

# 2 · Prehistoric Maps and the History of Cartography: An Introduction

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The study of prehistoric mapping in Europe and its borderlands, as in other continents, requires a new beginning. In the past scholars have been handicapped not only by a severe shortage of evidence but also by misguided attitudes toward the intellectual capacity of early man. In addition, they have failed to consider either the diagnostic characteristics of prehistoric maps or the principles that should be developed for their identification and study. Accounts of the origins of mapping have tended to be confused and contradictory, and any new study must necessarily adopt a critical viewpoint. It seems obvious that the origins of European cartography must be sought in the period before that of the earliest recorded maps in the historic societies and that if examples of maps have survived from the prehistoric period they will be found in the archaeological material.

Richard Andree seems to have been the first to focus specifically on the origins of mapping,<sup>1</sup> but it was not until the middle of the twentieth century that the real problem was diagnosed. In 1949 Lloyd Brown had remarked that “map making is perhaps the oldest variety of primitive art . . . as old as man’s first tracings on the walls of caves and in the sands.”<sup>2</sup> Yet it was not until 1951 that Leo Bagrow belatedly drew attention to the fact that, notwithstanding these prehistoric origins, actual information about early maps is hard to come by and that early maps had been known for a much shorter time than many other products of civilization.<sup>3</sup>

Surveys of the origins of mapping can be counted on the fingers of one hand. The first of three pioneering works is Andree’s monograph, which, despite its promising title, “Die Anfänge der Kartographie” (The beginnings of cartography), is a straightforward account of mapping by “primitive people.” It does not include any discussion of the relation between such mapping and the earliest development of the idea of the map or of spatial skills in the prehistoric period, although these were obviously well developed by the time of the earliest historical maps.<sup>4</sup> Andree’s paper, which set the tone for much of the subsequent literature, starts with a comment on the way many “primitive people,” lacking the benefit of the magnetic compass, are nevertheless able to produce maps of surprising exactitude and accuracy. At-

tention is drawn to the two conditions present among “primitive peoples” that account for their cartographic abilities: first, an unparalleled sense of direction, related to their knowledge of the terrain; second, their technical skill in drawing. The main discussion concerns examples of “picture maps” (*Kartenbilder*), starting with Ainu sand maps and Eskimo maps and finishing with early Chinese and Japanese maps. Although the paper was later incorporated verbatim in one of his major works, *Ethnographische Parallelen und Vergleiche*, which also contained an informed chapter on petroglyphs from all over the world, Andree still did not link such images, most of which are prehistoric in date, with the origins of mapping concepts.<sup>5</sup>

The second of the pioneering works, Wolfgang Dröber’s “Kartographie bei den Naturvölkern” (Mapmaking among primitive peoples), appeared at the beginning of the present century.<sup>6</sup> Dröber’s title provides a more honest description of its preoccupation with examples of “primitive maps” rather than the origins of mapping. Dröber was obviously indebted to Andree<sup>7</sup> and, in particular, took up Andree’s comments on the basic skills

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1. Richard Andree, “Die Anfänge der Kartographie,” *Globus: Illustrierte Zeitschrift für Länder* 31 (1877): 24–27, 37–43.

2. Lloyd A. Brown, *The Story of Maps* (Boston: Little, Brown, 1949; reprinted New York: Dover, 1979), 32; five years previously, David Greenwood, “The First Graphic Art,” *Newsletter of the American Institute of Graphic Arts* 78 (1944): 1, had said that “cartography is not only the oldest of the graphic arts but also the most composite of them.”

3. Leo Bagrow, *Die Geschichte der Kartographie* (Berlin: Safari-Verlag, 1951), 14. The translation is from page 25 of his *History of Cartography*, rev. and enl. by R. A. Skelton, trans. D. L. Paisey (Cambridge: Harvard University Press; London: C. A. Watts, 1964).

4. Dating from about 3000 B.C.; see p. 57.

5. Richard Andree, *Ethnographische Parallelen und Vergleiche* (Stuttgart: Julius Maier, 1878), 197–221; idem, “Anfänge der Kartographie,” with figures (“Petroglyphen”) (note 1).

6. Wolfgang Dröber, “Kartographie bei den Naturvölkern” (Mapmaking among primitive peoples) (Diss., Erlangen University, 1903; reprinted Amsterdam: Meridian, 1964); summarized under the same title in *Deutsche Geographische Blätter* 27 (1904): 29–46.

7. In addition to Andree’s *Ethnographische Parallelen* (note 5), Dröber frequently cites his *Geographie des Welthandels*, 2 vols. (Stuttgart, 1857–72).

of “primitive peoples,” adding to the list one other condition—their sharp eyesight.

Finally came Bruno Adler’s Russian essay, “Karty pervobytnykh narodov” (Maps of primitive peoples).<sup>8</sup> Still

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8. Bruno F. Adler, “Karty pervobytnykh narodov” (Maps of primitive peoples), *Izvestiya Imperatorskogo Obshchestva Lyubiteley Yestestvoznaniya, Antropologii i Etnografii: Trudy Geograficheskogo Otdeleniya* 119, no. 2 (1910). This has never been translated from the Russian, and insofar as it is known at all to historians of cartography, it is probably through H. de Hutorowicz’s brief synopsis “Maps of Primitive Peoples,” *Bulletin of the American Geographical Society* 43, no. 9 (1911): 669–79. A better idea of the wide-ranging scope of Adler’s work may be derived from its contents, as tabulated here using Adler’s headings:

Chapter 1

1. “Orientation” in humans
2. [Navigational] markers
3. Drawing

Chapter 2

1. Maps of primitive peoples
  - A. Chukchi
  - B. Eskimos
  - C. Koryaks
  - D. Yukagirs
  - E. Yenesei
  - F. Samoyeds
  - G. Yuraks
  - H. Dolgane
  - I. Tungusii (Yenesei valley)
  - J. Yakuts
  - K. Russian peasants of Turukhansk Kray
  - L. Ostyaks
  - M. Gilyaks
  - N. Ainu
  - O. Karagas and Sayoti (?)
  - P. Mongols and Buryats
  - Q. Indians of North America
  - R. Indians of South America
  - S. Natives of Africa
  - T. Ancient Ethiopian (?) map
  - U. Australians
  - V. Oceanians
  - W. Maps of prehistoric peoples

Chapter 3. Maps of semicultured and cultured peoples of antiquity and a comparison of these with the maps of primitive peoples.

- A. Mexicans and Incas
- B. Assyro-Babylonians
- C. Ancient Jews
- D. Ancient Persians
- E. Ancient Indians
- F. Ancient Chinese
- G. Japanese and Koreans
- H. Ancient Egyptians
- I. Ancient Greeks
- J. Ancient Romans
- K. Ancient Arabs
- L. Maps of the Middle Ages
- M. An ancient Russian map
- N. Maps of Russian missionaries among the Yakuts

Chapter 4. Comparison of maps of primitive peoples with maps of literate peoples.

- A. Orientation according to the points of the horizon
- B. The compass

the only substantial work on the subject, it failed to become a seminal text. This may be attributed in part to the language barrier, but it was not a theoretical work, nor did Adler speculate in it about the origins of mapping. What it does contain is an important corpus of “primitive maps” gathered during the decade before its publication. These came from contemporary expeditions, especially those into Siberia; from a library and museum search throughout Europe; and from contributions sent in by American scientific institutions.<sup>9</sup> It also contains, in the wide range of Adler’s survey, germs of inspiration that could have stimulated further research (the section on maps and religion, for instance), but these have been left dormant. Notwithstanding all this promise, even Adler had very little to say under his section headed “Maps of Prehistoric Peoples.”<sup>10</sup>

It was here, in a largely undeveloped state, that the matter of prehistoric cartography rested for the most part until the 1980s. In the interval, only Leo Bagrow made any contribution to the subject, and even he devoted relatively little space either to prehistoric maps or

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- C. Auxiliary lines on a map
  - D. Observance of accuracy of distances and areas
  - E. *Nomina geographica*

Chapter 5. Materials, instruments, techniques, coloring of maps, etc., of primitive peoples.

- A. Material
  - a. Maps on sand, snow, etc.
  - b. Relief maps
  - c. Maps on stone
  - d. Maps on bark and birch bark
  - e. Maps on animal hides, cloth, and paper
  - f. Maps on chance objects
  - g. Stick maps
- B. Map-drawing instruments
- C. Map techniques
- D. The coloring of maps
- E. Geographical landscape portrayed on maps
  - a. Rivers
  - b. Relief of earth’s surface
  - c. Vegetation
  - d. Anthropogeographical features on the map
  - e. The animal world

Chapter 6

- A. Chief types of maps of primitive peoples
- B. The maps of primitive peoples as an educational aid
- C. Atlases of primitive peoples
- D. Maps in religion
- E. Capabilities of primitive peoples in cartography

Findings and conclusions

(Translated by Alexis Gibson, London.)

9. Hutorowicz, “Maps,” 669 (note 8), said this added up to fifty-five maps from Asia, forty from Australia and Oceania, fifteen from America, three from Africa, and two from the East Indies.

10. Adler, “Karty” (note 8), cols. 217 (3 lines only) and 218–20, thus taking up only three columns (one and a half pages) to dispose of the full range of his examples; Hutorowicz, “Maps,” 675 (note 8), however, said Adler gave “many pages” to a discussion of recently discovered maps. See pp. 64–66 for Adler’s comments on the Kesslerloch artifacts.

to the origins of mapping.<sup>11</sup> The various synoptic texts on the history of cartography that appeared later—for example, those of Herbert George Fordham, Lloyd A. Brown, Gerald R. Crone, and Norman J. W. Thrower—were equally brief.<sup>12</sup> All these paid lip service, usually in the opening paragraph, to what they saw as early man's "almost instinctive" ability to draw, though they neither supported such claims nor demonstrated their significance in connection with the origins of mapping. All started their histories of the map with the Babylonians and Egyptians, at the earliest, or with the maps of the classical period. All ignored the prehistoric period.

Thus the first confusion in the bulk of the literature on the earliest maps derives from a lack of proper attention to the distinction between prehistoric cartography and the "primitive" cartography associated with indigenous cultures in the historical period. Another basic aspect of the neglect of prehistoric cartography follows from that and is the second source of confusion, namely the almost exclusive use of anthropological sources by Andree, Dröber, Adler, and Bagrow. Archaeological evidence, unless encountered in the course of ethnographic studies in the New World,<sup>13</sup> was ignored, and European and Old World cartographic prehistory, to say nothing of that in other areas of the world, went largely unacknowledged.<sup>14</sup> The consequence of this bias was that early historians of cartography were distracted from searching the archaeological evidence for the first signs of cartographic activity. Instead, they concentrated on the regional distribution of largely contemporary indigenous maps. Had these authors made a clear distinction between prehistoric and historical indigenous, and had they appreciated the interdependence of interpretations of these two categories, their research might have substantially contributed to the study of the origins of mapping. Only Bagrow recognized the potential of such an approach, pointing out that "we must therefore look at the primitive tribes of today, whose cartographic art has stopped at a certain point in its development [and where] we may find evidence . . . by analogy for what happened in the Mediterranean world in earlier times."<sup>15</sup> Thus, for Bagrow, in the absence of contextual evidence from the prehistoric period itself, the major line of approach to prehistoric cartography would have to be through the maps of historical indigenous cultures. Nevertheless, this would be only a means to an end.

A third source of confusion arose from yet another blurred distinction, the lack of differentiation between the well-documented wayfinding and navigational skills of many indigenous peoples and the practice of making maps within these early societies.<sup>16</sup> Moreover, this whole discussion was clouded by the general acceptance of a Darwinian viewpoint, which stresses an irreversible evo-

lutionary sequence from primitive to advanced, savage to civilized, and simple to complex in thought and behavior.<sup>17</sup> Adler quoted Schurtz's condescending admission that some "rude and awkward attempts" at map-making may have been made in prehistoric times; Brown was led to see cartography as evolving "slowly and painfully" from obscure origins; while Fordham's choice of the word "savages" blocked further argument.<sup>18</sup> Their writings thus implied a contradiction. On the one hand was the claim regarding the antiquity of the art they described and on the other was the incapacity of the prehistoric "savages" to produce it. Refuge was taken in the word "instinct." As late as 1953, Crone could accept that "primitive peoples of the present day . . .

11. This treatment can be traced back to his first major publication, Leo Bagrow, *Istoriya geograficheskoy karty: Ocherk i ukazatel' literatury* (The history of the geographical map: Review and survey of literature), *Vestnik arkheologii i istorii, izdavaemyy Arkheologicheskim Institutom* (Archaeological and historical review, published by the Archaeological Institute) (Petrograd, 1918), where what he had to say about prehistoric maps took one page, "primitive" maps took another, and by page 3 he was discussing the clay tablet maps from Babylonia. This balance was maintained in his 1951 text *Geschichte* (note 3) and in his *Meister der Kartographie* (Berlin: Safari-Verlag, 1963), which is identical in content to the English version of 1964, *History of Cartography* (note 3). For details of his comments on European prehistoric maps see below, pp. 65–66 n.61, 72–73 n.90, 85.

12. Herbert George Fordham, *Maps: Their History, Characteristics and Uses: A Handbook for Teachers*, 2d ed. (Cambridge: Cambridge University Press, 1927); Brown, *Story of Maps* (note 2); Gerald R. Crone, *Maps and Their Makers: An Introduction to the History of Cartography*, 1st ed. (London: Hutchinson, 1953; 5th ed., Folkestone: Dawson; Hamden, Conn: Archon Books, 1978); and Norman J. W. Thrower, *Maps and Man: An Examination of Cartography in Relation to Culture and Civilization* (Englewood Cliffs, N.J.: Prentice-Hall, 1972).

13. For example, Alexander von Humboldt, *Views of Nature*, trans. E. C. Otté and H. G. Bohn (London: Bell and Daldy, 1872), said that the petroglyphs he found in the vicinity of the Orinoco could not possibly have been carved by the existing "naked, wandering savages . . . who occupy the lowest place in the scale of humanity" (p. 147) and concluded that they attest the area was "once the seat of a higher civilisation" (p. 20).

14. The exception being Adler's reference to the bone plaques from Schaffhausen, Switzerland, in "Karty," col. 218 (note 8), which was taken up by Bagrow, *Istoriya*, 2 (note 11), *Geschichte*, 16 (note 3), and *History of Cartography*, 26 (note 3).

15. Bagrow, *Geschichte*, 14 (note 3), and *History of Cartography*, 25 (note 3).

16. This distinction was pointed out by Michael J. Blakemore, "From Way-finding to Map-making: The Spatial Information Fields of Aboriginal Peoples," *Progress in Human Geography* 5, no. 1 (1981): 1–24, esp. 1.

17. On Darwinism in the history of cartography see Michael J. Blakemore and J. B. Hatley, *Concepts in the History of Cartography: A Review and Perspective*, Monograph 26, *Cartographica* 17, no. 4 (1980): 17–23.

18. Adler, "Karty," col. 220, n. 2 (note 8), refers to Heinrich Schurtz, *Istoriya pervobytnoy kul'tury* (History of primitive cultures) (Moscow, 1923), 657, translated from the German *Urgeschichte der Kultur* (Leipzig and Vienna, 1900); Brown, *Story of Maps*, 12 (note 2); Fordham, *Maps*, 1 ff. (note 12).

have an almost instinctive ability to produce rough but quite accurate sketches.”<sup>19</sup> Moreover, he conjectured, similar abilities would be found at the origins of map-making in the Middle East and around the shores of the eastern Mediterranean. Suggestions such as these ignored anthropological evidence. It is well known that indigenous peoples, far from relying on instinct, have developed elaborate and exacting, usually ritualistic, mechanisms to ensure the dissemination of the most valued knowledge within their society and its transmission from one generation to another. Such cartographic skills as these peoples have are not instinctive but are as much acquired and learned as those of members of modern societies.

The fourth confusion characterizing the literature concerns the relative importance and distribution of maps in prehistoric and indigenous societies. It is perfectly fair to point out, as did Dröber, that not all these peoples are equally “good” at cartography,<sup>20</sup> but further qualification is needed. Not all prehistoric and indigenous peoples choose to be interested in graphic forms of expression or communication.<sup>21</sup> It is also necessary to consider the influence of different physical environments on the mapping stimulus. Thus, it can hardly be considered fortuitous that the stick charts of the Marshall Islanders, which are still given prominence in virtually every text or paper touching upon the subject of indigenous mapping, come from Oceania, or the Eskimos’ carved maps from the frozen North; they both meet the demands of a highly specialized way of life involving regular navigation in extensive areas of undifferentiated terrain. Land-based tribes, at least those not living in the deserts, need no such artifices and have not normally produced them for their own use. Too much emphasis has been placed on these familiar and well-worn aspects of nonliterate cartography and too little on the nature of prehistoric maps and the origins of cartography.

The final confusion in the literature concerns the narrow interpretation of the function of both prehistoric and indigenous mapping. The tendency has been to assume that both these categories exclusively served what was perceived as a basic need, that of wayfinding. Until very recently, there was no real attempt by historians of cartography to understand indigenous societies on their own terms. Thus Fordham, in a tantalizing but abortive section on cartographic ideas, selected direction and distance as the crucial concepts in the genesis of maps.<sup>22</sup> For him, early maps were never more than route maps, in due course embellished with collateral information to give rise to the topographical map. Such an interpretation ignores well-known anthropological facts. The acknowledged skills of indigenous peoples at navigating without artificial aids, including maps, and the paramount importance to them of memorizing all know-

ledge, were glossed over.<sup>23</sup> Also ignored was potential insight into the function of prehistoric maps to be gained through prehistorians’ and anthropologists’ studies of rock art in the prehistoric and historical periods. These studies suggest that prehistoric maps may have been produced in a religious context, that matters of belief governed their execution, and that their function would have been abstract and symbolic rather than exclusively practical wayfinding and recording.<sup>24</sup>

Taking all these points together, we see that historians of cartography are on unfamiliar ground when it comes to a study of the origins of European cartography. They are faced with a new set of concepts and the need for a new approach. There are already signs of a change of attitude in the literature of the history of cartography. In 1980 P. D. A. Harvey’s *History of Topographical Maps: Symbols, Pictures and Surveys* was published.<sup>25</sup> In that year, too, Michael Blakemore and J. B. Harley warned of the “ever present danger . . . that we will apply our own standards unthinkingly to those of the cartography of the past.”<sup>26</sup> In the following year, Michael Blakemore went on to question why aboriginal (indigenous) peoples should draw maps at all when their directional skills were so developed,<sup>27</sup> and in 1982 an attempt was made to look again at the prehistoric maps in European rock art.<sup>28</sup> It is now time to reconsider the evidence for early maps and for the origins of cartography in a new light.

Taking the broadest view of graphic forms of spatial representation, evidence of early maps can be sought in many different types of art, artifacts, and cultural activities. It has been associated with a wide range of geographically scattered and temporally distributed cultures. Examples of prehistoric maps and maps made by indigenous peoples of the historical period have been reported in the literature of diverse subject disciplines

19. Crone, *Maps and Their Makers*, 15 (note 12).

20. Dröber, “Kartographie,” 78 (note 6).

21. Robert Thornton, “Modelling of Spatial Relations in a Boundary-Marking Ritual of the Iraqw of Tanzania,” *Man*, n.s., 17 (1982): 528–45.

22. Fordham, *Maps*, 1–2 (note 12), is followed by Crone, *Maps and Their Makers*, i (note 12), among others.

23. A point noted by Bagrow in *Geschichte*, 14 (note 3), and *History of Cartography*, 25 (note 3). See also Frances A. Yates, *The Art of Memory* (London: Routledge and Kegan Paul, 1966).

24. Mircea Eliade, *A History of Religious Ideas*, trans. Willard R. Trask (Chicago: University of Chicago Press, 1978), vol. 1, *From the Stone Age to the Eleusinian Mysteries*, chap. 1.

25. P. D. A. Harvey, *The History of Topographical Maps: Symbols, Pictures and Surveys* (London: Thames and Hudson, 1980).

26. Blakemore and Harley, *Concepts*, 22 (note 17).

27. Blakemore, “Way-finding” (note 16).

28. Catherine Delano Smith, “The Emergence of ‘Maps’ in European Rock Art: A Prehistoric Preoccupation with Place,” *Imago Mundi* 34 (1982): 9–25.

and preserved in map, museum, and archival collections as well as—in the case of rock art—in the field.

In this *History*, a working distinction is drawn between the maps associated with prehistoric and with indigenous societies within the historical period in both Old and New World contexts. The basis of the distinction involves the nature of the evidence. The primary source material for all prehistoric periods is by definition exclusively archaeological. For indigenous mapping, it is primarily anthropological and historical and only secondarily archaeological. The two classes of evidence are not, of course, mutually exclusive, and anthropological findings are crucial in illuminating the archaeological record of the prehistoric period.<sup>29</sup> Adopting this criterion, a more or less clear line, based on the appearance of writing in a culture, can be drawn, often but not universally, to mark the separation between the prehistoric and the historical eras. The present volume deals with the prehistoric period of only part of the Old World. The focus is on Europe, although the sweep is broadened to take in the adjacent parts of southwestern Asia and northern Africa. In these regions the prehistoric period ended approximately in the third millennium B.C., at the time of the appearance of Babylonian pictographs (about 3100 B.C.) and cuneiform writing (after 2700 B.C.) and Egyptian hieroglyphs (about 3000 B.C.), followed by Cretan pictographs (2000 B.C.).<sup>30</sup> It closed slightly later in China (ca. 2000 B.C.). In Southeast Asia and in Japan the arrival of writing and the dawn of the historical period was later still, being scarcely perceptible until the first century A.D. Thus, discussion of Asian prehistoric cartography is deferred until the second volume of the *History*, where it will take its place as a prologue to the great cartographic achievements of that part of the Old World. In the New World, and in many peripheral regions of the Old World, the prehistoric period continued—generally speaking—until the arrival of European voyagers, explorers, and settlers in the fif-

teenth century or later. Apart from some notable exceptions, such as Mayan pictographs and the use of an Old Javanese-based script in the Philippines before the arrival of Magellan in 1521, literacy came to these areas only with European conquest. It is appropriate, therefore, to delay discussion of these maps—both prehistoric and historical, of the Americas, Africa (south of the Sahara), Australasia, and Oceania—until they can be included in a discrete section in volume 4 devoted to the major period of European contact with many of those societies.

Although this division may seem unfamiliar to those accustomed to seeing all prehistoric and indigenous mapping treated as a prologue to the history of cartography proper, it is amply justified. The aim is to be able to describe both the qualitative individuality and the chronological sequence of the main contexts for such mapping in Europe, Asia, and the New World. For the New World, treating indigenous cartography in the context of Old World colonialism maintains the fuller historical perspective as well as the narrative arrangement of the *History* as a whole. Likewise, the following discussion of the origins of cartography, which precedes the survey of the prehistoric cartography of Europe (including Russia west of the Urals), the Middle East, and North Africa (with the Sahara), serves to bring into sharper focus man's earliest involvement in what is now recognized as cartography.

29. See below, chap. 4, "Cartography in the Prehistoric Period in the Old World: Europe, the Middle East, and North Africa," pp. 54–101.

30. Information on the different writing systems, their origins, and date of appearance for the present discussion is derived mainly from David Diringer, *The Alphabet: A Key to the History of Mankind*, 3d ed. rev. (London: Hutchinson, 1968), with reference also to Hans Jensen, *Symbol and Script: An Account of Man's Efforts to Write*, 3d ed. rev. and enl. (London: George Allen and Unwin, 1970). The relationship of the different forms of early writing in the Middle East is summarized in *The Times Atlas of World History*, ed. Geoffrey Barraclough (Maplewood: Hammond, 1979), 52–53.