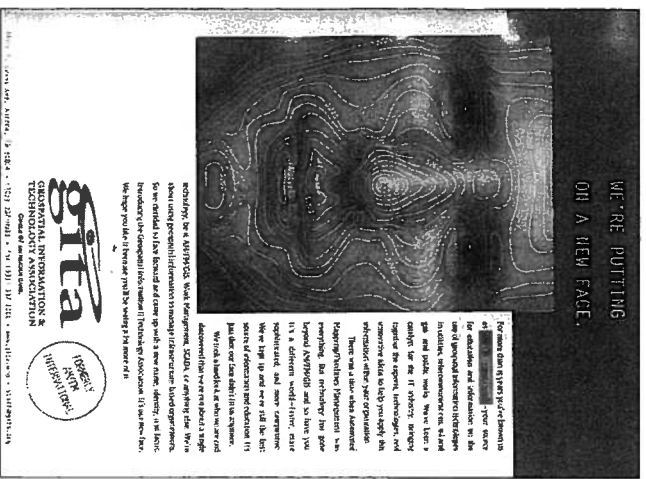# Cartographic Cyborgs

IN JUNE OF 1998, I was making my way across London to the Royal Greenwich Observatory, the home of the prime meridian and self-proclaimed "centre of time and space," when I became lost. I was re-reading my map to the London Underground when I noticed an advertisement on the wall that read: "The problem with ordinary maps is, they don't know where you are." This advertisement, produced by Garmin for its hand-held Global Positioning Systems (GPS), seemed to cater to people—like myself—who had gotten off at the wrong subway stop. Instead of an ordinary map, Garmin's GPS could locate my absolute geographical coordinates, via satellite, with the push of a button. It had sentience, even agency, the ad seemed to say. It knew where I was. Once my position had been fixed and my destination entered into this cell-phone–sized computer system, an arrow would come up on the screen that would point me in the direction to walk and even provide me with a map of my route.

The era of the Rand McNally road map, while by no means over, is gradually becoming superseded by an era of cyborg mapping technologies, or technologies that enable the map to think for us. Manfred Clynes, the aerospace scientist who coined the word "cyborg" in 1960, claimed that the purpose of a cyborg is "to provide an organizational system in which . . . robot-like problems are taken care of automatically and unconsciously, leaving man free to explore, to create, to think, and to feel."[1] Garmin, in its satellite-based mapping computer, takes care of the problem of being lost by easily locating its own position and consequently that of the holder. "We'll take you there," Garmin's StreetPilot promises. Programs like StreetPilot have been incorporated into the luxury-auto industry in the form of computerized dashboard maps—such as Oldsmobile's GuideStar. The driver merely enters a destination and the car signals when it is time to exit the freeway or turn. 911 uses a Geographic Information System (GIS) to decide the fastest route for

ambulance drivers to travel, eliminating the possibility of human navigational error and allowing the driver to concentrate on driving. Tractors can now drive themselves using GIS/GPS technology. MapQuest, a web-based GIS, gives directions, turn by turn, for getting anywhere in Canada or the U.S. Maps are being designed to think for us, so that we have more time "to create, to think, to feel" without worrying about being lost.

Once, while hiking in the Rocky Mountains, I asked someone coming the other direction how far he thought it was to the lake. He answered, without hesitation, "My GPS says it's 5.8 miles." He was carrying a hand-held Garmin system, and all he had to do was glance down at his satellite-generated map to know exactly where he was. This kind of symbiotic relationship between satellites and humans is actively being promoted in advertisements for GIS/GPS. For instance, in an advertisement that reads "We're Putting on a New Face," the face is the map. The caption reads: "Technology has gone beyond AM/FM/GIS [the old mapping system] and so have you," making an equation not only between the customer and the map but also between two maturing sys-
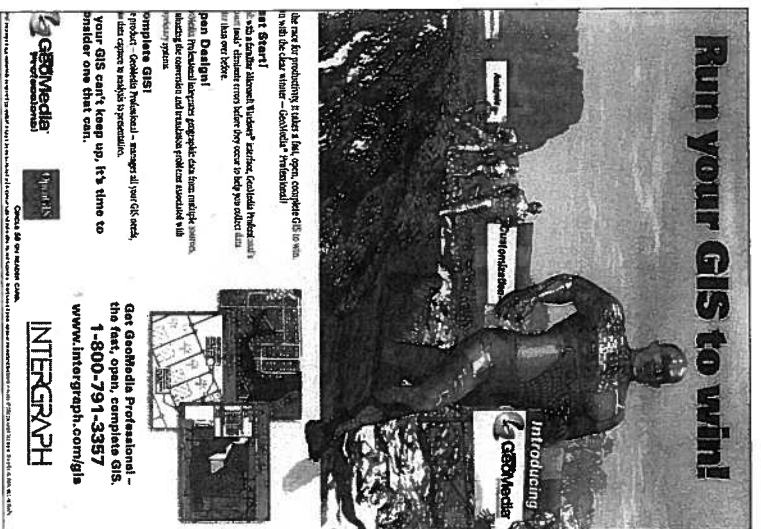

1. The subjects in GIS ads are predominantly white men. "We're putting on a new face," 1998, courtesy of Geospatial Information & Technology Association (GITA).

tems (fig. 1). New GIS/GPS technologies are constantly superceding each other, leading to better resolution, speed, and user-friendliness. In another advertisement, "Run Your GIS to Win," the caption reads, "In the race for productivity, it takes a fast, open, complete GIS to win. Run with the clear winner." The men who are racing in the illustration have been taken over by their GIS programs. Both ads suggest that getting the newest GIS program will improve one's own performance, making you better and faster (fig. 2).

Not only is GIS being linked to improving human performance, but also mapping programs are being sold for their ability to process vast amounts of global information (or data), making it useful to the individual. Advertisements, therefore, commonly depict mapping data as literally being ingested into the body; satellite photos of the globe are often being carried, thrown, or even eaten. In Earth Observation Magazine, a recent advertisement read: "The Larger Your Appetite for GIS Data, The More you Need SQS [a GIS program]." Depicting the globe on a platter, this


2. This ad demonstrates the cyborg status of GIS. It is unusual in that the map-man is multicolored and almost monstrous looking; a certain slave status seems to be implied by equating "your GIS" with "your man." "Run your GIS to win!" 1998, courtesy of Intergraph Corporation.

advertisement suggests that the planet can literally be eaten and in this way controlled. The hand holding the globe on an ornate silver platter is wearing a white glove, invoking a certain nostalgia for the days of the wealthy aristocracy. This ad, which ran in a British magazine, did not appear in the United States, where one is more likely to encounter images like "Mr. SID: The Most Powerful Image Compressor on the Planet" (fig. 3). Rather than a wealthy patrician, a stylish businessman controls the planet in this ad.[2] Another U.S. advertisement depicts the globe as a pizza, reading: "Have Your Slice Delivered" (fig. 4). But what all these corporations are selling (both in the United States and Britain) is a body wed to the map, improved and nourished by the consumption of data.

The question, then, is whose body is being linked to the map and who is given the power to consume and process data. Production of GIS technologies occurs predominantly in first-world countries, just as satellites are generally owned by the most industrialized nations. Joseba Gabilondo wrote, "In the economically privileged First World the production of 'Man' has given way to the reproduction and simulation of
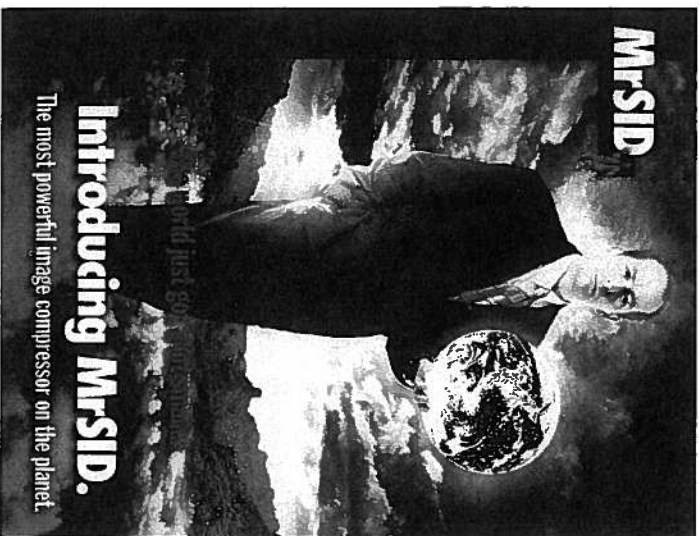
3. Mr. SID promises that "massive images of unlimited size" (including satellite imagery) can be instantaneously made available to zoom into, navigate, and manipulate. "Introducing Mr. SID," 1998, courtesy of LizardTech.
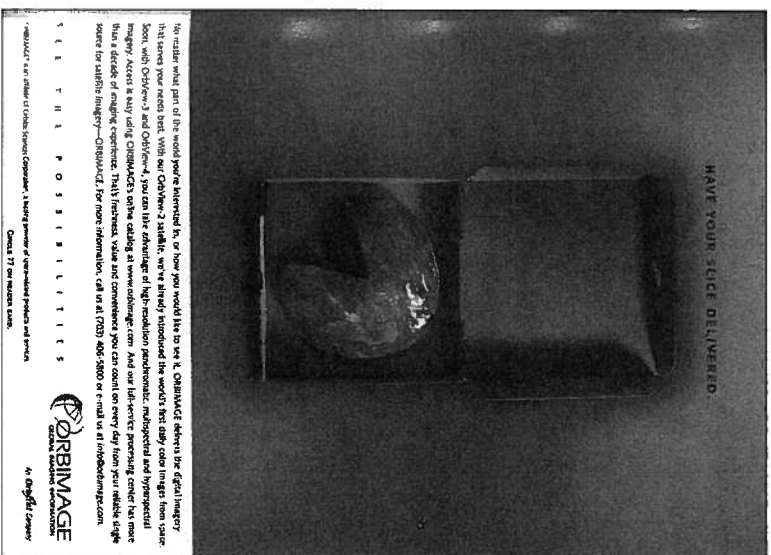
4. Consumption of global data is a common theme in GIS ads. "Have your slice delivered," 1998, courtesy of OrbView Imagery, provided by ORBIMAGE.

'cyborgs.'"[3] But if the first world now produces cyborgs, or people wed to high-tech production and consumption, its demand for data-food has become focused largely on the third world, which is seen as lacking in geographic information. Maps in third-world countries are often out of date, resources are uncharted, and census data are generally weak or unavailable. "The first law of geographical information," one GIS critic suggested, is "the poorer the country, the less and worse the data."[4] Those nations with "less and worse" geographic information, then, automatically become subjects for satellite data acquisition from first-world countries. S.F.H. Borley explains: "Developing countries may lack the data they require, or this data may be out of date and inaccurate.... GIS designers have turned to satellite remote sensing and aerial photography to provide a new data source."[5] The collection of data by an extra-national agency, however, sets up a relation that is potentially oppressive, as one GIS critic explained: "It leads experts to see those people to whom

their data refer as 'other'. . . . Because the availability of information is seen as being of fundamental importance to the making of decisions, those who have the information see themselves as empirically better able to make decisions than those who are merely 'other.'"[6] The hand that wears the glove in the British GIS advertisement, then, could be read as the third world offering up its data for first-world consumption. The third world feeds the data that make the map man whole, represented, in these ads, with the satellite image of the globe swallowed by the first world.

The contemporary lack of third-world data, in many ways, simply represents a continuation of the constant colonial struggle to fill voids in maps; the failure of maps to adequately cover the entire territory has always been a driving force of cartographic pursuits. As in Jorge Luis Borges's famous parable, the goal in cartography appears to be that the "imperial map . . . ends up exactly covering the territory."[7] Historically, those areas that were outside of geographic knowledge—or off the map—were seen as the abodes of monsters and brutes. In sixteenth- and seventeenth-century colonial maps, monsters regularly inhabited the margins, showing the frightening limits of European knowledge. Geographers in the eighteenth century commonly traced the word "cannibals" over blank spaces on maps. In 1733, Jonathan Swift observed, "So geographers in Afric maps, with savage pictures fill their gaps."[8] The Arctic, also, was depicted as full of "brutes with neither language nor reason [who] hiss like geese."[9] Anne McClintock commented on this practice: "With the word cannibal, cartographers attempted to ward off the threat of the unknown by naming it, while at the same time confessing a dread that the unknown might literally rise up and devour the whole." She continued, "The failure of European knowledge appears in the margins and gaps of these maps in the forms of cannibals, mermaids and monsters, threshold figures eloquent of the resurgent relations between gender, race and imperialism."[10] By moving dangerous or potentially resurgent elements to the marginal spaces on the map, fear of threats to the imperial map were circumscribed. Michel Foucault, in The Order of Things and The Archaeology of Knowledge, discusses the fear of these kinds of marginal or "threshold" spaces. Because of this fear, he proposes, Europeans constantly attempt "to master and control the great proliferation of discourse; to relieve its richness of its most dangerous elements; to

organise its disorder so as to skate round its most uncontrollable aspects."[11] Maps, it seems, have been so organized, to skate around danger and delimit the boundaries of knowledge; dangerous elements, in turn, are forced into the blank spaces, oceans, or margins of the maps.

If, territorially, there has been a historical tension between areas that are mapped and unmapped, so, psychologically, it could be said that there is a parallel tension between what is considered human and what monstrous. Jean-Paul Sartre, along with others, has suggested that construction of European "Man," with his notions of "freedom" and agency, is based upon the constitution of "Others." In the preface to The Wretched of the Earth, Sartre sums this theory up clearly: "There is nothing more consistent than a racist humanism since the European has only been able to become a man through creating slaves and monsters."[12] In the West, identity is based in the notion of the free and independent individual who is sovereign or self-governing; yet, as many have argued, this concept of the individual emerged concurrently with the growth of the slave trade. Literally, "free" humans could be seen as the inverse correlative to the slave or the "uncivilized" human being. Sovereignty, in European discourse, is linked to establishing control over that which is considered disordered or proliferating, whether it is indigenous peoples or the natural environment.

Mary Louise Pratt has suggested that sovereignty, in colonial discourse, is constructed through sight; this is what she calls the "monarch of all I survey" trope.[13] What is seen is claimed, or thought to be owned; thus, one is sovereign over that which one sees. This was commonly the attitude of explorers, in the race to map the colonies. For instance, when Henry Stanley entered the Lake Tanganyika district of Africa in 1871, he wrote in his journal: "Think how well a score of pretty cottages would look instead of those thorn clumps and gum trees! Fancy this lovely village teeming with herds of cattle and fields of corn, spreading to the left and right of this stream! How much better would such a state become this valley."[14] Today, through "visualization" programs, this same process can be enacted by computers, which redesign the landscape according to the designer's plans. GIS World recently devoted an issue to visualization programs, the cover of which read: "Visualize Realistic Landscapes: 3-D Modeling Helps GIS Users Envision Natural Resources." Visualization technologies are combining with GIS programs to help users "see" their

product, which in this case is "natural resources." The theory behind visualization technologies is that, for instance, a "virtual" Bermuda could actually be sold to Bermuda as a model for planning. In an interview for *GIS World*, the designer of the Virtual Bermuda project commented that a 3-D representation of Bermuda would help to establish and control definitions of "the Bermuda image."15 In this example, Bermuda was completely relandscaped, and the poor and homeless were eliminated from the "map." So while Stanley could enter Africa and see England, now computer-mapping technologies can visualize virtual Bermudas. Just as Stanley could see pretty cottages rather than thorn clumps, it is as if resources may be finally envisioned—or brought into being—by the power of the gaze alone. Thorn clumps are seen, but pretty cottages establish sovereignty.

Sovereignty, since the eighteenth century, has been defined in international law as "the control of a well-defined territory"; and "territory" tautologically meant the land "under the jurisdiction" of a sovereign.16 Legally, a sovereign state could acquire territory through "an act of effective apprehension, such as occupation or conquest."17 The way to establish sovereignty was to mark a boundary or make a map, a method accepted in international law. The law stated that "states may by convention fix limits to their own sovereignty, even in regions such as the interior of scarcely explored continents where such sovereignty is scarcely manifested, and in this way each may prevent the other from any penetration of its territory."18 Cartography, then, became a race to imprint the "scarcely manifested" record of sovereignty upon a territory.

Preconquest territories, according to this definition, belonged to no one. In Australia, the doctrine of *Terra nullius*, held until 1992, defined preconquest Australia as a "territory belonging to no state, that is, territory not inhabited by a community with a social and political organisation."19 To be sovereign, then, involved taking land from those who were considered less "organized."20 It was based in the idea of invading a void, or an unoccupied space, which—of course—existed nowhere but in the colonial imagination. Sovereignty became a way to rhetorically clear space for invasion, and in this clearance, the concept of whiteness—as transparency—could emerge. Geographer Robert Sack explained this phenomenon: "Territoriality in fact creates the idea of a socially *empty* space."21 The modern conception of space involves a perpetual *separation*

of places and things followed by their recombination "as an assignment of things to places."22 Thus, we have the notion of "virgin" or "empty" land that is waiting to be filled. Sovereignty, in this sense, became linked to erasure, based in the notion of creating a territorial blank slate on which one could construct colonial rule and authority. Clearing space, in effect, became a way to establish whiteness—or to differentiate oneself from indigenous peoples.

If the sovereign state could acquire territory through occupation, so could the sovereign individual. Thus the notion of private property emerged in conjunction with the idea of individual sovereignty. In *Robinson Crusoe*, the character of Crusoe exemplifies the ideal of gaining individual sovereignty through acquiring territory. Crusoe, after years of cultivating the island that he was stranded upon, declared with satisfaction: "I was the lord of the whole manor; or if I pleased, I might call myself king, or emperor over the whole country which I had possession of. . . . I had no competitor, none to dispute sovereignty or command with me."23 As a kind of mini-kingdom, Crusoe's island is seen as his even after he leaves it, simply because he had claimed it and cultivated it before any other European. Jean Jacques Rousseau, in *The Social Contract*, also spoke of the rights of "first occupancy" over a territory: "In order that the right of 'first occupancy' may be legalized, the following conditions must be present. (1) There must be no one already living on the land in question. (2) A man must occupy only so much of it as is necessary for his subsistence. (3) He must take possession of it, not by empty ceremony, but by virtue of his intention to work and to cultivate it."24 This philosophy of private property could be read as an extension of the colonial methods of acquiring territory, in which the individual establishes his or her dominance over nature/natives. In *Robinson Crusoe*, Friday cannot claim possession of the island, even though he works on it; the "cannibals" who regularly use the island for their ceremonies also have no rights to it.

Private property, it was believed, extended from one's inalienable right over his or her body. Then, what one did with the body (i.e., labor) also became private property. John Locke, in his *Second Treatise of Government*, made this progression explicit, stating: "Every man has a property in his own person; this nobody has any right to but himself. The labor of his body and the work of his hands, we may say, are properly his. Whatsoever,

then, he removes out of the state that nature has provided and left it in, he has mixed his labor with it, and joined to it something that is his own, and thereby makes it his property."25 Removing something from the state of nature meant establishing sovereignty; and so "nature" itself, as well as the indigenous peoples that resided within it, was seen as an obstacle that must be overcome. The land became "civilized," literally, when it became an extension of the European's body. The fear was that those who had been cast out of the body/land, like some demonic ghosts, would return.

Because there was always an awareness of those who were pushed aside in order to construct whiteness and clear territory, a fear of the "primitive" concurrently would emerge. The term "primitive," not surprisingly, became popularized during the eighteenth century; previously, the word "savages" had been commonly used.26 The main difference between these two terms was that "primitive" linked aboriginal peoples to the idea of an originary moment; "savages," in contrast, did not have temporal associations. Hadyen White explains that, by the nineteenth century, "primitive man" came to be regarded "as an example of arrested humanity, as that part of the species which had failed to raise itself above dependency upon nature."27 "Primitive" signified the inverse of "progress" and "development," and the term would gradually begin to appear everywhere, from Marx's primitive food gatherers to Freud's primal horde and Nietzsche's barbarians.28

Because of their presumed disorganization and arrested development, "primitive" cultures were viewed by the colonizers as infected with fear, superstition, enchantment, or fancy. "Enlightenment," according to Max Horkheimer and Theodor Adorno, "has always aimed at liberating men from fear and establishing their sovereignty." In *Dialectic of Enlightenment*, they describe this phenomenon: "The program of the Enlightenment was the disenchantment of the world; the dissolution of myths and the substitution of knowledge for fancy."29 The emergence of the concept of sovereignty became invested in pushing out fear from the territory, thus overcoming its primitive disorganization. The etymology of the term "territory" also suggests this relation between fear and sovereignty. According to the *Oxford English Dictionary*, the term "territory" is derived—in the fifteenth century—from the French *terrere*, or to frighten (terrorize), and *territor*, or frightener (terrorist). The etymologi-

cal origins of "territory" were later displaced—in the eighteenth century—by the Latin *territorium*, which combines *terra* ("land") and *torium* ("belonging to" or "surrounding"). "Territory," it seemed, was something haunted from within by the "primitive," which had to be perpetually overcome by the sovereign subject.30 The "primitive" was what the sovereign subject hoped to displace, in his or her role as controller or organizer of space. Horkheimer and Adorno explained that any reversion in this progressive dialectic was thought to involve "a reversion of the self to that mere state of nature from which it had estranged itself with so huge an effort, and which therefore struck terror into itself."31 The terror associated with primitive life and organization became associated with a fear of reversion, as well as invasion.

Sigmund Freud later capitalized upon this idea of reversion—or the primitive within—in the field of psychology. Freud claimed that individual development paralleled anthropological stages of development, suggesting that "primitive beliefs are most intimately connected with infantile complexes, and are, in fact, based upon them."32 The "civilized" individual, he suggested, had the ability to overcome his or her primitive complexes in ways that aboriginal cultures had never succeeded in doing. Freud's "uncanny" was that forgotten history that threatened to pull the civilized back into a primitive state: "The 'uncanny' is that class of the terrifying which leads back to something long known to us, once very familiar."33 The uncanny was described as that which was once familiar but had been forgotten; it was strangely "home-like" but nonetheless frightening. The problematic pull between the familiar (home) and the primitive created the feeling of the uncanny, according to Freud, which led back to "the old, animistic conception of the universe" in which "the world was peopled with spirits of human beings."34 Freud continued, "Nowadays . . . we have *surmounted* such ways of thought; but we do not feel quite sure of our new set of beliefs, and the old ones still exist within us ready to seize upon any confirmation. As soon as something actually happens in our lives which seems to support the old, discarded beliefs we get a feeling of the uncanny."35 The uncanny captures that fear of the "primitive" as an object that cannot be superseded. It is frightening precisely because the "primitive" is *us*. It is that part of ourselves that we thought had been surmounted, but that was actually contained within our origins, as *home*, waiting to be remembered.

The idea of the map was invested in overcoming the darkness of primitive territorial organization and establishing sovereignty, as whiteness, as home; but it left residues of the uncanny within its borders. The colonial map, in this sense, could be said to be as much about the boundaries of modern human identity as it is about territorial designations. It is about overcoming the possibility of primitive knowledge, both about the land and within the self. Ironically, of course, explorers could only create maps by relying upon indigenous geographic information and native guides to the territory. In 1874, the president of the Royal Geographical Society described the mapping of northern India as a threefold process: "First . . . were the reports of native travellers which shed a wide but uncertain light on the vast unknown. Behind them, piercing this gloom, came narrow shoots of clear light representing the travels of individual European explorers. Finally, and well behind, came the zone of harsh white reality shed by the surveyors and map-makers."[36] In colonial discourse, the natives are often described as having insufficient or "uncertain" knowledge, thus justifying the entrance of the colonizer who, by contrast, appears to have certain, unambiguous, and scientific knowledge. In 1818, one explorer commented on the lack of indigenous knowledge about their own territories: "Do the savages of New Holland, we would ask,—do the Hottentots of the Cape—do the more civilized tribes of African negroes, or of the Eskimaux of Greenland—do any one of these know the extent of their respective countries?"[37] The answer to this rhetorical question would provide the justification for further cartographic pursuits. The insufficiency of native knowledge—its very primitivism—became the defense for invasive mapping projects.

Even as the cartographer attempted to overcode native knowledge, he was generally reliant upon indigenous peoples for their knowledge of the territory. Therefore, the cartographer's job was always an ambivalent one. The cartographer had to rely upon the so-called "native informant," who generally provided the information for the map, but who could also utilize any number of strategies to confuse or resist the cartographic projects. For instance, in nineteenth-century India, locals were known to pull up the stakes that marked the surveyor's base line for triangulation surveys. In one explorer's report of this situation, he explained: "In India such marks are viewed with cupidity not unmixed with fear. The natives have an idea that money is buried under these mysterious monuments

erected by the western strangers, while they feel a dread that they may cast a spell over the district."[38] By turning the native's understandable fear of territorial encroachment into a superstitious dread, the colonizer thus attempted to belittle or stereotype this threat, thus containing it. But, overall, the cartographer's distrustful relationship with the native informant would lead to the desire to eliminate this source of knowledge.

Cartography, then, began moving away from the "threat" of the native, often literally by leaving the ground. The development of the aerial camera in 1915 signaled this possibility, which cartographers openly celebrated: "Mappers were no longer required to 'slog' into the messy reality of the field in order to produce the 'map.' . . . The need for field survey and the actual contact of the cartographer with the object of his survey and her work was, as a consequence, greatly reduced."[39] Avoiding the "messiness" of reality, the cartographer could also avoid the unreliability of the native, who was seen as a more literal threat to mapping projects. Similarly, the camera was seen as aiding in evading the "spell" of the native—or his possible ambush. One advocate of aerial photography explained: "The surveyor is no longer travelling blindly, exploring as he goes, nor is he dependent on Indian guides to lead him on his route."[40] The ambivalent relation with the "Indian guide" can be seen in this quote; traveling "blindly" is associated with dependence upon the Indian. By contrast, "seeing" (or regaining sight) can be achieved with the aid of a plane, which eliminates the Indian. In this sense, the elimination of the native is dependent upon the production of the pilot who "sees" through the camera. Similarly, the "less and worse" data of third-world countries may today be overcome through the first-world satellite.

In this book, I read particular shifts in mapping technology—the establishment of the prime meridian, the development of aerial photography, and the emergence of satellite/computer mapping—as representative of cartography's impulse to leave the ground in order to escape the dangerously racialized or gendered subject. This view from above has been the false trajectory of cartography, which seeks to move into space in order to overcome race. Maps, of course, are generally not thought of in terms of race. Maps are still largely read in a utilitarian fashion—to get around. In this sense, they are understood as asexual and deracialized objects of territorial information—which further promotes their claims to objectivity. In order to fulfill its fantasies of objectivity, colonial

discourse eliminates the very indigenous knowledge upon which it relied to produce the map.

My reading of cartography is in direct contrast to those in traditional histories of geography and cartography, which generally proceed as narratives of accretion in which "man" is the subject and the knowledge of the earth is the object. Generally, cartographic knowledge is presumed to gradually grow as frontiers are pushed forward until the map occupies all. Instead, I argue that cartography is equally invested in constructing "man." Cartography, in my reading, is part of a colonial discourse invested in establishing "whiteness," or transparency, as a kind of identity formation. This is not to say, however, that cartography is simply the history of domination over indigenous peoples, in an effort to create colonial authority. The history of colonial cartography certainly contains this violence (including direct military action), but the dominating discourse never quite succeeds. It never quite suppresses alternative forms of territoriality, which continue to haunt the map. Similarly, the progress of the map, itself, could be read as a kind of cognitive failure—or a form of mistaken identity.

The contest over territorial definitions still occurs, though the very struggle may be misunderstood. Like the struggle over the "official" or state-sponsored language, cartography is based in the contest over whose map wins official status. To illustrate this point, a student from Zambia wrote of her admiration for non-English-speaking women in rural areas who were "quick-witted, intelligent, very skilled socially, and . . . very nimble and agile conversationalists." This student saw these women treated "by the official or bureaucratic world" as "illiterate peasant women."[41] This transformation from "agile conversationalist" to "illiterate peasant woman" demonstrates the struggle over representation that also occurs in territorial designations. Some maps are seen as credible, or more sophisticated, and so are given state sponsorship and become the official territorial language; others are misunderstood, misrepresented, and forgotten. But they still continue. It is this gap in cartographic knowledge—as well as the complex ways in which this very gap is avoided, overcoded, or suppressed—that is the subject of this book.

I begin this book in Greenwich, England, because this is where the concept of global space and time came into being. In 1884, the establishment of an internationally accepted prime meridian (or 0° longitude)

at Greenwich marked the transformation of cartography into an international discourse in which a "universal day" was accepted as well as a basis for standardized map-making around the world. Patrick McHaffie explained that the establishment of this global grid was essentially an attempt to delimit territorial meaning: "By basing the subdivision of space on a worldwide grid such as latitude and longitude, these mapping systems tear local meaning from areas."[42] Greenwich represented an attempt to eliminate competing meridians in Lisbon, Rio de Janeiro, Paris, and elsewhere. Chapter 1 demonstrates how anxieties about multiplying meridians—a form of proliferative discourse—led to the establishment of one prime meridian in Greenwich. This elimination of meridians, interestingly, paralleled a fear of "polyglot discourses" invading England through waves of anarchist immigration from Russia and France. Joseph Conrad's The Secret Agent documents this fear of anarchism through the retelling of an actual anarchist attempt to blow up the Greenwich Observatory. Newspaper accounts and police reports from this time period also reveal that the concept of "Greenwich time" was thought to be under attack by the suffragettes, who aligned themselves with anti-imperialist movements. It is in this in-between space—between the suffragettes and Greenwich—that my reading takes place.

Beginning in Greenwich, I go on to examine the triangulation surveys—based on latitude and longitude—that occurred in the Himalayas, looking specifically at the dialogue that occurred between the "pundits" and explorers in mapping Tibet. In the Survey of India maps of the Himalayas, the corners of the maps contain a line that reads: "From the Routes of Pundit A_K_." Behind this simple line is a hybrid history of colonial exploration, in which Indians—in disguise—traveled into Tibet to map territory for the British. The ambivalent relationship between the European officers and these "Pundits" was recorded in explorer journals and popularized in Rudyard Kipling's Kim. Chapter 2 will examine the history surrounding this marginal note, revealing the ambivalent statements about racial identity that it represents. Chapter 3 investigates the rise of aerial photography in the 1920s and women's role in its development. Chapter 4 examines the postcolonial reformulation of the Nazi mapping of Africa in Michael Ondaatje's The English Patient, looking at journals of the actual explorers and bringing back narratives of resistance by the Libyan Senussi. Chapter 5 compares the Canadian development

of GIS to Margaret Atwood's feminist "explorer" narrative, *Surfacing*, as well as the local Cree and Innu resistance to mapping projects in Quebec. Chapter 6 discusses the GIS program used by the International Water Council in Amitav Ghosh's *The Calcutta Chromosome*, examining postcolonial resistance to mapping technology in this text and comparing it to the anti-dam movement in India, specifically looking at the activist writings of Booker Prize–winning novelist Arundhati Roy.

In each of these chapters, I explore the tension between those who map and those who resist or redefine mapping projects. I also look at the psychic conflict within the cartographers themselves, as they struggle to push toward those "blank spaces" that must be mapped. It is in the margins of the map, I will demonstrate, that cartographers and explorers repeatedly describe an uncanny fascination with the primitive. In Joseph Conrad's *Heart of Darkness*, this fascination with the primitive (and its dangers) is popularized in the character of Kurtz, who travels into the "darkness" of Africa and is transformed by it. It is this transformation, on the margins of the map, that is repeatedly described by explorers as both seductive and threatening. To evade the boundaries of official colonialism and *go further* is precisely the fascination of cartographic pursuits.

These margins, or unexplored territories, are described in explorer narratives as both objects of desire and areas that are being lost, or swallowed up, by the map itself. As the boundaries of the map are pushed forward, a certain nostalgia for unmapped spaces begins to emerges. There is also, however, a fear that what is discovered *out there* may escape its margins and be brought back home or somehow infect the civilized world. So we see a predominance of European literary figures like Frankenstein's monster, who shows up in England, or Conrad's Kurtz, who becomes infected—at his moral core—by the "primitive" cultures of Africa. Timothy Findley's *Headhunter*, in its memorable opening lines, describes a fear of Kurtz coming back from Africa: "On a winter's day, while a blizzard raged through the streets of Toronto, Lilah Kemp inadvertently set Kurtz free from page 92 of *Heart of Darkness*. Horror-stricken, she tried to force him back between the covers."43 The horror of Kurtz potentially coming home is the horror (and desire for) the primitive, who—like Frankenstein's monster—will run amuck, lost, destroying the world. It is the fear of what has been left off the map that makes Kurtz show up in Toronto or monsters appear in the margins.

Western identity is formulated by pushing something off of the map, then safely embracing the map as the self, but knowledge of the margins is always waiting to return, as the uncanny.

To be "lost," then, or to be unable to find yourself on the map, is to become caught in a problematic fantasy of identification with that which has been pushed off the map. Michael Ondaatje, in *The English Patient*, describes a moment of being "lost" in London. A group of geographers who just returned from Africa are looking for the Royal Geographical Society. Ondaatje explains, "When they travel by train from the suburbs towards Knightsbridge on their way to Society meetings, they are often lost, tickets misplaced, clinging only to their old maps." They are, he writes, "like Conrad's sailors . . . not too comfortable with the etiquette of taxis, the quick, flat wit of bus conductors."44 This sentimentalizing of being lost signals a desire to evade the effects of "over-civilization" and so to jump off the official map and into the margins or blank spaces. In this sense, I was also "lost" in the London Underground. I was outside of Garmin, the Tube maps, the Greenwich Meridian. I was displaced, a foreigner in London, dreaming of home and thinking that I did not belong in the world of taxis and trains. Thankfully, this problematic fantasy of escaping the map—and thus my own cyborg status—did not last long. I soon found myself on the map. It is, after all, nearly impossible to get lost in the London Underground, a train system now run by GIS.