

1 • Introduction

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Maps are seen through many different eyes. As the historical study of maps has broadened and matured over the past two decades to extend beyond the idea of maps as ever-improving representations of the geographical world, at least three approaches have been developed and championed: the map as cognitive system, the map as material culture, and the map as social construction.¹ All three are necessary to a full understanding of how maps function in society. The way these approaches have waxed and waned has depended not only on the background and predilections of individual researchers, but also on the differing roles and meanings of maps in the various cultures that have been studied.

The emphasis on these three approaches has shifted as the *History of Cartography* volumes have appeared. In this book, which deals with the cartography of traditional African, American, Arctic, Australian, and Pacific cultures, where very few truly indigenous artifacts have been found or preserved, we would expect the cognitive and social approaches to have necessarily greater emphasis than in previous books. This introduction is meant to lay the conceptual groundwork for the chapters that follow. After addressing definitional questions—what we mean by various key words in the title of the book, such as “cartography” and “traditional”—we discuss the differences among what can be called cognitive, performance, and material cartography and explain the many instances where these categories overlap. The introduction then turns to a number of methodological problems and issues, including the problem of bias inherent in studying the maps in this book from a Western perspective, the possible omissions deriving from a diversity of approaches, the feasibility of cross-cultural comparisons, and the ways the study of maps can be made more central in ethnohistorical studies.

DEFINITIONS

In volume 1 of this *History*, maps were defined as “graphic representations that facilitate a spatial understanding of things, concepts, conditions, processes, or events in the human world.”² The definition, purposely broad, was intended to set general parameters for the en-

tire six-volume series. But in this book the very terms “map” and “cartography,” with their strong Western overtones, need some elaboration. There is no cross-cultural, generally agreed definition of these terms, and none of the cultures described here apparently had a word for “map,” let alone “cartography,” before contact with the West. If the purpose of our definition is pragmatic rather than semantic, however, using “map” as a general term can be helpful. Although an Australian aboriginal toa, a Marshall Islands stick chart, an Inka *khipu*, and a Luba *lukasa* memory board are very different in form and function, they all depict a people’s world in a way that enhances spatial understanding.

The search for “maps” in these cultures, particularly when accompanied by the idea that maps privilege the societies in which they are found, is profoundly Eurocentric. But *The History of Cartography* was born of a belief that the endeavor to understand the world by depicting it in map form should be treated in a global way and across the span of human history. By using the word “map” to cover so many different things, we are simply extending the logic of earlier volumes that called the Greek *pinax*, the Roman *forma*, the Chinese *tu*, and the medieval *map-*

1. For mapping as a cognitive system, see David Stea, James M. Blaut, and Jennifer Stephens, “Mapping as a Cultural Universal,” in *The Construction of Cognitive Maps*, ed. Juval Portugali (Dordrecht: Kluwer Academic, 1996), 345–60. The map as material culture has been explored in David Woodward, ed., *Five Centuries of Map Printing* (Chicago: University of Chicago Press, 1975); David Woodward, *The All-American Map: Wax-Engraving and Its Influence on Cartography* (Chicago: University of Chicago Press, 1977); and idem, “Maps as Material Culture,” in *Maps as Material Culture*, Yale-Smithsonian Reports on Material Culture no. 6 (forthcoming, 1998). The social construction of maps has been treated in J. B. Harley, “Maps, Knowledge and Power,” in *The Iconography of Landscape: Essays on the Symbolic Representation, Design and Use of Past Environments*, ed. Denis E. Cosgrove and Stephen Daniels (Cambridge: Cambridge University Press, 1988), 277–312; idem, “Deconstructing the Map,” in *Writing Worlds: Discourse, Text and Metaphor in the Representation of Landscape*, ed. Trevor J. Barnes and James S. Duncan (London: Routledge, 1992), 231–47; and Denis Wood with John Fels, *The Power of Maps* (New York: Guilford Press, 1992).

2. “Preface,” in *The History of Cartography*, ed. J. B. Harley and David Woodward (Chicago: University of Chicago Press, 1987–), 1: xv–xxi, esp. xvi.

pamundi and *carta da navigare* “maps” and included them in a cartographic history.³

Creating a separate volume for “traditional cartography” has been a pragmatic decision based on a body of anthropological and ethnographic literature very different from the historical literature underlying volume 1. The danger is that such a division of subject matter might be thought to imply that there are two fundamentally different ways of spatial thinking: Western and “other.” We prefer to characterize the differences not in terms of mental capacity or predisposition but according to the social and cultural need for maps.

The term “traditional” implies continuity, the handing down of skills over generations, rooted in longevity. Yet given the difficulties of documentation, it is almost impossible to ascertain how long this tradition has been maintained in the societies discussed here, or how continuous it has been. Likewise, if the term is used for the kind of cartography that was independent of the development of systematic topographic survey and mapmaking in Europe, it implies that one somehow “progressed” into the other.

Our motivation for using the term “traditional,” despite its problems, is to convey the idea that we are dealing with a different kind of cartography that is neither inferior nor superior to that of the West. Although even “traditional” has sometimes been used pejoratively, we have preferred it to other terms that are now almost always interpreted as disparaging, such as “preliterate,” “simpler,” “primitive,” or even “savage.” The problem with such pejorative terms is that they fail to treat the maps of traditional societies on their own terms and therefore endorse the idea of traditional “inferior” cartographies “progressing” into ever more realistic modern maps. Except in the sense of the purely geometric definition of geographic data, this theory is no more true for cartography than it is for art. As early as 1937, Sorokin was at pains to document that what he called ideational culture mentalities that nineteenth-century writers had associated with primitive art devoid of skill and technique did not somehow “progress” into sensate (visual) art forms that art historians associated with the European Renaissance.⁴

Since all cultures have always been in a constant state of change, it is not possible to draw hard and fast boundaries between “traditional” and “European” cartographies or to ascertain what is truly “traditional,” “indigenous,” or “original.”⁵ Describing spatial representation in oral societies before contact with Westerners is difficult for several reasons. These include the paucity or virtual absence of extant precontact artifacts; an unwillingness or inability to recognize as maps certain types of archaeological evidence such as ceramics, textiles, petroglyphs, and pictographs, even when datable; the unlikelihood of

3. The number of artifacts that could be called maps vastly increased in the modern period, and there is a sense in which the map as a fully developed artifact did not properly exist until the medium of print made maps everyday objects. See Walter J. Ong, *Orality and Literacy: The Technologizing of the Word* (London: Methuen, 1982). For a development of this theme, see Denis Wood, “Maps and Mapmaking,” in *Encyclopaedia of the History of Science, Technology, and Medicine in Non-Western Cultures*, ed. Helaine Selin (Dordrecht: Kluwer Academic, 1997), 26–31. Wood states: “Maps are permanent, graphic objects which are a very recent phenomenon with relatively shallow roots in human history” (26). These views are based on the conviction that the term “map” should be reserved for products generated in societies in which standardized, reproducible maps are widespread and that draw on them as models. Indeed, some philosophers who are otherwise critical of the notion of “representation” are willing to make an exception for such maps. Richard Rorty, commenting on work by Donald Davidson, states, “I take his point to be that we should restrict the term ‘representation’ to things like maps and codes—things for which we can spell out rules of projection which pair objects with other objects, and thus embody criteria of accurate representation. If we extend the notion of representation beyond such things, we shall burden ourselves with a lot of philosophical worries we need not have” (Richard Rorty, “An Antirepresentationalist View: Comments on Richard Miller, van Fraassen/Sigman, and Churchland,” in *Realism and Representation: Essays on the Problem of Realism in relation to Science, Literature, and Culture*, ed. George Lewis Levine [Madison: University of Wisconsin Press, 1993], 125–33, esp. 126).

4. Pitirim Aleksandrovich Sorokin, *Social and Cultural Dynamics*, vol. 1, *Fluctuation of Forms of Art (Painting, Sculpture, Architecture, Music, Literature, and Criticism)* (New York: American Book Company, 1937), 269 ff.: “Ideational and primitive were often taken to be identical, while any competent rendering in the Visual style was regarded as a manifestation of artistic skill, maturity of technique, progress in art and in aesthetic genius. Even now many people, looking at the paintings of Indians or Eskimos or Egyptians or other ancient peoples, consider them certainly to be the result of a lack of artistic skill and as a manifestation of the primitiveness of the art of the ancients. However natural such opinions seem to be, in most cases they are wrong. The fault of such theories consists in their identification of Ideational with immature, of Visual with mature. As a matter of fact, the real situation in many cases is quite different” (269–70).

More recently, Morphy writes, in the context of the anthropology of art: “In the case of [the term ‘primitive’], however, I am content to assume that the battle has been won in anthropology, if not in art history. The addition of the label ‘primitive’ adds nothing but confusion to the literature on the art of non-Western societies. However, the fact that the word ‘primitive’ was applied to these arts for so long tells us something about the European concept of art and the role it has played in the positioning of ‘other cultures’ in European thought, and highlights why it is so necessary that any review of the anthropology of art should begin with the definitional problem.” Howard Morphy, “The Anthropology of Art,” in *Companion Encyclopedia of Anthropology*, ed. Tim Ingold (London: Routledge, 1994), 648–85, esp. 648. For a general discussion of the notion of “progress” in cartographic history, see Matthew H. Edney, “Cartography without ‘Progress’: Reinterpreting the Nature and Historical Development of Mapmaking,” *Cartographica* 30, nos. 2–3 (1993): 54–68.

5. See J. C. H. King, “Tradition in Native American Art,” in *The Arts of the North American Indian: Native Traditions in Evolution*, ed. Edwin L. Wade (New York: Hudson Hills Press, 1986), 64–92, esp. 65. For further clarification on the meaning of “traditional” and other terms associated with oral culture, see the helpful book by Ruth H. Finnegan, *Oral Traditions and the Verbal Arts: A Guide to Research Practices* (London: Routledge, 1992), 7–8 and *passim*.

there being an evidential record of maps that are part of a performance; and the difficulty of interpreting oral traditions as history.

The issues raised by the inclusion in this book of maps with forms and functions very different from those in previous books of the *History* can perhaps best be explained by referring to table 1.1. This table distinguishes between internal spatial concepts or mental constructions of spatial ideas and the expression or manifestation of these concepts either in performance or in the construction of a record of spatial knowledge in the form of material artifacts.⁶ We can thus speak in terms of “cognitive or mental cartography,” “performance or ritual cartography,” and “material or artifactual cartography,” and the next three sections explain what each means in the context of this book.

COGNITIVE CARTOGRAPHY

In volume 1 of this *History* Brian Harley wrote:

There has probably always been a mapping impulse in human consciousness, and the mapping experience—involving the cognitive mapping of space—undoubtedly existed long before the physical artifacts we now call maps. For many centuries maps have been employed as literary metaphors and as tools in analogical thinking. There is thus also a wider history of how concepts and facts about space have been communicated, and the history of the map itself—the physical artifact—is but one small part of this general history of communication about space.⁷

A “general history of communication about space” would be based on the vast literature of spatial cognition and behavior in psychology, philosophy, anthropology, geography, and now artificial intelligence.⁸ Spatial constructs are keys to the physical, social, and humanistic understanding of the world. Human activities relevant to cartography include reducing the complexity and vastness of nature and space to a manageable representation; wayfinding or navigating from one point to another; spatial reckoning of generalized distances and directions (as in an awareness of the cardinal directions); visualizing the character of local places; articulating spatial power and control related to territoriality; and constructing spatial views of real and imagined worlds. The mental constructions of such spatial ideas are sometimes selectively described as “mental maps.” This is an intuitively attractive term and has been the subject of many recent studies, but it can mean at least two quite different things.

On one hand, the term is used to mean an image of the environment held in the mind to aid wayfinding or spatial orientation. This may be an image one remembers from having seen a physical map, or it may be con-

TABLE 1.1 Categories of Representations of Non-Western Spatial Thought and Expression

INTERNAL (Inner Experience)	EXTERNAL (Processes and Objects That Realize or Externalize the Internal Experience)	
	COGNITIVE CARTOGRAPHY (Thought, Images)	PERFORMANCE CARTOGRAPHY (Performance, Processes)
Organized images such as spatial constructs	<i>Nonmaterial and ephemeral</i> Gesture Ritual Song Poem Dance Speech	<i>In situ</i> Rock art Displayed maps <i>Mobile compa- rable objects</i> Paintings Drawings Sketches Models Textiles Ceramics Recording of “performance maps”
	<i>Material and ephemeral</i> Model Sketch	

6. This internal/external distinction is used in a similar sense described by Sorokin in his classification of world systems of culture. He writes, “The elements of thought and meaning which lie at the base of any logically integrated system of culture may be considered under two aspects: the *internal* and the *external*. The first belongs to the realm of inner experience, either in its unorganized form of unintegrated images, ideas, volitions, feelings, and emotions; or in its organized form of systems of thought woven out of these elements of the inner experience. . . . The second is composed of inorganic and organic phenomena: objects, events, and processes, which incarnate, or incorporate, or realize, or externalize, the internal experience.” Sorokin, *Fluctuation of Forms of Art*, 55 (note 4). Sorokin goes on to say that the internal is more important for the student of culture to study, but being constrained by the material evidence, one is forced to focus on the external. Although he agrees that the external is an inextricable part of the complex of culture, it is “part of culture” only when it is serving as such a vehicle for understanding of culture.

7. J. B. Harley, “The Map and the Development of the History of Cartography,” in *The History of Cartography*, ed. J. B. Harley and David Woodward (Chicago: University of Chicago Press, 1987–), 1:1–42, esp. 1.

8. For representative geographical works, see Roger M. Downs and David Stea, eds., *Image and Environment: Cognitive Mapping and Spatial Behavior* (Chicago: Aldine, 1973); Reginald G. Golledge and R. J. Stimson, *Spatial Behavior: A Geographic Perspective* (New York: Guilford Press, 1997), esp. 229–38; Robert David Sack, *Conceptions of Space in Social Thought: A Geographic Perspective* (London: Macmillan, 1980); and Michael Blakemore, “From Way-Finding to Map-Making: The Spatial Information Fields of Aboriginal Peoples,” *Progress in Human Geography* 5 (1981): 1–24.

structed from one's experience of reality (such as one's neighborhood). This type of mental map is often used to give directions, to rehearse spatial behavior in the mind, to aid memory, to structure and store knowledge, to imagine fantasy landscapes and worlds, or of course to make commonplace material maps. We know, however, that many people do not visualize space in mental pictures when engaged in everyday wayfinding or giving directions.⁹ Some writers have questioned the value of using terms such as "image," "pictures in the head," and "mental map" to describe complex mental processes.¹⁰

The other main use of the term "mental map" or "cognitive map" is to denote physical artifacts recording how people perceive places. This category includes maps researchers draw from data about subjects' place preferences, as in Gould and White's *Mental Maps*.¹¹ Or in some cases subjects themselves may draw their cognitive or affective view of their environment. In both instances we are dealing with a physical object, not a mental image.

Nevertheless, for want of a better phrase, the term "mental cartography" is sometimes used in this book to refer to the maps that many of these groups apparently carry in their heads as mnemonic devices. A good example concerns the Pacific Islanders. In only one island group in Micronesia, the Marshall Islands, have material artifacts traditionally been made for the purpose of remembering and teaching navigation skills in the Pacific Ocean. Clearly, inhabitants of other island groups have had a similar need to navigate the thousands of miles between the island groups, yet these needs are met not with graphic artifacts but with a "mental cartography."¹²

PERFORMANCE CARTOGRAPHY

If mental constructs can be metaphorically called "maps," there are occasions in many societies when a performance also fulfills the function of a map. Referring again to table 1.1, a performance may take the form of a nonmaterial oral, visual, or kinesthetic social act, such as a gesture, ritual, chant, procession, dance, poem, story, or other means of expression or communication whose primary purpose is to define or explain spatial knowledge or practice. Or the performance may include a more material, but still ephemeral, demonstration such as a drawing or model in the sand.

Not all our authors agree on whether oral-kinesthetic expressions qualify as maps. For example, for Australian Aborigines, Peter Sutton has used this distinction as a key reason to be cautious about identifying some icons as kinds of maps, in that they "arise principally as display or performance rather than as explanation or record."¹³ Similarly, for Mesoamerica, where many more map artifacts survive than from oral cultures, Barbara Mundy mentions the circumambulation ritual still carried out in

hundreds of Mexican communities, only to point out that this performance is not a map but "an oral litany of boundary sites committed to memory."¹⁴ On the other hand, Eric Silverman points out in the chapter on Mela-

9. In an experiment described by Michel de Certeau, residents of New York described the layouts of their apartments, and these descriptions fell into two distinct types, which the researchers C. Linde and W. Labov called the "map" and the "tour." The first is of the type, "The girls' room is next to the kitchen." The second, "You turn right and come into the living room." Only 3 percent of the descriptions turned out to be of the "map" (or, we might say, the "mental map") type. The vast majority of New Yorkers thought in terms of sequential narrative rather than visualizing their apartments as a map. De Certeau extends the argument in terms of one of the differences between medieval and Renaissance cartography, pointing out that the "itinerary map" is more characteristic of the Middle Ages. For de Certeau, the development from itinerary to map is central to the difference between premodern and modern mapmaking. An intermediate "itinerary map"—obviously based on linear directions—first appears; eventually the modern map removed traces of its earlier itinerary sources. Michel de Certeau, *The Practice of Everyday Life*, trans. Steven F. Rendall (Berkeley: University of California Press, 1984), 118–22.

10. Yi-Fu Tuan, "Images and Mental Maps," *Annals of the Association of American Geographers* 65 (1975): 205–13. Tuan concluded that such terms "have tended to become vague entities that do not correspond to psychological reality" (213). A recent hypothesis by Couclelis suggests that there is more likely to be a complex relation of various elements aiding in direction giving and wayfinding. These elements include preconceived schemata, verbal directions, and cognitive maps, of which one component is not necessarily basic or privileged over another. See Helen Couclelis, "Verbal Directions for Way-Finding: Space, Cognition, and Language," in *The Construction of Cognitive Maps*, ed. Juval Portugali (Dordrecht: Kluwer Academic, 1996), 133–53. The term "cognitive map" originated with the psychologist Edward Chance Tolman, who used it to explain how rats react to the stimulus of whole environmental fields rather than local landmarks in wayfinding. See Tolman's "Cognitive Maps in Rats and Men," *Psychological Review* 55 (1948): 189–208. Cognitive psychologists have since been engaged in what has been called the "imagery debate" about how visual imagery is processed in the brain, excellently summarized by Stephen M. Kosslyn, *Image and Brain: The Resolution of the Imagery Debate* (Cambridge: MIT Press, 1994). The argument centers on whether depictive or propositional representation is responsible for mental images. A depictive representation is made up of a pattern, say the letter A or (in our context) a map, whereas a propositional representation of the letter might consist of the description "two symmetrical diagonal lines that meet at the top and are joined roughly halfway down by a horizontal line." At issue is not whether people experience visual mental images; it is generally agreed that they do. Neither is there disagreement that a depiction needs a propositional component to be interpreted. Kosslyn states that the issue is whether "visual mental images rely on depictive representations (which are in turn interpreted by other processes), or whether they are purely propositional representations" (6). After reviewing extensive neurological experiments, he concludes there is good evidence that image representations are depictive on the grounds that the human visual cortex includes "topographically mapped areas" to record such information (405–7).

11. Peter Gould and Rodney White, *Mental Maps*, 2d ed. (Boston: Allen and Unwin, 1986).

12. Ben Finney, "Traditional Navigation and Nautical Cartography in Oceania," pp. 443–92 below.

13. See p. 365 below.

14. See p. 220 below.

nesian maps that the Iatmul of the middle Sepik River map the landscape orally through chains of paired, polysyllabic names that are chanted and sung on ritual occasions. And Neil Whitehead relates how the dances of the Barasana in the Vaupés region of Colombia enact the interconnection between persons and the cosmos in which the path of celestial bodies is replicated through the annual cycle of ritual and dance in a longhouse representing the celestial vault.¹⁵

MATERIAL CARTOGRAPHY

A spatial representation may also be a permanent or at least nonephemeral record created or placed in situ, as in rock art, maps posted as signs, or maps embodied in shrines or buildings. Or the representation may take the form of a mobile, portable, archivable record. This category of material cartography, which comprises most artifacts we normally think of as “maps,” includes models, ceramics, drawings, paintings, textiles, descriptions or depictions of performances, and in situ records.¹⁶

Despite the frequent image of the history of cartography as an antiquarian field, the study of maps as physical artifacts—as material culture—has been astonishingly neglected, perhaps on the mistaken grounds that technical studies do not illuminate the wider social history of cartography. This is unfortunate, since technology is rooted in society, cannot be separated from its influences, and often sheds light on broader social issues. One of the fundamental purposes of this book is to present the material evidence of traditional cartography—to describe the map corpus in a way that approaches the maturity of other fields that address issues of material culture, such as art history, ethnography, and industrial history. Wherever the evidence has permitted, we have attempted to reconstruct the fabric and format of maps and the methods of their creation. We hope that in some cases we have also been able to move beyond the bare statement of how maps were made. This approach of course is fully compatible with recent studies of material culture, which go beyond explaining process.¹⁷

OVERLAPS AND INCONSISTENCIES

There are several instances where the categories of cognitive, performance, and material cartography overlap. This overlap is most obvious where map artifacts are used during a performance. For example, Thomas Bassett describes how memory boards known as *lukasa*, covered with beads and cowrie shells, are used to teach initiates about the origins of Luba kingship in the Kabongo region of the Democratic Republic of Congo. The *lukasa* is read or sung to remember the journeys of a king, the location of sacred lakes, trees, spirit capitals, and migration routes.

The content changes according to the king being praised, the singer’s knowledge of royal history, and the political circumstances of the performance.¹⁸ In this sense the performance is not the map but an interpretation of it. Likewise, the Comanches of western Texas prepared for raids into northern Mexico between about 1830 and 1845 by assembling a bundle of sticks, each marked with notches to represent days. A map was drawn on the ground illustrating every landmark to be encountered on the journey for the day represented by the notched stick.¹⁹

The evidence for mapping as performance—dances, dreamings, sandpainting ceremonies—is less complete than for material maps and is subject to greater errors in interpretation. Although such performances were observed and recorded in some traditional societies in the recent past, we do not know what proportion of performance maps were too sacred to have been witnessed by outsiders. Earlier examples were doubtless unobserved or misreported.

Many of the societies examined in this book assigned preeminence to performance, privileging process over product, particularly where permanence of the artifact might be a disadvantage in societies where maps were designed to grasp the ever-changing rhythms of nature and territory. Thus, in the Inuit context, Rundstrom describes his conversation with an Inuk elder: “[He] told me that he had drawn detailed maps of Hiquiligjuaq from memory, but he smiled and said that long ago he had thrown them away. It was the act of making them that was im-

15. See pp. 426 and 316 below.

16. Bruno Latour makes much of this ephemeral/portable distinction. See his “Drawing Things Together,” in *Representation in Scientific Practice*, ed. Michael Lynch and Steve Woolgar (Cambridge: MIT Press, 1990), 19–68, esp. 19–26 and 56. Latour, writing from the standpoint of the history of modern Western science, makes a distinction between informal ephemeral maps and permanent, mobile inscriptions using an example from the expedition of La Pérouse in which the explorer meets with the inhabitants of Sakhalin and tries to learn from them whether Sakhalin is an island or a peninsula. An older man draws a map of his island on the sand, but another picks up one of La Pérouse’s notebooks to draw the map again with a pencil. Latour points out that the difference between the two maps is that one was ephemeral and one was brought back to Europe. The power and influence of the mobile map was far greater when viewed in the context of ensuing European colonial policy and as it became further inscribed through the medium of print (24–25). See Jean-François de Galaup, comte de La Pérouse, *The Journal of Jean-François de Galaup de La Pérouse, 1785–1788*, 2 vols., ed. and trans. John Dunmore, Publications of the Hakluyt Society, 2d ser., nos. 179–80 (London: Hakluyt Society, 1994–95), 2:289–98.

17. David Woodward, “Maps as Material Culture” (note 1). The conference for which this paper was prepared, the Sixth Yale-Smithsonian Seminar on Material Culture, brought together anthropologists, cartographers, historians of cartography, art historians, and historians of design at the Cooper-Hewitt Museum, New York, in March 1993 and was the first to address the issue of maps as material culture.

18. See pp. 32–33 below.

19. See pp. 128–29 below.

portant, the recapitulation of environmental features, not the material objects themselves.”²⁰ Likewise, in the case of the Nazca geoglyphs, Clarkson notes the extensive overlapping of the geoglyphs and says it “raises an interesting and in many ways important question of why certain areas of the pampa look like a chalkboard used for many different lessons but never erased between each lesson. Was the act of construction as or more important than the recognizability of individual geoglyphs?”²¹

Given the fluid nature of the categories of cognitive, performance, and material cartography, we have assiduously avoided drawing a hard line between “map” and “nonmap” in table 1.1. The “mapness” of an artifact depends in great degree on the social or functional context in which it is operating. Our concern in this book is less with constructing inclusive and exclusive criteria for what might be considered maps and more with shedding light on how certain members of society represent and codify spatial knowledge. Thus, in this introduction we have carefully avoided defining terms such as “protomap” used by some of our authors, letting the context of their use and the authors’ individual definitions illuminate the meaning intended.²²

Any definition that ignores either the function of maps or their role as social constructions fails to account for the fact that maps are far more than wayfinding devices; they have enhanced the prestige, power, and respect of those members of society who have controlled their making and use for religious and political ends. Maps are frequently used to establish social position—to gain respect through a display of knowledge—certainly a motivation behind many shamanistic rituals among such widely different groups as the Khoisan in Namibia, the Chukchi in Siberia, the Tukano and Desana in the Amazon, the Inuit and Ojibwas in Canada, and the Barasana in Colombia.

The oral “map” lies at the center of the definitional controversy. Whether a list of places is arranged in topographical or artificial order is certainly significant in the study of mental processes. Jerome S. Bruner suggests an experiment designed to help us understand how an individual represents the world. Individuals would be asked to name the fifty states of the Union. If the order is “Alabama, Alaska, Arizona . . .” the supporting mental construct is inferred to be listlike. If the order is “Maine, New Hampshire, Vermont . . .” the supporting representation is spatial and, we could say, moves toward a “maplike” representation.²³ Whether the “Maine, New Hampshire” approach would be called a “map” by our authors is debatable.

Possible conflicts in definition are not new with this book. In the chapter on Egyptian cartography in volume 1 of the *History of Cartography*, for example, such lists of place-names are not mentioned. Yet Goody describes as “an elementary kind of map” taxation scenes on the

southern and northern entrance walls of a Theban tomb listing the dues paid to the Vizier Rekhmire^c (in the reign of Thutmose III, ca. 1450 B.C.) by various towns lying to the south and north of Thebes, not in random order, but according to their topographical and cardinal positions.²⁴ Similarly, no mention is found in the medieval chapters of volume 1 of the prevalent processional “beating of the bounds” ceremony to confirm parish boundaries in England, which could be thought of as a kind of “performance map.”²⁵

It is also important to realize that the significance of elements of graphic representation (ideas such as points, lines, and areas) varies considerably, not only from society to society but also between individuals within a group. For example, the concept of a line—whether signifying a boundary, a pathway, or some connection between two geographic elements in the landscape—is so basic to modern Western cartography that “we take it for granted, as given in reality. We see it in visible nature, between material points, and we see it between metaphorical points such as days or acts.”²⁶ Among the people of the Trobriand Islands of Papua New Guinea, however, there is no indication that lines are conceived as connecting point with point during a journey, and hence repre-

20. Robert A. Rundstrom, “A Cultural Interpretation of Inuit Map Accuracy,” *Geographical Review* 80 (1990): 155–68, esp. 165. And see also Rundstrom’s “Expectations and Motives in the Exchange of Maps and Geographical Information among Inuit and Qallunaat in the Nineteenth and Twentieth Centuries,” in *Transferts culturels et métissages Amérique/Europe, XVI^e–XX^e siècle*, ed. Laurier Turgeon, Denys Delâge, and Réal Ouellet (Sainte-Foy, Quebec: Presses de l’Université Laval, 1996), 377–95.

21. Persis Banvard Clarkson, “The Archaeology of the Nazca Pampa: Environmental and Cultural Parameters,” in *The Lines of Nazca*, ed. Anthony F. Aveni (Philadelphia: American Philosophical Society, 1990), 115–72, esp. 171.

22. The importance of context for definitions is well illustrated by the following anecdote. A docent for the Washington, D.C., version of the Cooper-Hewitt Museum’s exhibition “The Power of Maps” was overheard explaining to a young visitor about a bundle of sticks from the Marshall Islands, bound together by twine with shells hanging from it—what we know as a “stick chart.” The youngster was puzzled and asked why this was a map. “Because it’s in this exhibition,” the docent replied.

23. Jerome S. Bruner, “On Cognitive Growth,” in *Studies in Cognitive Growth: A Collaboration at the Center for Cognitive Studies*, ed. Jerome S. Bruner et al. (New York: John Wiley, 1966), 1–29, esp. 7, and Jack Goody, *The Domestication of the Savage Mind* (Cambridge: Cambridge University Press, 1977), 110.

24. Goody, *Domestication*, 107–8.

25. Volume 1 of *The History of Cartography* is *Cartography in Prehistoric, Ancient, and Medieval Europe and the Mediterranean*, ed. J. B. Harley and David Woodward (Chicago: University of Chicago Press, 1987).

26. Dorothy Lee, “Lineal and Nonlineal Codifications of Reality,” in *Symbolic Anthropology: A Reader in the Study of Symbols and Meanings*, ed. Janet L. Dolgin, David S. Kemnitzer, and David Murray Schneider (New York: Columbia University Press, 1977), 151–64, esp. 155.

senting such a relationship as a line would make no sense.²⁷

On the other hand, the Yoruba of West Africa regard the line as extremely important, even associating it with civilization. In Yoruba, the phrase “this country has become civilized” literally means “this earth has lines upon its face.” The verb meaning to cicatrize scars on a face also has multiple associations with marking new boundaries and opening roads through a forest, in the general sense of imposing a human pattern on the disorder of nature.²⁸

PROBLEMS AND ISSUES

In compiling this book, several problems and issues have arisen that are uniquely applicable to the maps we will be describing. These include the problem of studying these maps from a Western perspective, the problem of possible omissions deriving from a diversity of approaches, and the definitional problem of what constitutes a map. Issues arise about the feasibility of cross-cultural comparisons and the ways cartography and its history can be made more central in anthropology, ethnohistory, and even cultural geography.

THE PROBLEM OF BIAS

Many writers on culture start out by saying that studying culture is a “risky endeavor,” as if this somehow exonerates them from error. This disclaimer does not, however, prevent them from proceeding.²⁹ Correctly interpreting the history of traditional African, American, Arctic, Australian, and Pacific cartography through modern Western eyes is, of course, impossible. The very fact that the editors have grouped such a diversity of forms of expression into one book—though we would not claim everything we illustrate is a map or is “traditional”—inevitably reveals a bias.

The artifactual evidence presented in this book has survived in diverse physical states—a spectrum ranging from forms largely independent of European influence to transcripts and copies of maps made for engraving and publication elsewhere. Contemporary annotations intended to assist understanding can only rarely be evaluated. Many artifacts are no longer extant and are known only via contemporary accounts. Inevitably, the descriptions were filtered by the circumstances in which they were recorded, and correcting for this is seldom possible. Very few truly indigenous map artifacts have passed from their native keepers into nonnative collections. Most of the material that was readily available to our authors was made during the historical encounters between Westerners and indigenous groups, where acculturation was inevitable.

Hence the representativeness of these records of the total picture is difficult to judge.

A related issue is the preservation or archiving of material artifacts. Until recently, most traditional societies have preserved their culture through means other than collections of artifacts, so it is not yet clear whether the new laws passed by many governments allowing indigenous groups to reclaim their heritage and requiring museums to return artifacts will help or hinder their long-term preservation, if this indeed remains an issue. In the meantime, as the credit lines for the illustrations in this book will attest, the vast majority of traditional artifacts are preserved in repositories founded in the European image of the museum, a relatively recent concept—in its well-developed form—dating from the Renaissance. Those that are preserved have thus usually been chosen according to the values placed on them in the Western culture of connoisseurship and collecting. As they have changed hands in private collections, the artifacts have accrued an importance beyond their intrinsic aesthetic worth, to include provenance, a position cemented by their description in published exhibition or auction catalogs. As with the “great maps” of the West, a few traditional artifacts have also been repeatedly illustrated and described, and their importance has thus been canonized.

There are further difficulties with the historical record. Some prehistoric rock art may have functioned as maps, but such an interpretation is necessarily speculative. Much surviving rock art was accretive over long periods; later content was frequently added, often by people possessing little or no knowledge of the earlier cultures that had a hand in creating the images. Thus linking rock art to the culture in which it originated always involves assumptions. Furthermore, much rock art undoubtedly reflects esoteric, mystical, shamanistic knowledge, and the figurative representations of this knowledge bear multiple meanings.

Another example of the difficulties of interpretation is the *Walam Olum*, a pictographic record described in the nineteenth century, but now lost, that some believe to be the ancient history of the Delawares (Lenni Lenape). The *Walam Olum* is told in the form of an epic migration story about their crossing of the Bering Strait and their journey south and eastward across North America to a

27. Lee, “Lineal and Nonlineal Codifications,” 159–60. Lee elaborates: “No terms are used here which might be taken as an implication of continuity; no ‘along the coast’ or ‘around’ or ‘northward.’”

28. Robert Farris Thompson, “Yoruba Artistic Criticism,” in *The Traditional Artist in African Societies*, ed. Warren L. d’Azevedo (Bloomington: Indiana University Press, 1973), 18–61, esp. 35–36.

29. See, for example, Eric Mark Kramer, “Gebser and Culture,” in *Consciousness and Culture: An Introduction to the Thought of Jean Gebser*, ed. Eric Mark Kramer (Westport, Conn.: Greenwood Press, 1992), 1–60, esp. 1.

homeland centered in the Delaware Valley, ending with a description of European ships arriving on the Delaware River about 1620. Some scholars date the record to the late eighteenth or nineteenth century, interpreting it as a bona fide attempt to create a unifying narrative in the face of disruption and forced migration.³⁰ More recently a strong case has been made that it is one of the oldest hoaxes of North America, analogous to Piltdown man in England.³¹ For the Delawares, the epic may well form part of a narrative received from their ancestors and valid as such. But in the face of such difficulties of interpretation, it is best to be extremely cautious about its value in corroborating or guiding archaeological or historical research.³²

There is, however, a concomitant problem of traditional groups' writing their own history in the absence of a historical record. The problem of bias has not dissuaded modern descendants of indigenous groups from "rewriting" and "reinterpreting" their history. For example, a recent history of Waitaha tradition has been criticized by several scholars for suggesting a longevity of settlement mythology for which there is no evidence.³³

Even if bias is likely to be present no matter who writes the history of cartography, we are presumably not so culture bound that any attempt is hopeless. We believe the problems are mitigated somewhat by choosing a worldwide team of anthropologists, archaeologists, art historians, geographers, and historians with an intimate knowledge of the cultures and literatures they describe. This volume of the *History of Cartography* is thus the first global attempt to describe and explain traditional cartography since Bruno Adler's pathbreaking study of 1910.³⁴

THE PROBLEM OF DIVERSITY OF APPROACH

Although multiple authorship is necessary for a work of this kind in which no one scholar could be expected to have a worldwide ethnographical, historical, and geographical knowledge of the cultures treated, such a plan involves a rich diversity of approach. Not only do our authors represent several fields, but there are widely varying interpretations of what constitutes a map, as our discussion of mental mapping and performance cartography in this introduction has shown. Furthermore, although we have attempted to cover the main cultures of the world, there have inevitably been omissions and inconsistencies owing to the extremely sparse literature on some topics and the lack of specialists familiar with artifacts that could be interpreted as maps.³⁵ Other inconsistencies include the varying emphasis on "modern" maps drawn by indigenous groups for ethnographical study or for their own land claims. Similarly, some authors discuss at length maps drawn for Europeans during colonial con-

tact, whereas others mention them only sporadically. Perhaps the most serious lacuna is the absence of separate chapters on celestial and cosmographical cartography for many of the cultures discussed, particularly in North America, like those in the books devoted to Islamic and Asian traditional cartography (volume 2, books 1 and 2). Differences in approach are therefore perhaps more marked in this book than in previous volumes, but when these essays are viewed together they provide a multiplicity of insights into precontact mapping and a richer texture than a more regimented encyclopedic attempt could possibly have produced.

THE ISSUE OF CROSS-CULTURAL COMPARISONS

By grouping traditional cartographies in volume 2 of the *History*, we are making the assumption that some kind of comparison between the maps of different cultures is desirable and will eventually be feasible. If all maps require some knowledge of their cultural context before we can

30. For example, David McCutchen, trans. and annotator, *The Red Record, the Wallam Olum: The Oldest Native North American History* (Garden City Park, N.Y.: Avery, 1993); Joe Napora, trans., *The Walam Olum* (Greenfield Center, N.Y.: Greenfield Review Press, 1992); and *Walam Olum; or, Red Score, the Migration Legend of the Lenni Lenape or Delaware Indians: A New Translation, Interpreted by Linguistic, Historical, Archaeological, Ethnological, and Physical Anthropological Studies* (Indianapolis: Indiana Historical Society, 1954).

31. David M. Oestreicher, "The Anatomy of the Walam Olum: The Dissection of a Nineteenth-Century Anthropological Hoax" (Ph.D. diss., Rutgers University, 1995), and idem, "Unmasking the *Walam Olum*: A 19th-Century Hoax," *Bulletin of the Archaeological Society of New Jersey* 49 (1994): 1-44.

32. The issue of the reliability of oral traditions as history is complex and controversial. See, for example, Victor W. Turner, "Symbols in African Ritual," in *Symbolic Anthropology: A Reader in the Study of Symbols and Meanings*, ed. Janet L. Dolgin, David S. Kemnitzer, and David Murray Schneider (New York: Columbia University Press, 1977), 183-94, and Jan Vansina, *Oral Tradition as History* (Madison: University of Wisconsin Press, 1985). Peter Nabokov has recently addressed the issue for North American Indians in "Native Views of History," in *The Cambridge History of the Native Peoples of the Americas*, vol. 1, *North America*, 2 pts., ed. Bruce G. Trigger and Wilcomb E. Washburn (Cambridge: Cambridge University Press, 1996), pt. 1, 1-59.

33. For example, Tipene O'Regan, "Old Myths and New Politics: Some Contemporary Uses of Traditional History," *New Zealand Journal of History* 26 (1992): 5-27.

34. Bruno F. Adler, "Karty pervobytnykh narodov" (Maps of primitive peoples), *Izvestiya Imperatorskago Obshestva Lyubiteley Yestestvoznaniya, Antropologii i Etnografii: Trudy Geograficheskago Otdeleniya* (Proceedings of the Imperial Society of the Devotees of National Sciences, Anthropology and Ethnography: Transactions of the Division of Geography) 119, no. 2 (1910).

35. For example, there is a chapter covering Papua New Guinea, but not the western part of New Guinea, Irian Jaya (now part of Indonesia). Cartographic elements in the rock art of southern Africa are treated, but not the indigenous cartography of Madagascar. In South America, Brazil and the Andes are emphasized, but not the native mapping traditions in Argentina, Chile, and Uruguay.

extract their meaning, comparing maps implies no less than comparing cultures.

Such a question has been occupying anthropologists and geographers since Franz Boas in 1896. George Peter Murdock describes the Cross-Cultural Survey started in 1937 at Yale, which was based on the conviction that all human cultures, despite their diversity, fundamentally have a great deal in common, and that these common aspects are susceptible to quantitative analysis. Such a program of study required a systematic cataloging and categorizing of cultural characteristics—a global database from which hypotheses could be constructed and conclusions drawn.³⁶ The criticism of such an approach is that it could not account for the local nuances in culture or the widely different contexts in which cultural practices take place, despite the enormous amount of useful fieldwork accomplished and data collected.

Since maps made by the cultures in this book are usually constructed from local knowledge, semantic systems, and materials, it is difficult to write about them using a Western vocabulary that attempts to analyze them structurally in terms of building blocks of graphic elements of points, lines, and color. This approach neglects the reasons the works were created, reasons that are almost always local.³⁷ Far more fruitful is a semiotic approach that bears these local contexts in mind. Thus Geertz writes:

If we are to have a semiotics of art (or for that matter, of any sign system not axiomatically self-contained), we are going to have to engage in a kind of natural history of signs and symbols, an ethnography of the vehicles of meaning. Such signs and symbols, such vehicles of meaning, play a role in the life of a society, or some part of a society, and it is that which in fact gives them their life. . . . This is not a plea for inductivism—we certainly have no need for a catalogue of instances—but for turning the analytic powers of semiotic theory, whether Peirce's, Saussure's, Lévi-Strauss's, or Goodman's, away from an investigation of signs in abstraction toward an investigation of them in their natural habitat—the common world in which men look, name, listen, and make.³⁸

REVERSING THE MARGINALIZATION OF MAPS

In the preface to volume 1, the editors pointed out that the history of cartography “occupies a no-man’s-land among several paths of scholarship.”³⁹ For the maps introduced in this book (both as material artifacts and as metaphors for encoding spatial understanding), it could more forcefully be said that their significance has not been adequately recognized by anthropologists, ethnographers, cultural historians, and cultural psychologists in discussions of the differences between European and non-European cultures.

In particular, maps, mapmaking, and map use within well-studied traditional societies have not received much attention from cultural anthropologists. Whether this reflects a low awareness of “map” among field anthropologists or the marginal position of spatial representation within the societies they have studied is not clear. The general impression is that terrestrial maps were more significant in hunting societies than among collectors, pastoralists, or cultivators. This difference may have been a function of the extent of the territories covered, the repeated use of relatively easy natural routes, and the spatial nature of the search for prey. It is uncertain whether the global evidence now available is sufficiently representative to test such tentative hypotheses at a worldwide scale.

Much of what is known about maps and mapmaking in traditional societies is derived from the kinds of sources widely used by historians: museum, archival, and special collections, early printed books of travel, and official publications of many kinds. Somewhat surprisingly, therefore, historians, even ethnohistorians, have rarely used extant maps as evidence.

Historians of exploration and discovery have been particularly remiss in this respect. For better or worse, explorers often based strategic decisions on maps supplied by peoples whose territories they were passing through, sometimes with unfortunate consequences. Whether these problems resulted from misinformation or misreading can be a fascinating question. Other than those with a special interest in maps made in traditional societies, even historians of cartography have seemingly been unaware of the significance of these maps. They have made surprisingly few attempts to analyze the processes involved, recognize diagnostic characteristics on the resulting maps, or consider the consequences either for contemporary map users or for the general history of cartography. With very few exceptions, archaeologists seem to have been blind to the possibility that maps made within traditional societies

36. George Peter Murdock, “The Cross-Cultural Survey,” *American Sociological Review* 5 (1940): 361–70. Murdock’s system grew into the Human Relation Area Files (HRAF), whose collection of cultural information of nearly one million pages at Yale University is accessible through a consortium of academic agencies. The collection is being systematically examined for evidence of the nature, evolution, and processes of spatial symbolic behavior at the State University of New York, Buffalo. See Ezra B. W. Zubrow and Patrick T. Daly, “Symbolic Behavior: The Origin of a Spatial Perspective,” paper prepared for a conference at the McDonald Institute and Corpus Christi College, Cambridge, United Kingdom, September 1997.

37. Kenneth A. Rice, *Geertz and Culture* (Ann Arbor: University of Michigan Press, 1980), 190.

38. Clifford Geertz, *Local Knowledge: Further Essays in Interpretive Anthropology* (New York: Basic Books, 1983), 118–19.

39. “Preface,” xv (note 2).

during the historical period might reveal sites, trails, even boundaries in ancestral prehistoric societies.

Why have maps been so clearly marginalized? Perhaps they are trivial, gross oversimplifications of the world that often stand in the way of our understanding of it. Alfred Korzybski's dictum, "A map is not the territory," has been echoed by many writers.⁴⁰ But *all* ways of knowing the landscape—speaking, writing, singing, painting—wear their own veils of representation. The medium tends to take on a life of its own beyond the message, so that it is not always possible to separate the representation from the represented. Indeed, Korzybski's dictum is now sometimes quoted only to overturn it.⁴¹ In a society where the map sometimes *is* the territory, and where we have created a "thicket of unreality which stands between us and the facts of life," to quote Daniel Boorstin, it is surely all the more important to understand the medium that is being mistaken for reality.⁴²

Another reason may account for the marginalization of maps in cultural studies. Anthropologists, historians, and psychologists interested in culture have not always appreciated the spatial manifestations of human behavior. Many of the artifacts illustrated in this book have thus not been recognized as conveying spatial information. Examples include the ceramics and textiles discussed in the chapter on Andean spatial representation, the symbolic codes in the shields of the Trobriand Islanders in Papua New Guinea, the *lukasa* memory boards of the Luba of the Kabongo region of central Africa, or the toas of the Lake Eyre region of south-central Australia.

A case could surely be made—and we hope this book of the *History of Cartography* will make it—that an indigenous culture's maps afford evidence of its ways of cultural worldmaking. The map is found at the interface of the

secular and the spiritual, it deals with the spatial world-views of societies (in the sense of both landscape and world order), and it often reflects a society's view of its history and its origins. The map is at the juncture of performance and artifact, of the visual and the aural, of the static and the dynamic. It sheds light on such deeply ingrained and universal human needs as wayfinding and feeling "in place." Maps have acted as versatile and essential tools for visual thinking about the world at global, continental, national, and local scales. They have shaped scientific hypotheses, formed political and military strategies, formulated social policy, and reflected cultural ideas about the landscape, and they have been agents of social and political power. They have also communicated, explained, and preserved information essential to the survival of cultures. With such attributes, it might seem that the maps in this book provide an evocative picture of how indigenous peoples view and represent their worlds. They illuminate not only questions of material culture but the cognitive systems and social motivations that underpin them.

40. Alfred Korzybski, *Science and Sanity: An Introduction to Non-Aristotelian Systems and General Semantics*, 4th ed. (Lakeville, Conn.: International Non-Aristotelian Library, 1958), 750. The theme has been taken up by S. I. Hayakawa, *Language in Thought and Action*, 3d ed. (New York: Harcourt Brace Jovanovich, 1972), 27–30.

41. David Turnbull, *Maps Are Territories, Science Is an Atlas: A Portfolio of Exhibits* (Geelong, Victoria: Deakin University, 1989; reprinted Chicago: University of Chicago Press, 1993).

42. For a recent discussion of this issue, see Geoff King, *Mapping Reality: An Exploration of Cultural Cartographies* (New York: St. Martin's Press, 1996), 78–102. King quotes Boorstin from Daniel J. Boorstin, *The Image: A Guide to Pseudo-Events in America*, 25th anniversary ed. (New York: Atheneum, 1987), 3.