Calling Older Graphic Notation Systems "Maps" Is Anachronistic

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

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

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

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

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

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

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

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

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

The Rise of Mapmaking in the Early Modern State

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

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

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

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

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

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

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

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

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

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

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

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

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

Maps Figure the State

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

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

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

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

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

modern—and even much later—mapping programs in France, Thailand, and elsewhere.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

"Expectation," Berry goes on,

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

Maps Unleashed

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

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

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

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

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

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

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

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

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

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

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

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

CHAPTER TWO

Unleashing the Power of the Map

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

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

Maps Advance Propositions

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

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

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

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

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

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

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

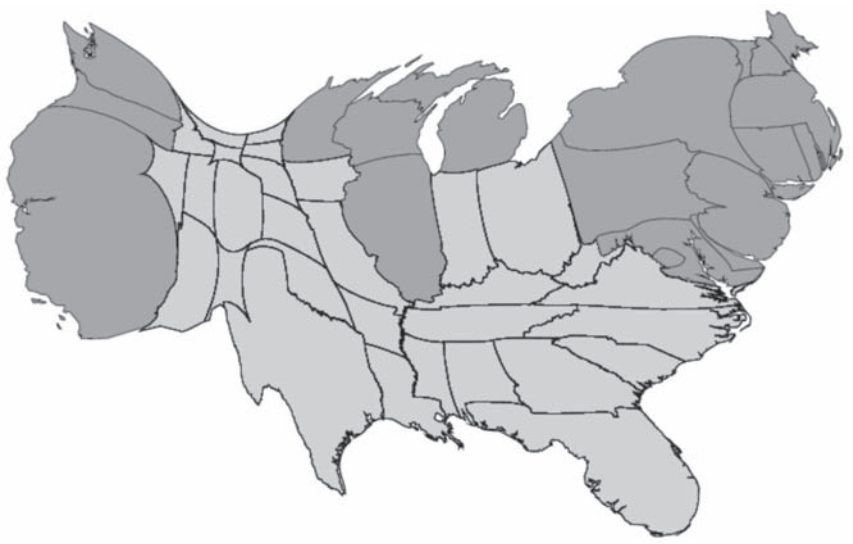

FIGURE 2.2. Red and blue cartogram. Wait! What happened to Bush's overwhelming victory? Here, in this cartogram, where the size of the states have been made proportional to their number of voters rather than their acreage, it looks more like an even split, which we knew from the news that it was. (*Source:*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

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

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

Maps Make Arguments

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

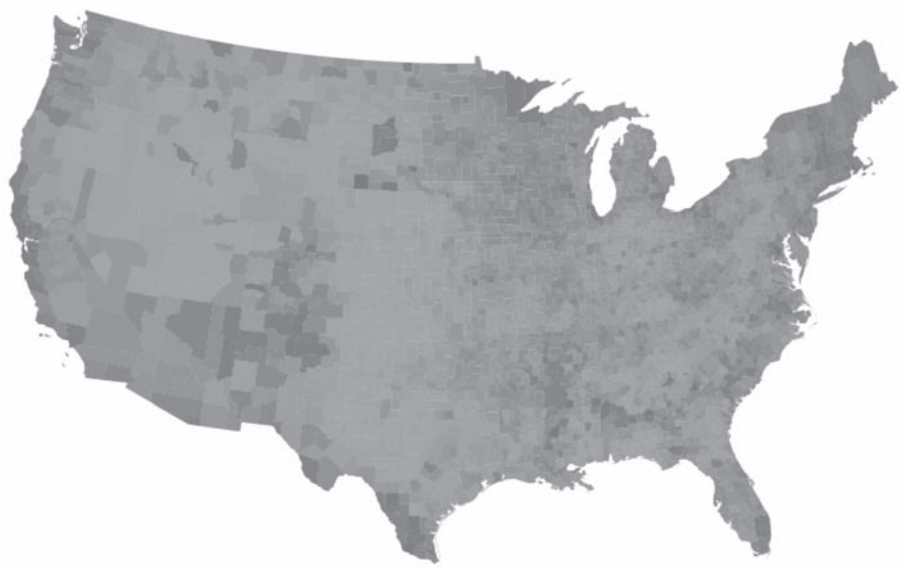

FIGURE 2.3. Purple America. Here, where we've posted county instead of state returns *and* adjusted the color—grays here—to reflect what *proportion* of each county voted for Bush or Kerry rather than reflecting who has the *most* votes, the country seems less polarized. (*Source:* M. T. Gastner, C.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

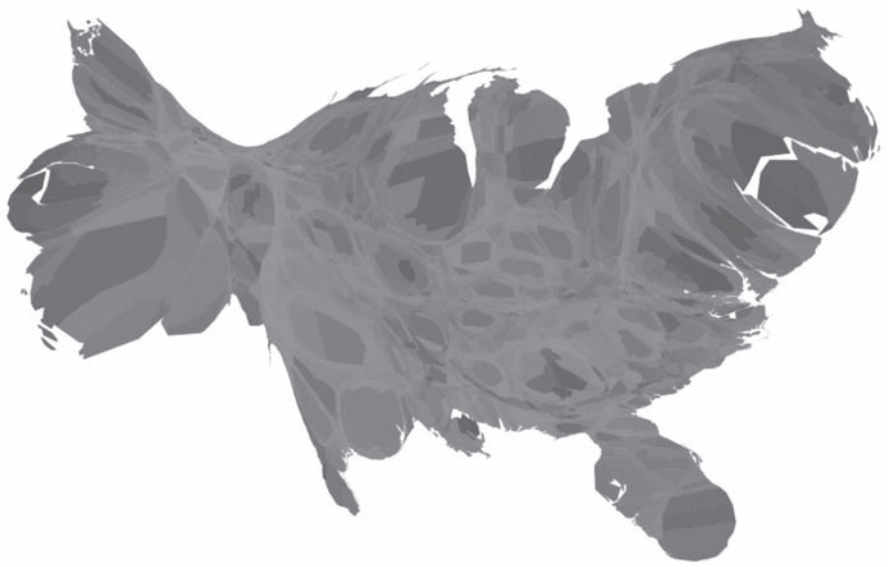

FIGURE 2.4. Purple cartogram. Here where we've posted county instead of state returns; adjusted the color—grays here—to reflect the *proportion* of each county voted for Bush or Kerry rather than reflecting who has the most votes; *and* adjusted their sizes to reflect the number of voters rather than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

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

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

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

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

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

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

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

Maps Propose the Existence of Things

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Let's take another example. This is *Cove Creek Gap Quadrangle,* a USGS topographic quadrangle, or topo quad. It's a map of a small piece of the terrain in the west of our detail from Thelin and Pike. In common with Thelin and Pike, *Cove Creek Gap Quadrangle* proposes to think about the land as, yes, rising and falling but as distinct from Thelin and Pike—and this makes all the difference—*Cove Creek Gap* also proposes to think about the land as known and named, as corralled and tamed, as parkland and forestland and gameland (Figure 2.7). While the topography here is less atomistic than on Thelin and Pike, *Cove Creek Gap*'s 40-foot contour interval still suggests a continuous surface and, while named, the mountains are actually no more delineated than on Thelin and Pike. That is, their names more

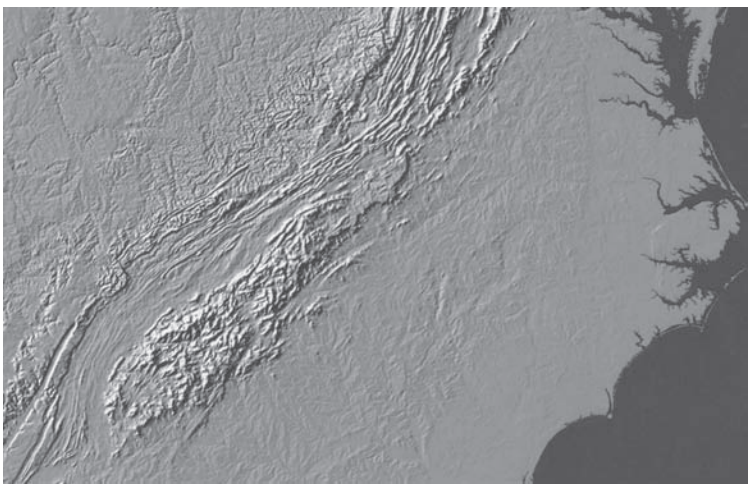

FIGURE 2.6. Detail from Thelin and Pike's *Landforms.* If you "see" something, say the gentle folds of the Appalachians, this is only because *you* brought it to the map, because *you* were able to carve that signifier from this map's continuous surface. (*Source:* USGS)

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

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

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

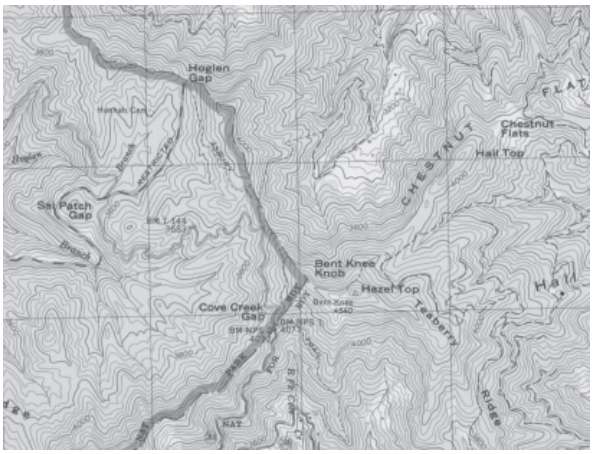

FIGURE 2.8. Detail from *Cove Creek Gap Quadrangle.* Here Bent Knee Knob overlooks Cove Creek Gap, just two of hundreds of instances of folk ontology. (*Source:* USGS)

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

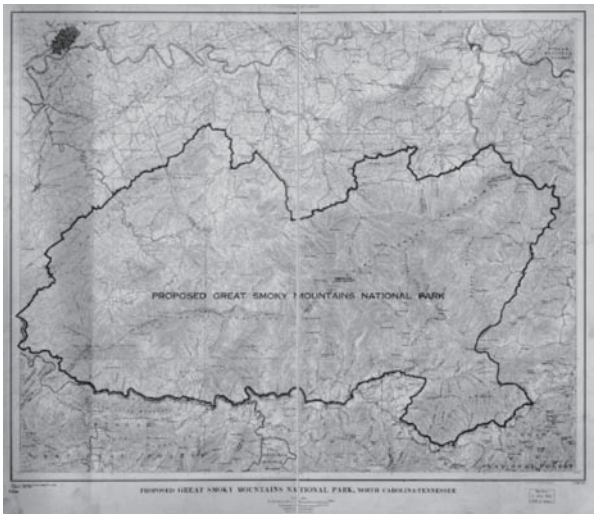

FIGURE 2.9. The 1926 *Proposed Great Smoky Mountain National Park.* The propositional character of this map is evident in its very title: it proposes a national park where none existed at the time. (*Source:* USGS and the Library of Congress, Geography and Map Division)

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

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

To one degree or another, every map does this.

The Map's Propositional Logic

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

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

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

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

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

1. The map is a vehicle for creating and conveying *authority* about and over territory.
2. The map's *authority* is the social manifestation of its *factuality.*
3. The *factuality* of the map is established by the social assent given to the *propositions* it embodies.
4. These *propositions* assume the form of *linkages* among conditions, states, processes, and behaviors conjoined in the territory.
5. These *linkages* are realized through *postings,* fundamental, spatial/meaning propositions expressed in the sign plane of the map. This is to say that the power of the map is, quite literally, a function of the power of the posting which, by embedding a fundamental, ontological proposition inside a locative one, leverages the power of both into a . . . performance of the real.

The Posting

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

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

As verbalized in the preceding paragraph, these are nothing but propositions that, again, are no more than statements that can be affirmed or denied.[32] What transforms a proposition into a posting is its expression *in the sign plane of the map.* This is another of those assertions that stop many readers dead. What could that mean, *its expression in the sign plane of the map?* Especially since, strictly speaking, there are no sign planes. *Strictly speaking,* signs are *correlations* between some sort

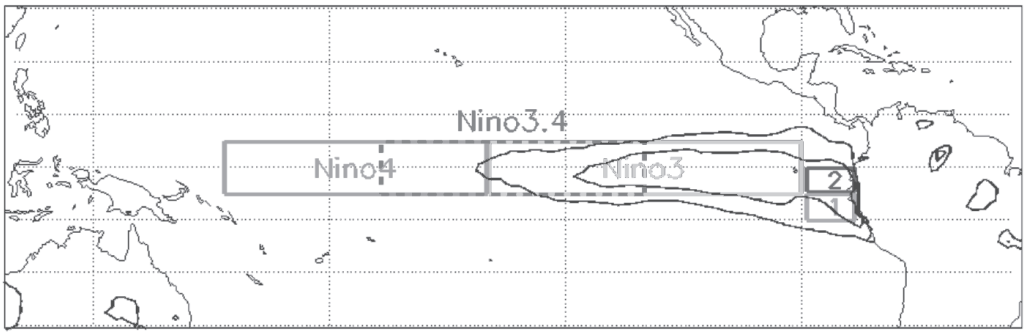

FIGURE 2.10. An El Niño event. This map posts five different index regions used to measure the strength of an El Niño–Southern Oscillation (or ENSO) over a background of the +2° and +3° C surface temperature contours of the 1997–1998 December–January–February surface temperature anomaly. This was the most recent *major* ENSO event. (*Source:* William M. Connolley)

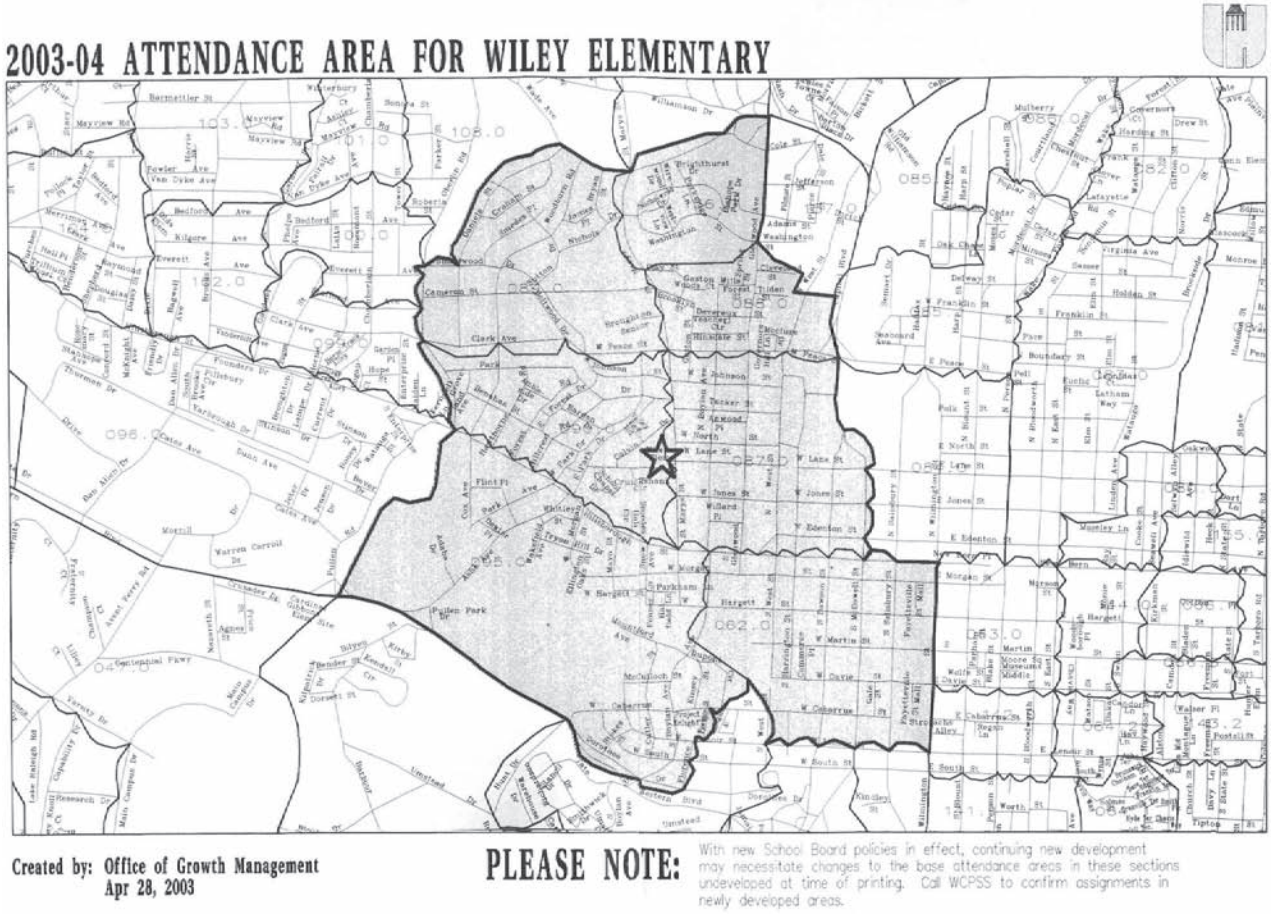

FIGURE 2.11. 2003–2004 attendance area for Wiley Elementary. We've already seen this map in the introduction. The intersection of St. Marys and Hillsborough streets is two blocks below the star in the middle of the attendance area. (*Source:* Wake County Public School System)

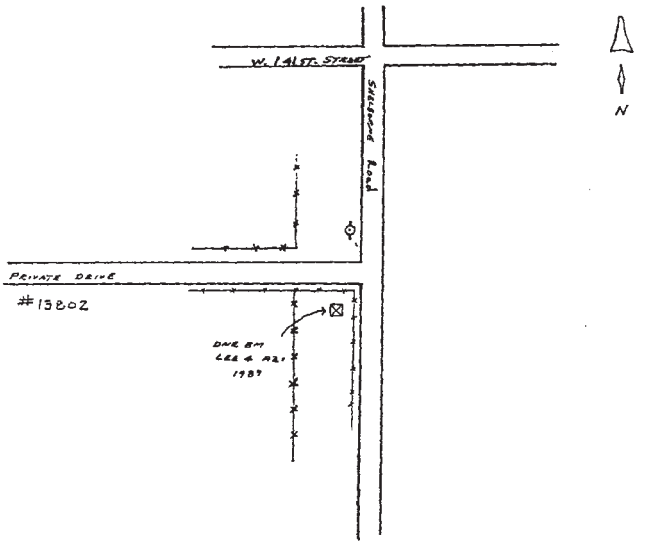

FIGURE 2.12. Location of a survey monument. This map posts the location of a survey monument in Clay Township, Hamilton County, Indiana. Set in the top of a concrete post just below the ground, it doesn't get much more concrete than this brass tablet stamped "LEE 4 AZI 1989." (*Source:* Indiana Department of Natural Resources, Division of Water)

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

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

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

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

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

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

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

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

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

Everything's in Code

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

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

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

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

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

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

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

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

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

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

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

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

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

At Least 10 Cartographic Codes

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

in (at least) these 10 codes. Those that the map exploits are termed *codes of intrasignification.* They operate, so to speak, within the map: at the level of language (they are caught up in the circulation of meaning among the postings). Those by virtue of which the map is exploited we term *codes of extrasignification.* These operate, so to speak, outside the map . . . *at the level of myth* (they are involved in supporting the map's authoritativeness).

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

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

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

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

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

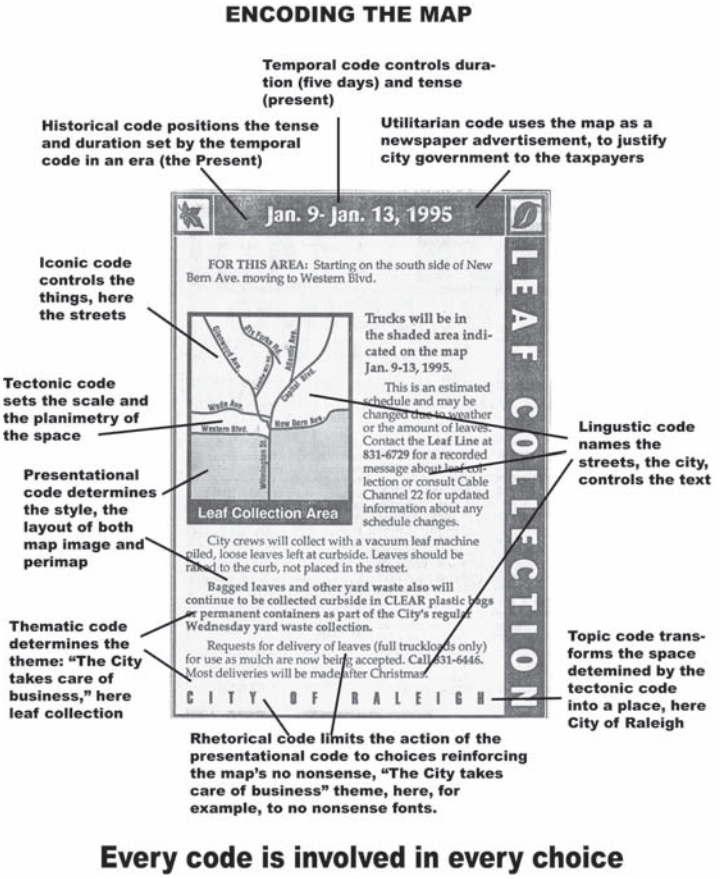

FIGURE 3.7. The 10 map codes at work. It is easy to point to actions of the five intrasignificant codes; but because they determine the range of action of the intrasignificant codes, the action of the extrasignificant codes is felt dispersed throughout the plane of the map. The iconic code may determine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

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

FIGURE 3.8. The rhetorical function of the weather map. A television weatherman points to a map. At the same time, it points back to him, establishing and emphasizing his modernity, sophistication, and thus his reliability. In turn, this flatters our sense of self-esteem for having selected this station over others. This map is all but consumed by its rhetorical functions.

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

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

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