except for unwitting error, an unintended failure of accuracy—*everything* on the map is above discussion. This is where the stream runs and that is where the boundary lies, and that is where the road will be built. Can we have it both ways? *We have to*. For the map to enable past or future to become part of our living now, it has to be able to connect it to a *here*. Otherwise, paralyzed by doubt, we are reduced to inaction: "Well, we want to plant a hedge, but until we really know where our property line is . . ." Yet unless we continuously *question* the map, doubt—yes—its accuracy, but more critically what of past or future it is linking up to the present and how it is doing so, the map will *disable* us from acting with intelligence and grace, will doom us to a living that is fatally flawed, partial, incomplete: "Well, we planted a hedge there, but none of the maps we looked at showed the city's plan to widen the road." Between doubt and conviction we must perpetually cycle: "We forfeit the whole value of a map if we forget that it is *not* the landscape itself or anything remotely like an exhaustive description of it. If we do forget, we grow rigid as a robot obeying a computer program; we lose the intelligent plasticity and intuitive judgment that every wayfarer must preserve."⁴⁵ At once the map is and is not the terrain:

"The map is not the terrain," the skinny black man said.

"Oh, yes, it is," Valerie said. With her right hand she tapped the map on the attaché case on her lap, while waving with her left at the hilly green unpopulated countryside bucketing by: "This map is *that* terrain."

"It is a quote," the skinny black man said, steering almost around a pothole. "It means, there are always differences between reality and the descriptions of reality."

"Nevertheless," Valerie said, holding on amid bumps, "we should have turned left back there."

"What your map does not show," the skinny black man told her, "is

that the floods in December washed away a part of the road. I see the floods didn't affect your map."⁴⁹

But the floods didn't wash everything away, they were not those that only Noah survived. Poised, suspended, between faith and doubt, we must make our way through the world of maps.

CHAPTER TWO

Maps Are Embedded in a History They Help Construct

Can the truth really be so hard to find? It all depends on where you're standing. Every view is taken . . . from *somewhere*, every view is but *one perspective on the common scene*. The variety this implies is bewildering (or beguiling—this too is a matter of perspective), but it is also less than at first it seems. The view from this bench in Raleigh, North Carolina is privileged, but not especially. If I move to its other end, I lose a little of the shade and everything has shifted . . . but not much. I will still be able to watch the squirrel chasing its tail and the bicycle will not cease leaning against the tree. The sky will be as blue . . . *even from another bench*. The view here is from America at the end of the 20th century. It is not that from England in the 16th century or China at the height of the Dong or Egypt during the 18th Dynasty. It is not that from the back of Red Cloud's horse before the Fetterman Fight or that of the Tellem on the Bandiagara escarpment before the coming of the Dogon or that of the man whose handprint can still be seen on the wall of this cave in the Pyrenees. It is not a view from a satellite or the moon, Mars or Alpha Centauri. It is not that of God.

It is mine . . . *wherever it is from* . . . but this too implies more freedom than I well can claim. It is not to be a determinist to acknowledge the claims of parents and birthplace, the demands of routine, to admit—even—to a certain rut that it is less than easy to get out of. It is to admit the course of growth, the sway of development, the power of history.

Growth, Development, History

Randall and Chandler, my two fine boys, and I have lived together since before they were born. For 17 years I have supported their growth and

participated in their development, helping them turn from mewling, all-but-helpless infants incapable of controlling their sphincters into the assertive and all but autonomous hulks who last summer roamed on their own around Manhattan. I think, though, that they have always felt like this, capable, that is, of purposeful action. They have always felt more or less powerful, more or less autonomous . . . or at least no less so than they do now. There was never a time when they felt like the babies or toddlers or little kids they appeared to be from my perspective. "Baby" and "toddler" and "little kid," after all, are adult words for children who, however small and muscularly undeveloped, never (or hardly ever) say of themselves, "See how weak we are," but always (or usually), "Look at us! See how strong we are!"—as though they were Joe Weider master blasters pumped for a Mr. Olympia contest instead of the 60-pound weaklings they inevitably are. Tom Watterson plays in the gulf between these perceptions. In one of his *Calvin and Hobbes* strips Susie asks Calvin if she can play with him and his tiger. "Hobbes and I are not playing," Calvin archly informs her. "We're doing important things, and we don't need you to mess them up."¹

All this is exactly how I felt about things when I was growing up—that is, I was competent, I was strong, what I was doing mattered, was important. I don't think I was that different from other kids I knew, but I was sufficiently secure in my feelings to send off my idea for a rocket to Charlie Wilson, then Eisenhower's Secretary of Defense. And the response I received from the Deputy Director for Special Activities did nothing to diminish my sense of being, at age nine . . . *on the cutting edge*. But I know I am different today. Looking back I see that I can do things now that I could not do then, however grownup I may then have believed myself to be.² I have more practice at thinking. I can reverse operations and start them in the middle to work my way out in either direction. I have a bigger vocabulary, and I can make more subtle discriminations. I can get into movies that once I couldn't. Because I have a job, I can even pay my way. When I walk into a pornographic bookstore, no one tries to stop me. There are a lot of things I can't do too. I can't sit on my mother's lap the way I used to, or fit into the clothes I wore when I was nine. I can't play with toys the way once I did, insinuating myself unself-consciously into the very cab of the little truck that once filled my hand. And I can't ever feel the way I did in the days before the time I hit my wife when I was drunk.

If I try to disentangle the threads twisted together in this braid of my experience, I can easily grab hold of three. The most obvious is simple physical growth: I weigh 150 pounds more than I did when I was born and stand 4 feet taller than I did then. But I'm not just bigger: I'm better integrated. I can do things that require the subordination of one part of my body to another, that force me to differentiate short-term lusts from

long-term needs. Not only can I ride a bike and dance and do aikido, but I can type and speak and write, as now, in complicated sentences. So the second thread is that of development, that is, my increased differentiation, articulation and hierarchic integration. This development did not (and does not continue to) occur *in vacuo* but in the United States in the 'Fifties and 'Sixties (and 'Eighties and 'Nineties) when certain things were (and now other things are) possible and certain things weren't (and still aren't). No matter how often I dressed up in what I wanted to believe was the costume of a medieval knight, I could never ride off to King Arthur's court. That was an historical possibility . . . *foreclosed*, precisely as Russia's Sputnik *opened* the way to the scholarship monies that permitted me to attend graduate school. And obviously the third thread is history, the way my growth and development was (and continues to be) shaped by the ceaselessly changing social and physical environments that I at the same time *collaborate* on bringing into being.

These changes in me and my kids constitute the central reality of my experience, and I see these three faces of the unfolding we call life at every scale.³ Systems, processes, things of every kind seem to get bigger or smaller, to grow more or less hierarchically integrated, to interact with other things engaged in similar processes to make our history.⁴ It is these that we see taking place at the scale of atoms and molecules in the stories we currently tell about the early history of the universe.⁵ It is these that we see unfolding at the scale of biological organisms in the story we call evolution.⁶ It is these that we see occurring in colleges and corporations, in families and cities, in national governments.⁷ In each domain I cannot help seeing the same three threads of growth and decay, of development and pathogenesis, of history.

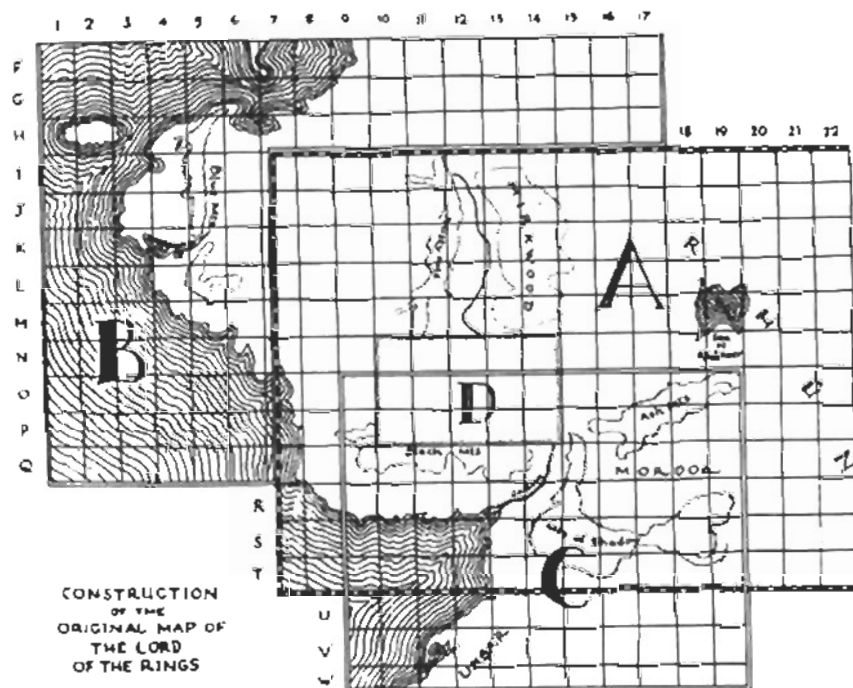
Maps Themselves Don't Grow (or Develop)

Though it would be silly to ignore the way maps come into being and subsequently disappear, I do not wish to claim that the map artifacts themselves grow or develop, although Christopher Tolkien has documented just such a process in his father's construction of a map of Middle Earth:

It consists of a number of pages glued together and on to backing sheets, with a substantial new section of the map glued over an earlier part, and small new sections on top of that. The glue that my father used to stick down the large new portion was strong, and the sheets cannot be separated; moreover through constant folding the paper has cracked and broken apart along the folds, which are distinct from the actual joins of

the map sections. It was thus difficult to work out how the whole was built up.⁸

Here we see not just growth and decay, but also development, for what J. R. R. Tolkien did was to continuously differentiate, articulate and hierarchically subordinate the parts of the Middle Earth he was creating . . . *interactively* . . . with this map; so that history too appears here, in the way the map takes as given certain aspects of Middle Earth previously worked out, even as it—precisely—generates others. Old Sanborn maps grew like this too, layer upon pasted layer, as the cities they mapped changed, as they grew and developed, the maps interacting with the insurance and firefighting systems of the cities they represented to help bring forth the history they would in time come to embody.⁹ The stick charts of the Marshall and Caroline Islanders also grow this way, literally get larger, coconut-palm rib by cowrie shell, and stick by stone.¹⁰ The ephemeral maps of the Inuit, scratched in the dirt, traced in sand and



This is a diagram of J.R.R. Tolkien's construction of the original map of *The Lord of the Rings*: first he drew one part, then he superimposed another, then extended a third, and so on. (From J. R. R. and Christopher Tolkien, *The History of Middle Earth, Volume VII*. Copyright 1989 by Frank Richard Williamson and Christopher Reuel Tolkien. Reprinted by permission of the Houghton Mifflin Company, Inc., and HarperCollins Publishers.)

snow or allowed to evaporate in the air, also grow this way,¹¹ to say nothing of the sketch maps we casually make, mark by mark.¹²

And yet there's an important sense in which all of these undoubted maps are quite marginal to what we mean when we talk about maps in an unself-conscious way. The reference then is to printed maps, typically produced in enormous numbers on high-speed offset presses. Except at the edge where the ink is being laid onto the paper at a hundred miles an hour, these maps don't grow either, at least not in the way we ordinarily use that word. They are slapped out—shh! shh! shh!—onto the paper elevator at the end of the press, and except as they fall apart from constant use or are chewed up by the dog or rot (or fail to rot) in a landfill, they don't decay either. Nor do they much develop. We might scrawl a note or a route or a destination on a map, and so increase its level of differentiation, but this is not often the case and usually the map artifact itself neither grows nor develops.

But Mapping and Mapmaking Do

What does grow and develop, however, are the systems or processes or things we refer to when we say "mapping" or "mapmaking." These words do not mean the same thing. "Mapping," as Robert Rundstrom has pointed out "is fundamental to the process of lending order to the world."¹³ What he is speaking of here is the way we humans make and deploy mental maps. Maybe 30 years ago the unqualified assertion that humans created and used mental maps could have been greeted with caution (if not downright skepticism), but not in an age when it is possible to assert without being in any way provocative that bees make and use mental maps.¹⁴ Remarks being made today by biologists eerily echo those made 20 years ago by psychologists. Where in 1969 the psychologist David Stea, pondering the geometry of mental maps in humans, assumed that "all persons form conceptions of those significant environments too large to be perceived, i.e., apprehended, at once,"¹⁵ in 1989 the biologist Talbot Waterman, pondering the geometry of mental maps in animals, observed that "whatever its modality the basic geometry of animal maps is a matter of great interest but little certainty."¹⁶ What is remarkable here is the absolutely taken-for-granted quality of the animal maps in question. Given the wide-spread assumption today that animals make maps,¹⁷ it is hard to imagine that adult humans don't; and evidently, humans and their immediate predecessors have used mental maps for millions of years, an ability selected for by their self-evident utility to an increasingly mobile genus.¹⁸ That is, the growth, development and history of the mental map are questions of *evolution*, the gradual appearance of the trait taking place over the many generations it

took anatomically modern *Homo sapiens* to evolve.¹⁹ At the same time it is an ability that flowers in us now—today—as we grow, develop and interact with the world in our modulation from fertilized egg to adult. Whether ontogeny recapitulates phylogeny may be moot,²⁰ but the universal ability to make and deploy mental maps in all human populations is not.²¹

There is, therefore, no doubt of the mapping abilities of those we still term "primitive." It is time to acknowledge that people like Catherine Delano Smith and Malcom Lewis are simply wrong when they speak of human groups with cognitive abilities less than ours. Relationships among *spatial cognition*, the *ability to make* maps, and their actual *production* are not straightforward, and the failure of the latter cannot be taken to indicate an absence of the former. Anyone who has tried to collect so-called "mental sketch maps" from college students knows how often maps exhibiting no more than "topological relations" are collected from individuals who have manifestly mastered "formal operations." Everywhere we find examples of those whose behavior in this or that circumscribed domain is the same as that exhibited in much earlier developmental stages than the one achieved and exhibited globally. It is simply not possible to assess general levels of intellectual development from the "sophistication" of this or that isolated gesture. This is not only because we develop abilities over different contents and in different domains at different rates, but because *we enter each new content area and domain in some sense as if each time we were starting again from scratch*. We then proceed, microgenetically, as fully operational adults, to pass through sensorimotor, preoperational, concrete and formal operational stages—to refer only to Piaget's typology.²²

How disturbing, then, to read in Lewis' "The Origins of Cartography" of "cultures in which cognitive development, even in adults, terminated at the preoperational stage."²³ This would mean, for every content domain, that these adults could repeat but not reverse operations (for example, they wouldn't be able to reverse a route to return home), would fail to justify assumptions (even in heated debate), would find it difficult to decenter from a given aspect of a situation (that is, to take another's point of view, including those of gods or animals in rituals and celebrations), and would be unable to coordinate perspectives (which is to say they wouldn't be able to create an "areal view") among other limitations. Such adults, in other words, would be behaviorally indistinguishable from, say, your 5-year old, and therefore (presumably) incapable of producing anything we might recognize as a map. Bluntly put, no such culture of *Homo sapiens* is ever known to have existed.

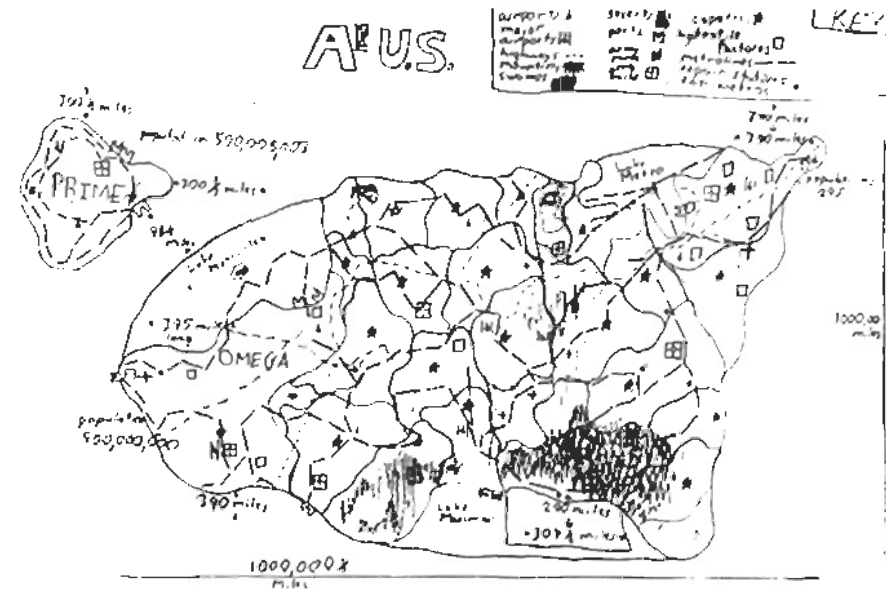
But if the cognitive attainments of individuals are invariant across culture, what is it that is "primitive" about "primitives?" Very little probably. Certainly the use of "primitive" which was widespread to

describe non-Europeans when the history of cartography was struggling into existence was unjustified (as was the similar characterization of medieval mapmakers²⁴). Such judgments concerning the sophisticated worlds of the Dogon and Hopi can only be explained as ignorance fueled by chauvinism (a behavior evidently preoperational in its inability to decenter from the labeling social group). Yet rejection of the pejorative implications of "primitive" cannot be allowed to mask the reality that differences among groups exist. Just because a squirrel can map its environment doesn't mean it can communicate this knowledge to others. Just because bees can both map and communicate such knowledge to other bees (through their notorious waggle dance), doesn't mean they can make maps, that is, produce the artifacts we unhesitatingly accept as such. And just because humans can make maps, doesn't mean that they do, at least as a matter of course, in their everyday taken-for-granted world.²⁵ Although "development" may seem appropriate only for describing systems that change over time, the term, as used by physicists, biologists and psychologists (notoriously Heinz Werner,²⁶ but also Piaget²⁷) characterizes the *degree of organization* of any system. In this way it may be used to compare different co-existing systems, and I will be using "development" in this way to compare the degree of organization of the mapmaking systems of different societies. Yet, it is the sense of *transformation*, from being unable to map the world, to being able to, to being able to communicate it to others, to being able to produce artifactual maps, to living map-immersed in the world that I am most thinking of when I speak of the growth, development and history of mapping and mapmaking.

To Live Map-Immersed in the World

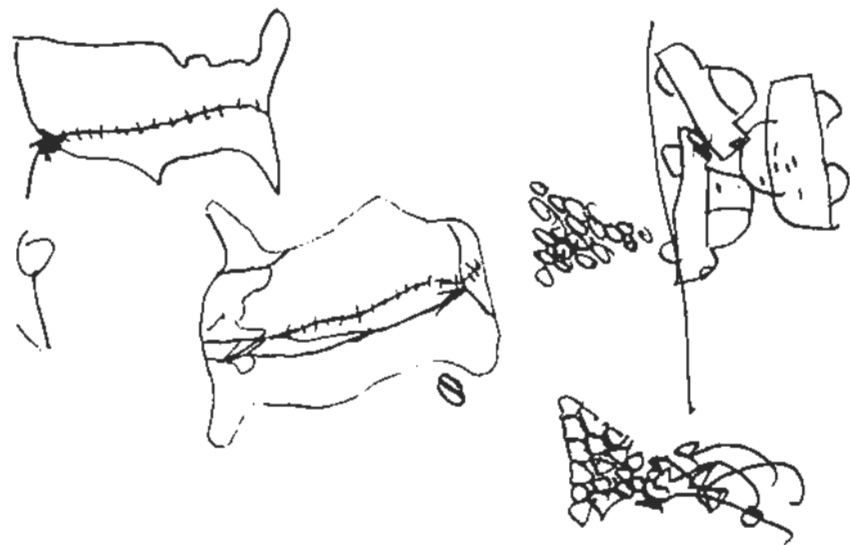
What exactly do I mean when I refer to being map-immersed in the world? I mean being so surrounded by and so readily and frequently consulting and producing maps as not to see them as different from the food that is brought to the table or the roof that is overhead or the culture in general that is apparently reproduced . . . *without effort*. Three years ago I tried to understand what this might mean by collecting every map my family encountered, used or produced in its daily life. Intending to keep this up for 30 days, I gave up after 20 so numerous were the maps involved.

On the second day into the period my then 14-year-old son, Randall, produced two elaborate maps of "Rebel Installation SR 543-k3" for the role-playing universe he was then running for a group of friends; during the period in question he was obsessively involved with these maps. My son Chandler, then 12 years old, made two maps during the



The map Chandler drew for a role-playing game.

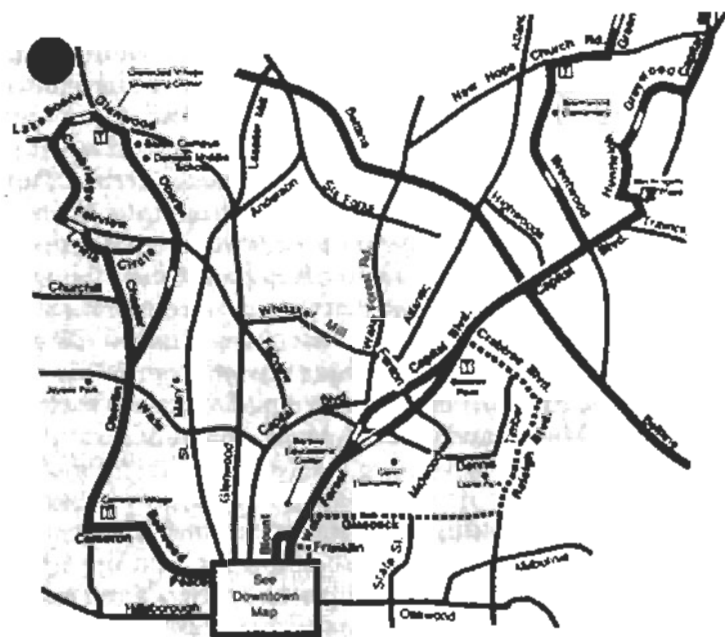
period for a school project on France. One was of departments, capitals and major rivers; the other was for a tourist brochure of attractions along the Seine ("France: The Country of Romance"). He also spent a lot of time during this period drawing elaborate plans for water parks (he drew as many as four or five a day); produced a map for a role-playing scenario; and quite spontaneously created a map of the world, apparently stimulated by a visit from Tom Saarinen who projected on our dining room wall slides showing maps from his National Geographic Society study of world views.²⁸ During this period nine maps were drawn for Pictionary games in attempts to evoke "Brazil," "Taiwan," "Los Angeles," "Illinois," "East Coast," "trip," "map," "area code" and "foreigner." Maps were used in the game Risk and showed up on packaging, in advertising and as editorial content in newspapers and magazines. Maps played central roles in numerous social situations. On the first day I gave my wife Ingrid maps of bus routes I had collected for her in Spokane and Portland to use in her capacity as a member of the Raleigh Transit Authority. On day two, the two of us consulted a pair of Amtrak maps to plan our summer train trip. On the third day I found my older son with Volume IV of the Mid-Century Edition of *The Times Atlas of the World*. "What's up?" I asked him. "Do you think you could Xerox this? I need it for my report on the Canary Islands." Two days later, Ingrid took



These are maps sketched during a game of Pictionary.

our Goode's off the shelf to show Chandler the route of the trip we'd planned for the summer. A day after that Randall and his friend, Garland, used a city road map to clarify the bike route we'd taken to see *Beverly Hills Cop II*. This led to a discussion of distances in which Garland used the map's index to find Walden Pond Road, and then he calculated the distance he'd biked to get there. Five days later Randall took a city road map with him on his Sunday bike ride to Wake Forest. Five days later still, on a bus trip with my father to pick up some replacement speakers, we conferred about our route while consulting the map on a bus stop kiosk. On the way home, when he observed that we were following a different route, we looked at the map on the bus schedule. Talking on the phone 2 days later, we each consulted our own copy of a city map as we tried to find various locations pertinent to our discussion. Two days later, a friend came by to deliver a pair of maps we needed to have mounted on foam core for a presentation to the Raleigh City Council. On our way to the stationers, we delivered to another friend a yard sign promoting our cause. The yard sign had a road map on it. That night at dinner, Chandler asked about Greenland on the Surrealist map of the world on a T-shirt I was wearing promoting R.E.M.'s *Little America* album. On his shirt, over the left breast, was a logo constructed around the outline of North Carolina.

How different all this is from the experiences I have had in Zinacantan, a community of Tzotzil-speaking native Americans in southern Mexico's Chiapas highlands. In the many days I passed there in the



The map my father and I consulted on our bus trip: in a map-immersed society there is no end to these entirely ordinary maps.

home of my friends, I recall seeing but a single map, in the textbook of one of the older boys who was studying Spanish in school. It was something I took pains to see, being curious about what he was learning in class. Maps appeared nowhere else in their home, unless perhaps in the logo of a Mexican government agency crudely stenciled on the burlap of the bags used to store corn. Maps were not drawn in the context of games or in the talk about the community that flowed endlessly around the fire. Kids did not discuss their day with their heads over a map. Fathers and sons did not trace out bus routes. Mothers and daughters did not turn to the atlas to work out a summer vacation trip. There were no books in the home, no magazines or newspapers. The mental atlas was continuously consulted. Geographic names peppered every discussion. Detailed knowledge about the twists and turns of paths was taken for granted. The layout not only of the town they lived in, but also of the large nearby Mexican center of San Cristobal, was frequently referred to as indeed was the geography of the State of Chiapas. At the time when there was much talk about our first landing on the moon, I witnessed my friend's father use a cup of coffee and his fingers to describe to his mother how on its return the capsule would splash into the ocean and be rescued by a ship. I did not get the feeling that

the explanation made much sense to her for whom the moon and the Virgin remained fused in a syncretic amalgam worked out in the centuries following the Conquest. It was no lack of cognitive ability that interceded, but rather a lack of knowledge about the world of NASA and Apollo and the astronauts that we absorbed from *Life* magazine and television and through 12 more or less mandatory years of schooling. Certainly my friend or his peers drew and helped to construct and interpret the maps and airphotos introduced into their lives by the anthropologists of the Harvard Chiapas Project,²⁹ but maps were not a deep part of their living. You see photos of them with government functionaries peering at maps at the founding of an *ejido*, and we know that their ancestors 20 and more generations ago produced the *lienzos* that even today are used in the courts to adjudicate land disputes, but maps do not play the role in their lives that they do in mine. Maps remain special, rare, precious.

Some Societies Are Bigger Than Others

What is the difference between my Zinacanteco friends and me, between their world and mine? If I follow my first thread, it is simply that there are more maps in my world than in theirs. I have no idea how many maps I have in my house, but the number is enormous. Even in homes less involved with maps than mine the number is high, even if they're only the ones in the phone book. Most maps may be crammed into glove compartments or kitchen drawers, but it is precisely that casual taken-for-granted quality that is the point. And most of these maps exist in numbers of copies running into the hundreds of thousands. The world these maps encode is much larger, too. Raleigh, the not terribly large city in which I live and in whose political life I am deeply involved, has more people living within its boundaries than there are Tzotziles altogether, that is, than there are Zinacantecos and Chamulas and Pedranos and all the rest of them, each with their own "center," their own patron saint, their own . . . world. And whereas these "centers" are not integrated into a larger Tzotzil world, and scarcely into a Mexican one, mine is *self-consciously* knit into many larger overlapping ones. As a matter of course I traveled thousands of miles to be able to stand before a group of geographers and for 20 minutes read an earlier version of this chapter in a room I needed a plan to find in a city I needed a map to even begin to understand.¹⁰

The greater size of my world, the greater number of persons integrated into it, has two implications. In the first place, maps are required for us all to keep track of each other and what we're up to. They manage this by connecting us *through them* to all the other aspects of the vast system of codes, laws, contracts, treaties, covenants, deals and so on in

which we have immersed ourselves. But in the second place, maps *allow* us to keep track of each other: *the specialization required demands a population of the size it permits to function*. I imagine there is some threshold above which mapmaking emerges in a society, and below which it doesn't, not because its members are incapable of making maps, but because the society is too small, with too little specialization to either require or support it. What is this population? It would be interesting to try and figure out, but I am hypothesizing that it will be rather large, much larger, for example, than traditional Micronesian or Inuit groups, even taken as a whole. The wonderful abilities of the great Micronesian pilots confirm rather than undermine this thesis. Theirs is the navigational skill of a Mississippi tow boat pilot, and the two groups of pilots are treated with an equivalent extravagance of position and praise. The Micronesian pilots and teachers undoubtedly make their well-known charts (though increasingly these are made by others for sale as curios), but there is little other evidence in their society of mapmaking and using (until recently, that is, until its integration into ours, into the world society of post-Fordian capitalism). In the society of the tow boat pilot, on the other hand, other kinds of charts are used by other kinds of pilots to sail the oceans, fly the skies and ply the roadways; nor is anyone surprised by an individual who makes his living sailing, flies for fun and uses a road map to get around his homeport. Besides these direct navigational aids, such pilots might be expected to consult weather maps, bathymetric diagrams, charts of rivers and ports, plans of his ship. They are *immersed* in a world of maps and charts and plans in a way their Inuit, Aboriginal and Micronesian counterparts are not. And this is related to the simple size of the society of which they are parts, for tiny societies cannot differentiate themselves to the degree that larger ones can.

Some Societies Are More Developed

Clearly, however, sheer size would be more a liability than an asset were the population not differentiated, specialized, hierarchically integrated, and indeed were these conditions not met, it could be doubted that a society could grow so large. Certainly there is labor specialization among the Zinacanteco—the women herd, the men hoe, and there are shamens, musicians and others—but the greater part are farmers, terrific generalists. There are no air conditioner repairmen among the Zinacanteco, no lawyers whose practice is limited to problems with pension funds, and certainly there are no surveyors, cartographers, map engravers, copy camera operators, plate makers, pressmen, or sales representatives for commercial producers of maps. It is the development of this system of production with the technology it implies of generation,

manufacture and distribution that in the end most radically differentiates mapmaking cultures from those that aren't.

This specialization penetrates our consciousness and thereby differentiates us not only from each other, but as a society from those societies whose consciousness remains more whole. Less specialized, such societies are . . . *less alienated*, less caught up in the logics of mapmaking, in the logics of print, in the logics of reproduction with their attendant demands for continuity and uniformity, abstraction and quantification. They are less caught up in *all* the logics required to integrate such highly differentiated masses as our society and others like it have become.³¹ The maps made by members of less alienated societies are different from ours. Often the *process* is more important than the *product*. Rundstrom has written:

During field work in 1989, one Inuk elder told me that he had drawn detailed maps of Hiquiliguaq from memory, but he smiled and said that long ago he had thrown them away. It was the act of making them that was important, the recapitulation of environmental features, not the material objects themselves.³²

Others have stressed other differences. Harley has quoted William Cronon to the effect that:

. . . even the objectives of English and Indian naming of landscape features were different. Thus, the English "frequently created arbitrary place names which either recalled localities in their homeland or gave a place the name of its owner" while the "Indians used ecological labels to describe how the land could be used."³³

David Turnbull pulls on an altogether different thread, one related to cultural variations in indexicality. In his *Maps Are Territories*, Turnbull compares three Aboriginal-Australian maps with a sheet from the British Ordnance Survey, *interpreting* the former and *interpellating* the latter. (An interpellation is technically a formal bringing into question—as in a European legislature—of a ministerial policy or action, but this is what the 43 questions Turnbull puts to the Survey sheet amounts to.) This has the effect of "deconstructing" the survey sheet—bringing to the surface its hidden assumptions (hidden because taken for granted, because transparent to our sight)—at the same time that the interpretation of the *dhulan* brings to the surface their hidden assumptions (hidden from us because hermetic, because unshared):

Aboriginal maps can only be properly read or understood by the initiated, since some of the information they contain is secret. This secrecy concerns the ways in which the map is linked to the whole body

of knowledge that constitutes Aboriginal culture. For Aborigines, the acquisition of knowledge is a slow ritualized process of becoming initiated in the power-knowledge network, essentially a process open only to those who have passed through the earlier stages. By contrast, the Western knowledge system has the appearance of being open to all, in that nothing is secret. Hence all the objects on the map are located with respect to an absolute co-ordinate system supposedly outside the limits of our culture.

One could argue that in Western society knowledge gains its power through denying, or rendering transparent, the inherent indexicality of all statements or knowledge claims. In the Western tradition the way to imbue a claim with authority is to attempt to eradicate all signs of its local, contingent, social and individual production. Australian Aborigines on the other hand ensure that their knowledge claims carry authority by so emphasizing their indexicality that only the initiated can go beyond the surface appearance of local contingency.

In the light of these considerations we should perhaps recognize that all maps, and indeed all representations, can be related to experience and instead of rating them in terms of accuracy or scientificity we should consider only their "workability"—how successful they are in achieving the aims for which they were drawn—and what is their range of application.³⁴

Though in *Maps Are Territories* this does segue into a comparison with Western maps from the Ptolemaic and medieval traditions, Turnbull's is not the unbridled relativist posture it might at first appear. What it does emphasize, though, is the way we have imposed on the study of world cartography not only criteria of our own—that is, generated from within, from within our own culture—but among these selected for special emphasis the very ones we most labor to produce in our own work (any history written under this aegis will inevitably construe our cartography as the acme of perfection). Accuracy, to recur to this issue, is not a measure that stands *outside our culture* by which other cultures may be evaluated but, rather, is a concept from *within our own culture* that may be irrelevant in another. In yet a third culture, accuracy may be an issue, but with respect to what? Certainly our topographic surveys do not, as the *dhulan* do, accurately represent the "footprints of the Ancestors." Of course if you don't believe in the Ancestors, then it's all a bunch of primitive nonsense anyway³⁵; but such cultural absolutism is not only repugnant (isn't this precisely what we condemned in Iran's Khomeini?) but impossible to justify.

But when all this is said and done, doesn't it remain true that societies with high degrees of labor specialization are more *advanced* than those that aren't? Doubtless this choice of word is not simply wrong but subtly and probably intentionally misleading. Yet such societies are more developed, if by that we mean that they are more differentiated and

hierarchically integrated. In addition to simple growth in the size of the society and the sheer number of its maps, the *varieties* of maps—and the *relationships* among them and to the society that generates and uses them—have grown increasingly differentiated, have become increasingly well articulated, have found themselves increasingly hierarchically integrated.³⁶ Furthermore the mapmaking and distribution system is increasing in each of these ways even as I type this. That is, not only is our society more developed with respect to mapmaking than that of the Aborigines and the Tzotzil, it is developing at a more rapid clip in that it is differentiating, articulating and reintegrating itself in this domain more rapidly. Stephen Hall's *Mapping the Next Millennium* constitutes a sketch of this wavefront.³⁷

But because of this are we better off in any deep way than the Tzotzil? Are we happier? Are we more satisfied? Do our days pass with greater intelligence? Hard to say, though what is easy to say is that the Tzotzil are in our orbit as we are not in theirs. The mapping impulse was deeply implicated in the Spanish Conquest, and the hold of the landlords over the subsequent centuries was insured and perpetuated in maps. This is to say that it was the differential development of mapmaking no less than other differences between the Spanish and Americans that resulted in the domination of the latter by the former. Thus are we catapulted into history.

Our Histories—Entwined—Are Different

Evidently the making of artifactual maps *originates* in many impulses, even as writing does, but neither seem to *develop* in the absence of a need to keep records.³⁸ The reasons for this were undoubtedly manifold, and while relevant, too hypothetical to reasonably treat here. Denise Schmandt-Besserat's hypothesis for Mesopotamia involves the necessity of accounting in long-distance trade³⁹; Mary Elizabeth Smith's hypothesis for the Mixtec invokes the complexities of land ownership amidst dynastic turmoil.⁴⁰ There are other hypotheses, but almost all of them assume that what was at stake was *control* of social processes in rapidly expanding groups. A variety of modes ranging from the linguistic through the logographic to the purely pictorial—and including mixtures of each—were used to record qualitative and quantitative information in both spatial and temporal dimensions. Signs that originally developed as names in narrative descriptions of lineages or routes were adapted as pictures on maps—and *vice versa*. Over time, in accordance with structuralist principles, the notation systems differentiated: *temporarily* ordered information (such as lineages and routes), which was recorded using logographic and *linguistic means*, developed into what we recognize as writing (toward history and descriptive itineraries); whereas *spatially* ordered information (such as land ownership, the number of sheep in

various fields belonging to different owners, and routes), which was recorded using logographic and *pictorial means*, tended toward what we recognize as maps. Although these two traditions increasingly diverged, for numerous generations they were not readily distinguishable. The use by the Mixtec of strings of footprints to link both *places* on the groundplane and *generations* of rulers is a case in point,⁴¹ but as David Woodward has shown, the two traditions are not firmly separated, even in the European tradition, until the dawn of the modern age.⁴²

In societies in which these graphic systems ceased growing or shrunk, development of mapmaking likely slowed or ceased as well. This is in accordance with Jerome Bruner's insistence "that cognitive growth in all its manifestations occurs as much from the outside in as the inside out," and his observation that "one finds no internal push to growth without a corresponding external pull, for, given the nature of man as a species, growth is as dependent upon a link with external amplifiers of man's powers as it is upon those powers themselves."⁴³ By positing growth as the engine driving development and so producing history, I am insisting that the three threads twined together in my experience are indeed incapable of being meaningfully teased apart in human experience generally. In growing societies, the continuing need for increasing hierarchic integration produces first a simple enlargement of the mapping function, but then it's ceaseless branching. Thus the state, in its premodern and modern forms, evolves together with the map as an instrument of polity, to assess taxes, wage war, facilitate communications and exploit strategic resources. In Brian Harley's words, "Stability and longevity quickly became the primary task of each and every state. Against this background, it will be argued that cartography was primarily a form of political discourse concerned with the acquisition and maintenance of power."⁴⁴

Smaller, simpler, face-to-face societies have no need to map land ownership, tax assessment districts, the topography of rank attacks, subsurface geology likely to contain oil, sewer lines, crime statistics, congressional districts or any of the rest of things we find ourselves compelled to map. This doesn't mean they don't create in their heads dense, multilayered, fact-filled maps of the worlds they live in.⁴⁵ Writing recently of the Mayoruna and Maku, the Arara and Parakana, the Arawete and the Guaja—Brazilian "peoples so remote and little known that few outside their immediate geographic area have heard of them"—Katherine Milton has observed that although life may for a while revolve around the village:

Sooner or later every group I have worked with leaves, generally in small parties, and spends weeks or even months traveling through the forest and living on forest products. Throughout the forest there are paths that

the Indians know and have used for generations. They travel mainly when wild fruits and nuts are most abundant and game animals are fat, but families or small groups may go on expeditions at other times of the year as well.⁴⁶

Such peoples carry everything with them at such times, but:

The most important possession the Indians carry with them, is knowledge. There is nothing coded in the genome of an Indian concerning how to make a living in a tropical rainforest—each individual must become a walking bank of information on the forest landscape, its plants and animals, and their habits and uses. This information must be taught anew to the members of each generation, without the benefit of books, manuals, or educational television. Indians have no stores in which to purchase the things they need for survival. Instead, each individual must learn to collect, manufacture, or produce all the things required for his or her entire lifetime.⁴⁷

In keeping with what I would imagine of a people who did not write, Milton also notes that “tropical-forest Indians talk incessantly, a characteristic I believe reflects the importance of oral transmission of culture.”⁴⁸ Others have made similar observations for groups as far-flung as the Zaire Ituri and the Aborigines of Australia; and indeed the converse—the silence demanded in our culture by the private act of reading—has been increasingly the subject of attention.⁴⁹

Mapmaking cultures differ from non-mapmaking cultures by the need, among others driven by mapmaking, to fill in the blanks within and without maps. In *The Heart of Darkness*, Conrad has Marlowe say:

Now when I was just a little chap I had a passion for maps. I would look for hours at South America, or Africa, or Australia, and lose myself in all the glories of exploration. At that time there were many blank spaces on the earth, and when I saw one that looked particularly inviting on a map (but they all look that) I would put my finger on it and say, “When I grow up I will go there.”⁵⁰

Observations like this have been held up for us as examples of the power of maps to *stir the imagination* (beguiling alibi). J. K. Wright opens a widely cited paper with these words:

Terra Incognita: these words stir the imagination. Through the ages men have been drawn to unknown regions by Siren voices, echoes of which ring in our ears today when on modern maps we see spaces labeled “unexplored,” rivers shown by broken lines, islands marked “existence doubtful.”⁵¹

Though he went on to qualify the songs the Sirens sang, his attention remained with the poetic quality of the song:

The Sirens, of course, sing of different things to different folk. Some they tempt with material rewards: gold, furs, ivory, petroleum, land to settle and exploit. Some they allure with the prospect of scientific discovery. Others they call to adventure or escape. Geographers they invite more especially to map the configuration of their domain and the distribution of the various phenomena that it contains, and set the perplexing riddle of putting together the parts to form a coherent conception of the whole. But upon all alike who hear their call they lay a poetic spell.⁵²

It would not just be churlish to deny this spell, it would be wrong. Human motivation is neither simple nor singular, and the purest of pleasures is often found in company with the basest of motivations; but the spell cannot be permitted to blind us to the overwhelming temptation of the *material* rewards to be reaped from the exploitation that exploration—the quest to fill in the blanks to which mapmaking cultures are driven—inevitably . . . opens up.

It is precisely this opening up (but also the closing such an opening implies) that attracted the attention of Brian Harley. Referring explicitly to Marlowe's remarks (and siting them in the context of Victorian colonialism) he observed:

The passage is often quoted as an example of how maps stir the geographical imagination. But it also demonstrates the map's double function in colonialism of both opening and later closing a territory. I shall argue that Conrad's thirst for the blank spaces on the map—like that of other writers—is also a symptom of a deeply ingrained colonial mentality that was already entrenched in seventeenth-century New England. In this view the world is full of empty spaces ready for taking by Englishmen.⁵³

This historical relationship was not symmetrical. The mapping—but not mapmaking—New England Indians may have made maps (indeed they made many for Europeans⁵⁴), but they made none with blanks on them indicating *terrae incognitae* in the interior of the British Isles. This asymmetry manifested, as it *undergirded*, the fact that the Indians were in the English orbit as the English were not in the Indians'. It is precisely here that the alibi of the *accurate* displaces the alibi of the *Siren's song*, so that even today we are distracted from the asymmetry of *inclusiveness* by squabbles over whether it was Indian or European misinformation that finally shaped . . . this feature . . . on that map. Meanwhile, magical sleight of hand, Europeans—accurate or not—are making off with the shop.⁵⁵

And this is the history of cartography! Transfixed, as professional cartographers so often are, by the minutia of projection and scaling, generalization and symbolization, it must be tempting to view the history

laid out in Mesopotamian clay tablets and descriptions of Ptolemaic imagery, *portolan* charts and Renaissance engravings, thematic lithographs and computer displays of satellite transmissions, as nothing more than a halting but unstoppable progress toward an unachievable Nirvana of perfect accuracy. Certainly in such terms the maps *do* get better. There is no need to deny the staggering achievements of Eratosthenes and Ptolemy, Ortelius and Mercator, Harrison and the Cassinis. But what is masked by the bland assertion about increased "comprehensiveness of the map content" that all but invariably encrusts this historical essence is the way mapping—but not mapmaking—peoples get lost in the process.

Look: what of the world as we have come to know it is embraced on this clay tablet from Nuzi? A few acres in the Middle East? And on this Ptolemy? We have pulled back, but not shifted the center of vision. It is the same gaze, the same perspective. Marco Polo pushes the boundary east. With the Columbian encounter, more of the world is snatched up in the west. Gradually the world as we have come to know it appears, and then—inexorably, century after century (it still goes on)—what we have is the slow plugging of the holes. It is like watching a computer fill in an outline drawing with color: line by line and pretty soon . . . *none of the white is left*. Or, in the case of the world . . . *none of the red*, as Indian places become increasingly hard to find on a Ptolemaic grid littered with . . . New Londons and New Spains:

For seventeenth-century New England, the map is a text for studying the territorial processes by which the Indians were progressively edged off the land. I am not suggesting that maps were the prime movers in the events of territorial appropriation and ethnic alienation. My contention, however, is that as a classic form of power knowledge maps occupy a crucial place—in both a psychological and practical sense—among the colonial discourses which had such tragic consequences for the Native Americans.⁵⁶

And now everyone is on this map, everyone has been caught up in this panoptic gaze.⁵⁷ As time passes more and more of the world gets caught up in a view from a center that shifts only slightly, from Mesopotamia to Greece and Rome—around the Mediterranean—up to France and England (momentous shift of a couple of hundred miles). *The prime meridian?* Of course it runs through Greenwich! But it has to run . . . *somewhere*.

Alibi of the necessary: it doesn't have to be . . . *there*.⁵⁸ It must be insisted on that this largely is not a disinterested cartographic activity, but the result of the same intertwining of polity and mapmaking we have referred to before, an activity required for the stability and longevity of the state. This is to say that, in a very important sense, the map *requires*

and justifies as it records and demonstrates transformations in control over the land, its appropriation in the name of science and civilization, the state and human progress (indeed it is precisely this process of appropriation and the consequent acculturation that is the focus of Milton's research among the Mayoruna and the Maku). Mapmaking societies . . . *reach out*, not of course to make maps more comprehensive (much less more truthful), but in the unfolding of the dynamic that their growth and development have helped to set in motion (and in which the cartographic enterprise is an essential and committed partner). In so doing they subsume whatever they can—the labor and other culture of those they encounter—and in this way their growth is fueled and their development pushed from without (that is, by conquest, appropriation and seduction) as well as from within. Stripped from those . . . *ripped off* . . . is not only their place, their energies, their knowledge about plants and animals, but their language, myths, rituals, customs and artifacts. It is not only explorers, missionaries, soldiers, slavers, trappers, miners, loggers and colonists who have encroached on such peoples, but anthropologists and their predecessors.⁵⁹ Characteristically, I am able to pull from my shelves, Xingu: *The Indians, Their Myths* (as the Xingu are unable to pull from their shelves anything about me) and read from its dustjacket that "as a source of ethnographic data for structural and comparative analysis, [the myths] are invaluable."⁶⁰ There is nothing we of the ever-growing mapmaking societies will not take and make use of. This way these great developing cultures—the "West," the "East," the "Islamic nation"—increasingly differentiate themselves from the less developed societies and cultures they ever more voraciously consume. What distinguishes "the West" most tellingly from the Kamaiura or the Ainu or the Navajo is not this view or that, but that in "the West" . . . *there are so many views*, that whatever it is—the origin of the world, or the relationship between man and nature—is *seen so many more ways* than it is among the Hopi or the Bororo or the Inuit. In the end there are not just so many more maps, but so unfathomably many more *kinds* of maps. It is in this way that mapmaking fuses its growth and development with history, in the transformation of the world from a mosaic of peoples to a mosaicked people.⁶¹

A way in which I, driven by my own growth and development (interactively with the history of those around me), fathered two sons, who even as I write are sitting in the next room gazed to a monitor where, in SimCity, thematic maps flash onto the screen to record and embody the "city" my sons are attempting to create. I am not terribly happy about this. I would rather they were out in the woods, or if not the woods then exploring the city whose pavement runs hard beneath their feet. But in the mapmaking society we live in this is what it's come to.