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INDIAN MAPS

THEIR PLACE IN THE HISTORY OF PLAINS CARTOGRAPHY

G. MALCOLM LEWIS

References to the maps and mapping activities of North American Indians have appeared in scholarly writings for approximately two hundred years and in contemporary accounts of discovery and exploration for more than four hundred years.¹ The topic has received relatively little attention, however, from modern scholars.² In view of the recent expansion of Indian studies in both Canada and the United States, this lack may at first seem surprising. In part it reflects the fact that there are relatively few extant examples of Indian maps because Indians and most whites have tended to treat them as ephemera, not for the most part worthy of preservation. In part it also reflects both the geographical scatter of extant examples through the libraries, museums, archives,

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and private collections of Europe as well as North America and the problems of searching through the vast literature and the large number of dispersed archival collections in which accounts of the mapping activities of Indians are occasionally to be found.

It would be possible to write on this topic with reference to any major region of North America, but areas within and immediately adjacent to the Great Plains are particularly frequently represented on extant examples of Indian maps. While most of these date from the nineteenth century, some are of eighteenth-century origin, and the earliest (1602) of all the extant examples of Indian maps from within North America covers part of the southern Great Plains.

North American Indians were in no sense unusual among the world's historic nonliterate peoples in making things which we call "maps" and which undoubtedly had many of the functions we associate with maps. Mapmaking is a universal trait—an aspect of pictographic communication that, in Europe at least, probably originated in the Upper Paleolithic, perhaps as early as 20,000 B.P. Within nonliterate societies it probably did not have a clearly differentiated status until after contacts with whites in the

historic period. Throughout the world, white aliens solicited from native peoples geographical information about their *terrae incognitae*, and the response was frequently in map form. This experience was particularly common in North America, where Inuits and Aleuts as well as Indians conveyed information to whites in this way.

The "maps" of nonliterate peoples deserve far more attention than they have received to date in at least five contexts. (1) They are important cognitively for what they reveal about a people's spatial structuring and evaluation of the earth's surface. (2) For archeological purposes, they provide evidence upon which to base searches for settlements and other prehistoric sites. (3) They have ethnological significance as well, particularly regarding their roles within the religious, social, and information systems of indigenous peoples. (4) As historical documents, they should be studied for their roles in communications and negotiations between nonliterate native populations and alien whites. Finally (5), their cartographic importance lies in their influence on maps made by whites.

This article examines Indian maps in historical and, more specifically, cartographic contexts. It draws its evidence almost exclusively from within the American Great Plains and Canadian prairies, even though in some cases better examples are available from other North American regions.

POSSIBLE MAPS FROM PREHISTORIC TIMES

Peoples on the plains may have made maps in prehistoric times or incorporated simple cartographic principles in some of their graphic art. According to a recent comprehensive survey of North American Indian rock art,

Here and there [in the Great Plains region], meandering lines and other abstract elements on certain [rock art] panels have suggested maps to experienced observers since the designs appeared to correspond rather closely with the features of nearby natural forma-

tions such as the contour of a mountain range or the course of a river. In various parts of the country, including the Plains, Indians of the historic period not infrequently drew maps on material other than rocks. . . . It is possible [therefore] that on occasion rocks were used for the same purposes, but reasonably convincing examples of this type are very infrequently encountered.³

No completely convincing examples of maps in prehistoric Plains rock art are known, however, and it seems unlikely that any will be discovered. The reasons behind the ambiguity of the evidence are threefold. Of these, the first two are universal and arise from the properties of maps drawn by nonliterate peoples. Such maps are always structured topologically; that is, they do not conserve true distance or true direction. Likewise, they never consistently represent the relative physical magnitudes of topographical features; culturally significant but topographically inconspicuous features are prominently represented and vice versa. In the absence of other evidence it is therefore virtually impossible to match maplike patterns in rock art with patterns of features on the earth's surface. "Other evidence," in the prehistoric context, takes the form of unambiguous pictographic representations of locally or regionally distinctive topographic features, such as lakes with distinctive shapes, mountains with distinctive profiles, bold escarpments, or sharp breaks in vegetation. Unfortunately, plains rock art, as indeed the region's early historic Indian art, is deficient in such elements.⁴ For these reasons, the case for cartographic elements in prehistoric plains rock art is, and seems likely to remain, tantalizingly unprovable, yet at the same time irrefutable.

The northwestern Great Plains contain a number of pre- or protohistoric structures that are generally known as medicine wheels. Typically they consist of a central cairn (or small circle) of stones, from which radiate at unequal angular intervals stone lines of unequal length. At the distal ends of some of these are smaller stone cairns. The age and function(s) of these

structures are matters of debate, but according to at least one twentieth-century Indian informant they incorporated cartographic principles. Supposedly memorials commemorating the war exploits of great chiefs, the stone lines show the directions of each expedition, their lengths the relative distances covered, and the presence or absence of distal cairns whether or not any of the enemy were killed.⁵ This technique incorporates several of the cartographic principles employed by Chickasaw Indians in Mississippi in 1737 in conveying information to the French about intertribal relationships.⁶

The Skidi band of Pawnees provides a more certain example of the spatial arrangement of structures according to cartographic principles. Before these people were removed to Oklahoma from the middle Platte valley, the band was divided into several villages, each with a different shrine, the contents of which were determined by a specific star. The star gave its name

to the shrine, and the name of the shrine became the name of the village. Five villages formed a central group, and their relative positions were fixed by the relative positions of the stars that had given them their shrines. Around these were approximately seventeen other villages, each likewise located according to the position of its star relative to the others. In this way, the villages of the Skidi people on the earth were located as a reflected picture of their stars in the heavens.⁷ Each Skidi band possessed a sacred bundle, and within some of these were star charts painted on skin. One in the Field Museum, Chicago, is on tanned elk skin (fig. 1).⁸ It represents the positions of stars by four-pointed symbols, drawn according to five different magnitudes: eleven of the first order; nine second order; forty-four third order; and many more fourth and fifth order, which, unlike the others, are apparently distributed at random. Across the center of the chart is a

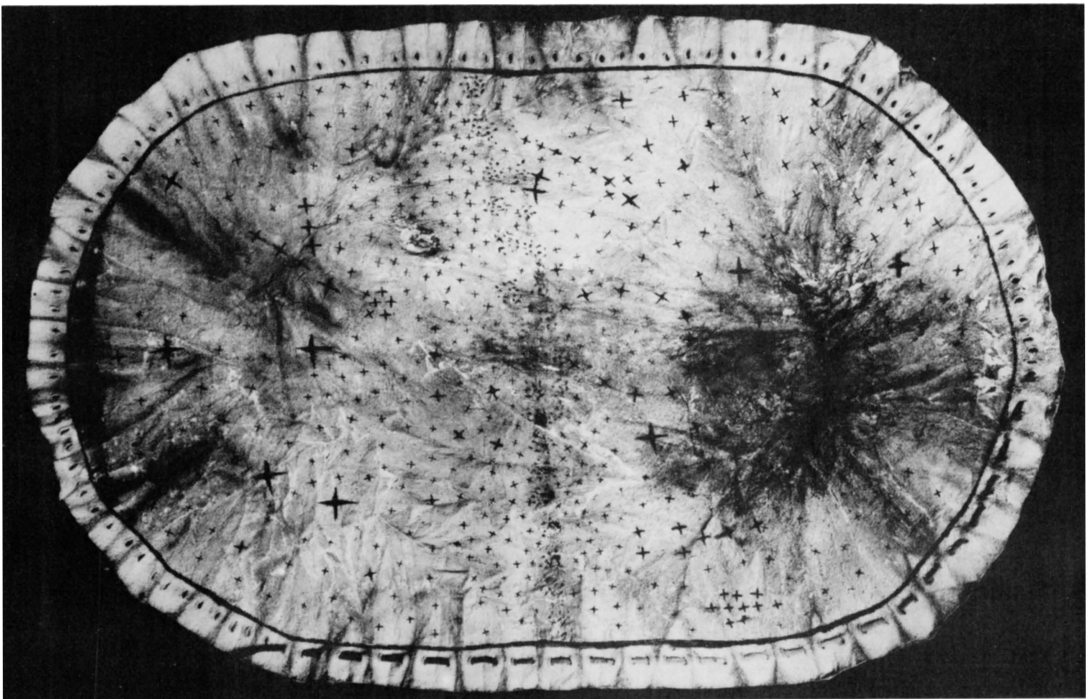


FIG. 1. Pawnee (Skidi band) celestial chart on elk skin, pre-1906 and supposedly much older. Original 65 x 43 cm. Courtesy of the Field Museum of Natural History, Chicago.

band of many small symbols representing the Milky Way. According to one analysis, the chart, which is supposed to predate any white influence, recognizes the same constellations that we do, shows seasonal changes, and records some double stars.⁹

INDIGENOUS MAPS OF HISTORIC TIMES

The Southern Ojibway Indians of northern Minnesota and western Ontario kept in their medicine bags birchbark scrolls, some of which have been fairly convincingly interpreted to be migration charts, representing in cartographic form the route via which the Ojibways believed they received the Midé religion—that is, from beyond the Great Salt Water (Atlantic Ocean), up the St. Lawrence River, through the Great Lakes, and from the head of Lake Superior via the St. Louis River to Leech Lake in central

Minnesota. Grossly distorted, highly schematic, and with many mythical elements, these charts can be related to the Great Lakes–St. Lawrence drainage system as we now know it, but more convincingly so to the west than to the east. They are of course topological and would probably not have been recognized as maps but for the oral evidence collected from twentieth-century members of the tribe.¹⁰

Given the evidence of indigenous mapping for religious purposes by the Skidis and the Southern Ojibways, it is reasonable to speculate that historians of cartography may still have much to learn from ethnologists and that, conversely, ethnologists might discover more about the functions of certain art and artifacts if they had a greater awareness of the ability of Indians to make maps and of the characteristics and functions of the maps that they are known to have made. Evidence presented by

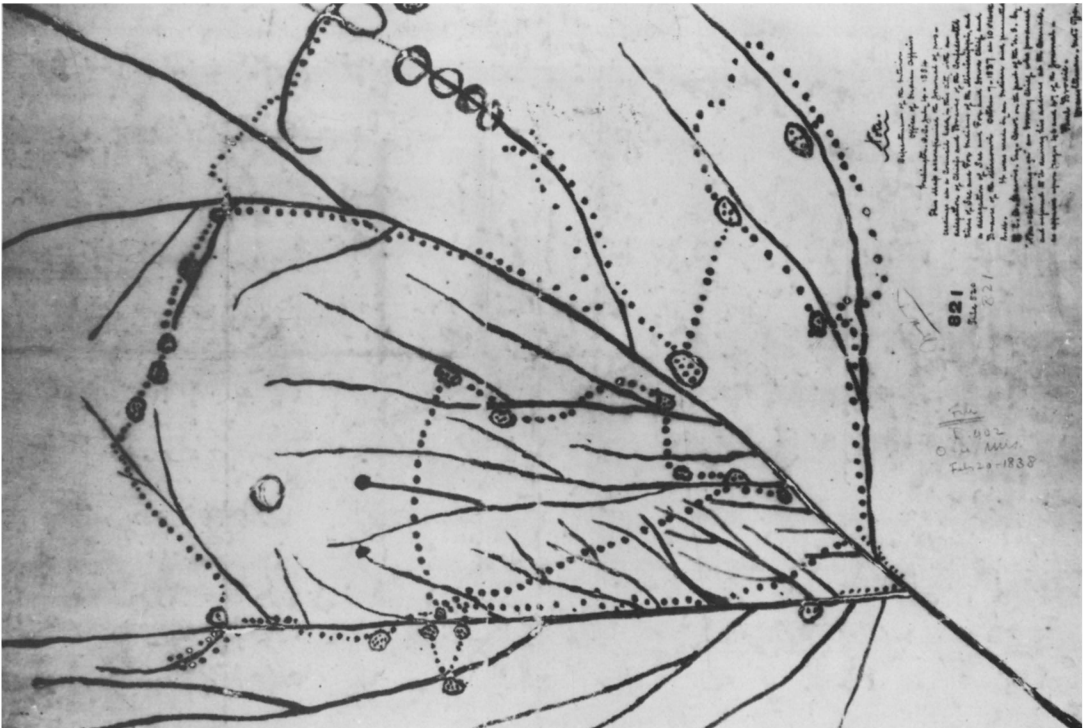
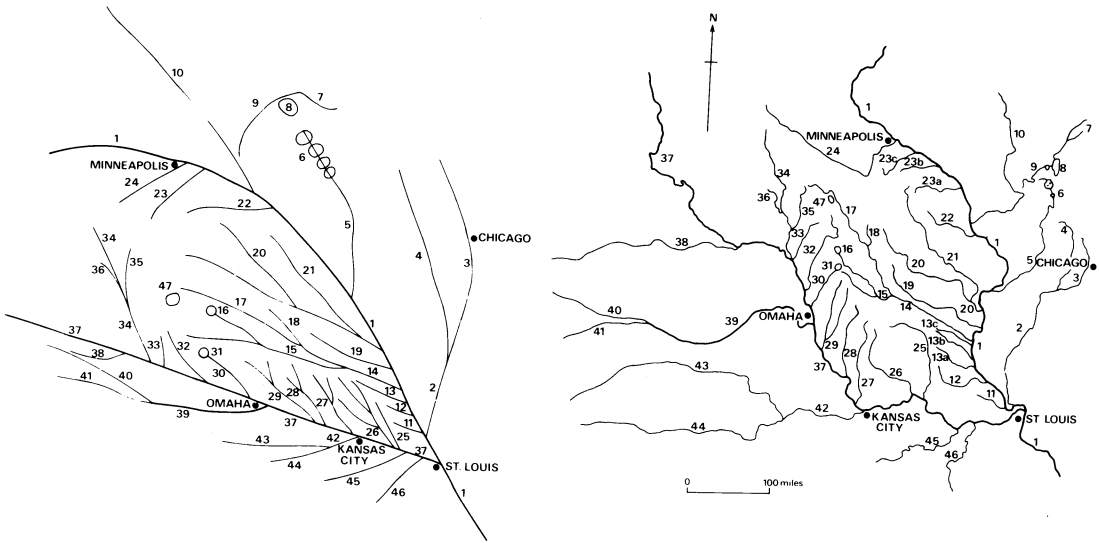


FIG. 2. *Non-Chi-Ning-Ga's (Iowa) map of tribal migrations in the upper Mississippi and Missouri drainage basins, 1837. MS original, 104 x 69 cm. Courtesy of the Cartographic and Architectural Branch, National Archives, Washington, D.C.*

Iowa Indians in the course of nineteenth-century treaty negotiations suggests that maps (both mental and artifact) were used as a means of preserving important information about the history of the tribe's migrations, although such maps are not known to have been preserved in medicine bundles (figs. 2 and 3).¹¹ At a more ephemeral level, Plains Indians certainly made and used maps for purely indigenous purposes. In the early nineteenth century, Comanche braves on the Texas plains were briefed before raids by older members of the tribe using maps.

Routes were planned in units of a day and the days were each recorded by notched sticks. A crude map was

drawn on the ground with a finger or piece of wood illustrating the journey of the day represented by the notched stick. The larger rivers and streams are indicated, the hills, valleys, ravines, hidden water holes and dry countries, every natural object, peculiar or striking. When this was understood, the stick representing the next day's march was illustrated in the same way, and so on to the end.



(a) Hydrography from Non-Chi-Ning-Ga's "map" of 1837.

(b) Hydrography from a modern map.

FIG. 3. Interpretation of the hydrography on Non-Chi-Ning-Ga's "map." The early map apparently includes the following present-day features:

- | | | |
|--|---|------------------------------|
| 1. Mississippi R. | 16. Storm Lake | 32. Little Sioux R. |
| 2. Illinois R. | 17. West fork Des Moines R. | 33. Floyd R. |
| 3. Des Plaines R. | 18. East fork Des Moines R. | 34. Big Sioux R. |
| 4. Fox R. (Illinois-Wisconsin) | 19. Skunk R. | 35. Rock R. (Minnesota-Iowa) |
| 5. Rock R. (Illinois-Wisconsin) | 20. Iowa R. | 36. Skunk Creek? |
| 6. Series of small lakes and swamps on the Upper Rock R. | 21. Cedar R. | 37. Missouri R. |
| 7. Green Bay? | 22. Turkey R. | 38. Niobrara R. |
| 8. Lake Winnebago | 23. (a) Root or (b) Zumbro or (c) Cannon R. | 39. Platte R. |
| 9. Fox R. (Wisconsin) | 24. Minnesota R. | 40. North Platte |
| 10. Wisconsin R. | 25. Chariton R. | 41. South Platte |
| 11. Cuivre R. | 26. Grand R. | 42. Kansas R. |
| 12. Salt R. | 27. Platte R. (Missouri) | 43. Republican R. |
| 13. (a) South Fabious or (b) Wyaconda or (c) Fox (Iowa) R. | 28. Nodaway R. | 44. Smoky Hill R. |
| 14. Des Moines R. | 29. Nishnabotna R. | 45. Osage R. |
| 15. Raccoon R. (with west and east forks) | 30. Boyer R. | 46. Gasconade R. |
| | 31. Blackhawk Lake | 47. Heron Lake |

Briefed in this way, a group of teenage braves, none of whom had previously undertaken the journey, memorized and successfully undertook a return journey of approximately one thousand miles from Brady's Creek, Texas, to Monterey, Mexico.¹² John Hunter, who as a captive had traveled between the Illinois Country and the Rocky Mountains with several tribes in the late eighteenth and early nineteenth centuries, later recorded that Indians in general could "delineate maps of countries with considerable accuracy."¹³ After ascending the Missouri River as far as the confluence of the Cheyenne River in what is now central South Dakota,

Jean Baptiste Truteau reported that the Indians made

delineations upon skins, as correctly as can be, of the countries with which they are acquainted. Nothing is wanting but the degrees of latitude and longitude. They mark the northern direction according to the polar star, and conformably to that, mark out the windings and turnings of the rivers, the lakes, marshes, mountains, woods, prairies and paths; . . . they compute distances by day's and half day's journeys.¹⁴

Throughout the nineteenth century some Plains Indians continued to make maps for

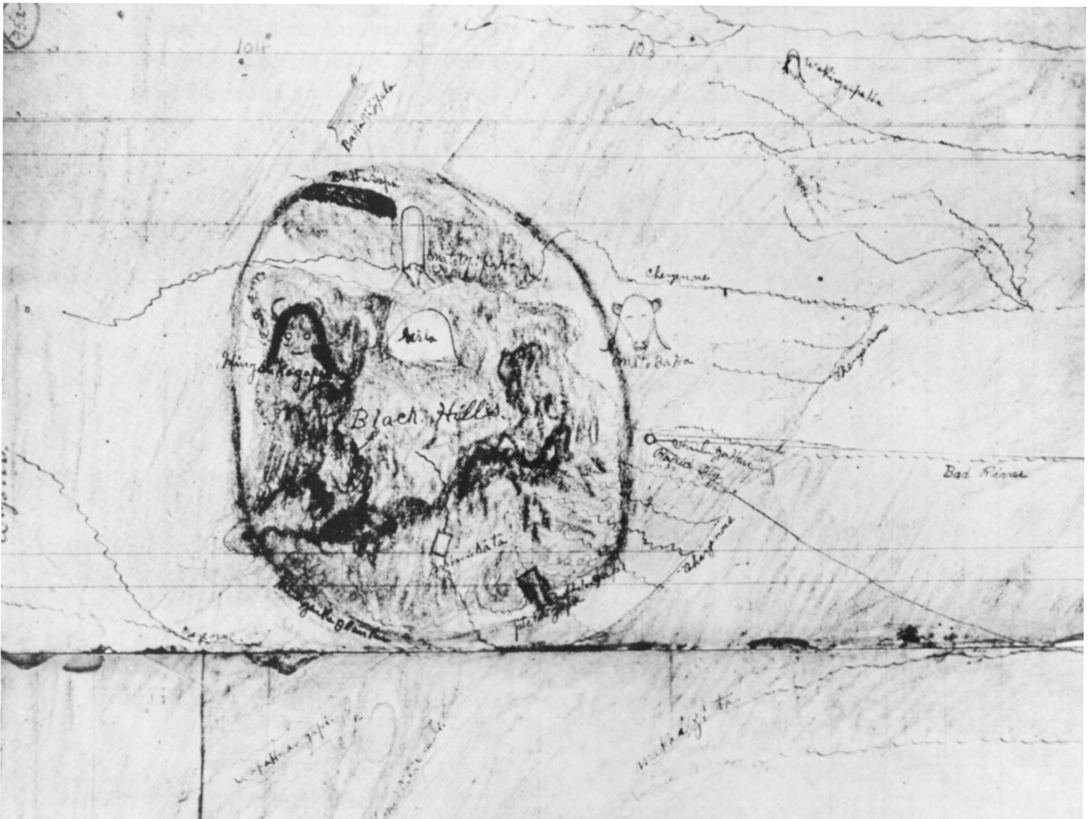


FIG. 4. Part of Amos Bad Heart Bull's (Oglala Sioux) pictographic representation of the Black Hills in the context of a more formal representation of the surrounding plains, done between 1876 and 1913. MS original, approximately 17.8 x 30.5 cm. Reprinted from *A Pictographic History of the Oglala Sioux* by Amos Bad Heart Bull, text by Helen Blish, by permission of the University of Nebraska Press, Copyright© 1967 by the University of Nebraska Press.

indigenous purposes, although acculturation increased as the century progressed. Sometime between the founding of Rapid City in 1876 and his death in 1913, Amos Bad Heart Bull, an Oglala Sioux, drew a map of the Black Hills and surrounding plains on which the former are represented pictographically and the latter cartographically (fig. 4).¹⁵ The almost circular Black Hills, with the traditional "Race Track" in yellow, are represented as an assemblage of symbolized features; for example, a bear's head for Bear Butte, a horned head for Ghost Butte, a barren rounded profile for Old Baldy, and a test-tube-like shape inverted on the top of a sketch of a bear's head for the towering cylindrical column of Bear Lodge Butte. In sharp contrast, the drainage networks on approximately thirty thousand square miles of the surrounding plains are represented in plan and with remarkable accuracy. Additional information includes the meridians 103° and 104° West. It would appear, therefore, that Amos Bad Heart Bull, who had been enlisted as a scout in the U.S. Army at Fort Robinson in 1890-91, when he must almost certainly have been exposed to official maps and surveys, placed an Indian-style pictographic map in the context of a Euro-American-style topographic map. In most examples of maps drawn by Plains Indians at this period, however, the mix is far less obvious.

CARTOGRAPHIC ELEMENTS IN PLAINS INDIANS' ART

Throughout the nineteenth century, cartographic principles were also incorporated in much of the two-dimensional representational art of the Plains Indians. That done by women tended to be abstract but men painted more naturalistically, frequently representing hills, buttes, men, horses, trees, and wild animals in profile against a planimetric representation of river and route networks. Many of the scenes were of important events in tribal history. At first they were always painted on skin, though this practice may have been a continuation of an earlier rock-art tradition.¹⁶ Later, the

Plains Indians began to use other materials. Almost twenty years after the event, White Bird, a Northern Cheyenne, painted on muslin a representation of the Battle of the Little Big Horn, in which tepees, Indians, horses, and soldiers of the Seventh United States Regiment were represented in profile but placed in relation to a plan of the Little Big Horn and its tributaries and the prebattle routes of Major General George Custer and Major Marcus Reno (fig. 5).¹⁷

Between 1878 and 1881, Howling Wolf, a Cheyenne, painted twelve colorful scenes in a sketchbook, reconstructing according to tribal lore significant events in his people's history. Two of these are presented against a cartographic background of rivers, wooded valley floors, buffalo trails, human tracks, and other features.¹⁸ One scene shows the first white men seen by the Cheyennes, supposedly more than one hundred years earlier on the Missouri River at a camp above the Cheyenne River. The other reconstructs the first trading for horses by the Cheyennes with the Kiowas on the Arkansas River. A few years before painting these scenes, Howling Wolf had been transported to Fort Marion in Florida. During his exile he was sent by sea from St. Augustine for medical treatment in Boston. Enroute he mailed to his father a prepaid postal card on which he represented his route from St. Augustine to a point off the Atlantic Coast somewhere to the north of Savannah, Georgia. Buildings, the steamer, and persons with their totems were represented in profile but positioned in relation to a map of the coastline and estuaries. The shape of these geographic features had been grossly distorted, partly, at least, because of the restrictive rectangular format of the small (3 in. x 5.3 in.) card.¹⁹

Of the 414 posthumously published drawings made by Amos Bad Heart Bull, the Oglala Sioux, between 1891 and 1913, nine are eminently cartographic.²⁰ One of the most interesting is in black ink and crayons and shows the setting of the Black Hills conference of 1876. The actual talks, seven Indian camps, and Fort Robinson are depicted in oblique perspective,



FIG. 5. *White Bird's (Northern Cheyenne) painting of the Battle of the Little Big Horn, painted in 1894-95. Original on muslin, 171 x 249 cm. Courtesy of the West Point Museum Collections, United States Military Academy.*

as are White and Crow buttes. Each is located in relation to the line of Pine Ridge, shown by means of a belt of pine symbols, and the valley system of the White River and its tributaries, shown not by the courses of the rivers but by deciduous tree symbols representing the valley-floor galeria forests of cottonwoods.²¹

In 1906, the secretary of the State Historical Society of North Dakota commissioned what must have been one of the last historical-record maps to have been made by a Plains Indian. Painted on canvas in eleven segments by a Mandan, Sitting Rabbit, it depicts various natural and past and present cultural features along a stretch of the Missouri River more than four hundred miles long, from about the mouth of the Yellowstone River to near the North Dakota-South Dakota boundary.²² The representation of the course of the Missouri is not original, but was derived somewhat freely from the sectional chart published by the Missouri River Commission

between 1892 and 1895, with which Sitting Rabbit had been supplied. Thomas Thiessen and his coauthors have recently described this map and stressed its significance in providing leads for later archeological surveys.²³ Apparently, however, they failed to recognize the unexplained use of color: blue for the channels of the Missouri and Heart rivers; orange for smaller tributaries; dark black riverine borders of variable width (floodplains?), which are sometimes separated from the channel by narrow bands of brown (bare sand and silt?); and brown (treeless?) islands. Most cultural features are shown in profile, but American settlements are depicted, albeit schematically, according to their grid plan.

One of the earliest surviving examples of a map depicting events dates from 1825 (fig. 6).²⁴ Sketched by an Oto Indian, Gero-Schunu-Wy-Ha, it shows events in that year on the middle Missouri River between Council Bluffs and the Little Missouri River and also traces the route

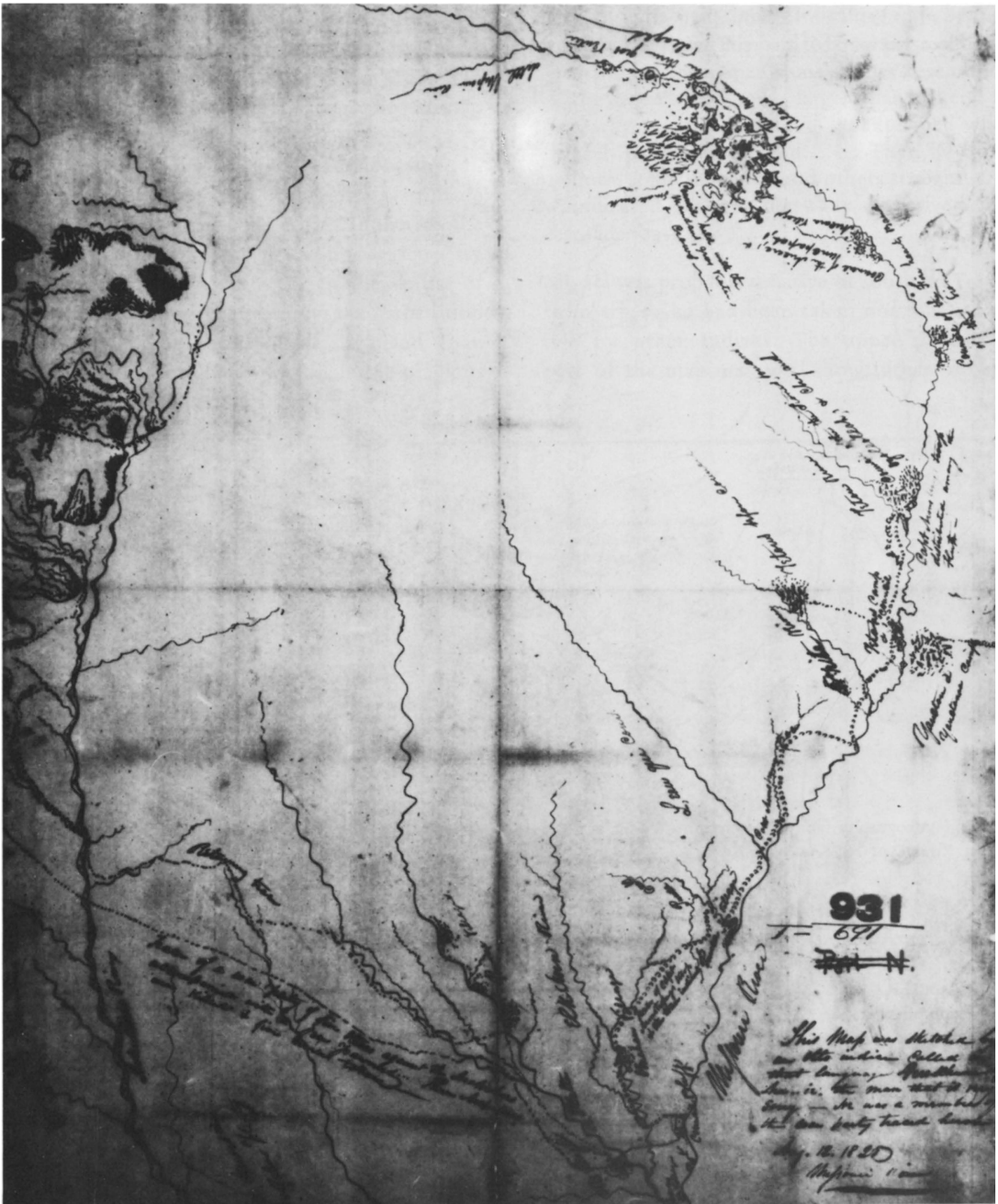
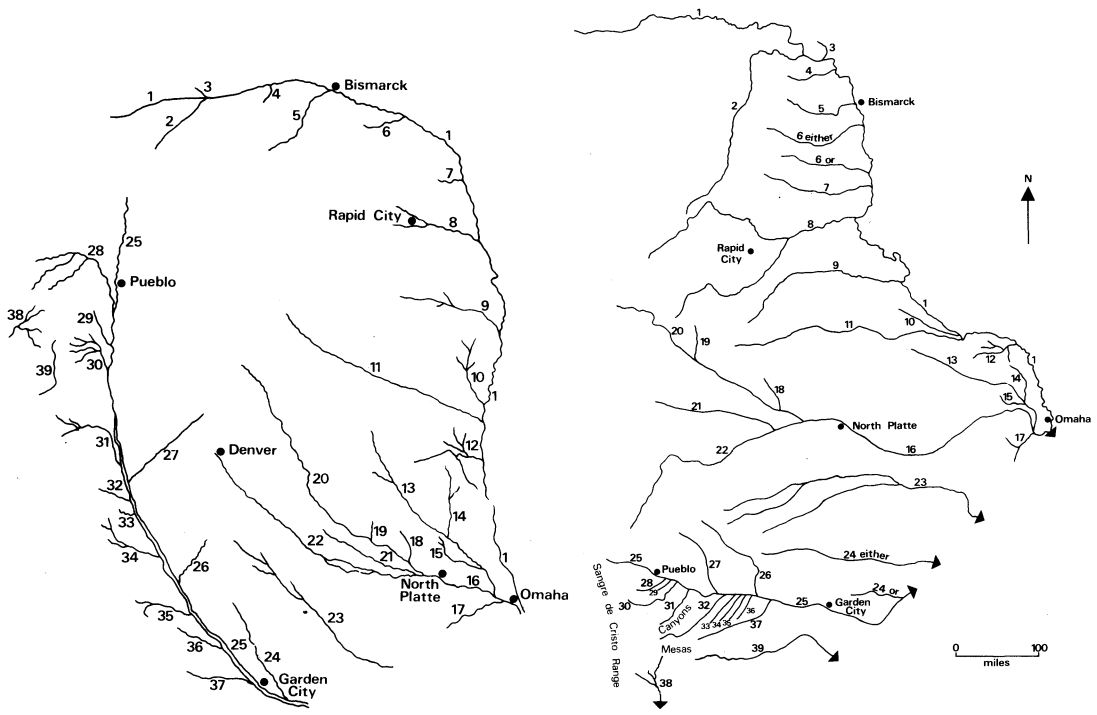


FIG. 6. Gero-Schunu-Wy-Ha's (Oto) map of events on the middle Missouri and upper Arkansas rivers, 1825. MS original with annotations, 53 x 42 cm. Courtesy of the Cartographic and Architectural Branch, National Archives, Washington, D.C.

of an Oto war party that attacked the Arapahos in the area between the upper Arkansas and upper Cimarron rivers.²⁵ The events are depicted in typical Indian pictographic style against a network of rivers. The gross distortion

of the network reflects the constraints imposed on the Indian by the rectangular sheet of paper (fig. 7a). Even so, it is a remarkable map, covering about a third of a million square miles of the northern and central American plains.



(a) Hydrography from Gero-Schunu-Wy-Ha's "map" of 1825

(b) Hydrography from a modern map

FIG. 7. Interpretation of the hydrography of Gero-Schunu-Wy-Ha's "map." The early map apparently includes the following present-day features:

- | | | |
|----------------------------------|--------------------------------|------------------------------|
| 1. Missouri R. | 14. Elkhorn N. Fork | 27. Horse Creek |
| 2. Little Missouri R. | 15. Maple Creek | 28. Charles R. |
| 3. Douglas Creek | 16. Platte R. | 29. Sixmile Creek |
| 4. Knife R. | 17. Salt Creek | 30. Huerfano R. |
| 5. Heart R. | 18. Blue Creek | 31. Apishpa R. |
| 6. Either Cannonball or Grand R. | 19. Rawhide Creek | 32. Purgatoire R. |
| 7. Moreau R. | 20. N. Platte R. | 33. Rule Creek |
| 8. Cheyenne R. | 21. Lodgepole Creek | 34. Caddou Creek |
| 9. White R. | 22. S. Platte R. | 35. Mud Creek |
| 10. Ponca Creek | 23. Republican R. | 36. Clay Creek |
| 11. Niobrara R. | 24. Either Smoky Hill R. | 37. Two Butte Creek |
| 12. Bow Creek | (misconnected) or Walnut Creek | 38. Canadian R. (headwaters) |
| 13. Elkhorn R. | 25. Arkansas R. | 39. Cimarron R. (headwaters) |
| | 26. Big Sandy Creek | |

MAPS DRAWN FOR WHITES

Given the map-drawing ability of Indians in the already settled parts of North America, it is not surprising that from the outset explorers approaching and entering the Great Plains obtained information about its geography in map form from indigenous peoples.

The earliest of all extant examples (albeit in contemporary transcript form) of a map made on paper by a North American Indian at the request of whites was made in Mexico City on 29 April 1602 (fig. 8).²⁶ In the course of an official inquiry concerning the expedition onto the Great Plains made by Don Juan Oñate, governor of New Mexico, in the previous

year, a captured Indian named Miguel was asked to

mark with pen and ink on a sheet of paper . . . the pueblos of his land. Miguel proceeded to mark on the paper some circles resembling the letter "O", some larger than others; in a way easily understood he explained what each circle represented. . . . Then he drew lines, some snakelike and others straight, and indicated by signs that they were rivers and roads.²⁷

Miguel was probably a native of southern Texas, from where he had been taken north as a captive by other Indians. The upper right-hand part of the map may well show Indian villages

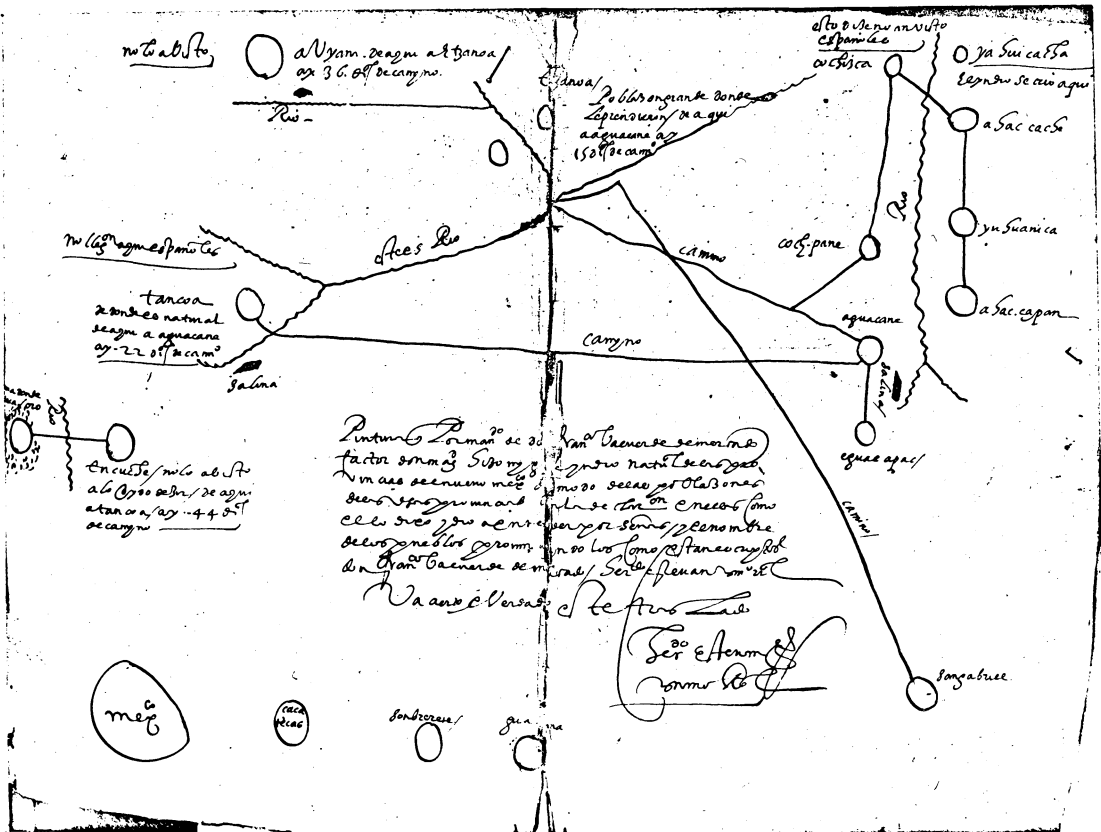


FIG. 8. Miguel's (Southern Plains or West Gulf Coast Indian) map of an area that includes San Gabriel, New Mexico, either the middle Arkansas valley or Texas coastal plain, and probably parts of Mexico, 1602. MS, contemporary transcript, 31 x 43 cm. Courtesy of the Archivo General de Indias, Seville, Spain.

on the west Texas coastal plain, but the Aces Rio certainly indicates the river far to the north where he was taken by the Spaniards. The most authoritative interpretation published to date suggests that the Aces Rio was one of the east-bank tributaries of the Arkansas River in northeastern Oklahoma.²⁸ I tend to favor the Trinity River some sixty miles or so downstream from Dallas, but in any case a careful interpretation needs to be undertaken with reference to detailed archeological, linguistic, and environmental evidence.

French, English, and American approaches to the Great Plains did not commence until approximately one to two hundred years later, but they also involved the use of information collected in map form from Indians. Indeed, one of the earliest pieces of non-Spanish evidence for the region's existence, as distinct from its environmental characteristics, may have been received in map form. In 1694, Lawrence van den Bosh sent a map of the lower Mississippi valley to Governor Francis Nicholson of Maryland. According to the accompanying letter, information on all the country "on the left side of the Messacippi River" on the map had been obtained "from a French Indian."²⁹ The Red and Sabine rivers are shown for an indeterminable distance upstream, but despite two legends indicating that they are only sixty-five leagues beyond the Sabine River, the "Mountains of Silver and Gold Mines" to the far left of the map must, on geological grounds, be beyond the southern plains in western Texas and southern New Mexico.

Approximately thirty years later, Nicholson, who was then the governor of South Carolina, received from an Indian chief a map of the whole of southeastern North America painted on a deer skin.³⁰ Showing rivers, coastlines, tribal locations, and Indian trails, it appears on first examination to terminate to the west at the Mississippi. However, squeezed between that river and the hind end of the skin are grossly distorted representations of the Red and Arkansas rivers, as well as named sites of Indian villages associated with the rivers. Of these villages, the following can be recognized with

reasonable certainty: on the Red, the Natchitoches (Notaukw), Kadohadacho (Katutaucejo), and Kichai (Kejoo); on the Arkansas, the Tawakoni (Tovocolau), Kansa (Causau), Pawnee (Pauncasau), and Comanche (Commaucerlau).

Neither of the maps received by Governor Nicholson indicate the existence of the grassland environment far up the Red and Arkansas rivers, but a map drawn in chalk in 1743 by Joseph la France, a "French-Canadese Indian," on the floor of a dining room at the Golden Fleece in New Bond Street, London, was among the first to indicate grasslands. La France, an ignorant metis who "knew nothing of figures," had spent the previous three years traveling, fishing, and hunting with Indians at and beyond the northeastern edge of the plains, and in culture he was almost certainly more Indian than French.³¹ His chalked map of the Lake Winnipeg-Nelson River drainage system was incorporated in an important printed map of 1744. Grossly distorted, and hence difficult to interpret, it places the "Assinibouels of the Meadows" to the west of what would appear to be Lake Manitoba—that is, in the grassy openings and wheatgrass prairies of southwestern Manitoba.³² Beyond, and to the southeast, were the Nation de Beaux Hommes (generally supposed to be the Blackfeet).

The French approach to the northern plains was also preceded by the solicitation of geographical information from Indians, and some of this was likewise in map form. It differed, however, from that supplied to the English in that some of it became incorporated in important printed maps, with unfortunate consequences for the growth of knowledge about the area. In a report to the governor of New France dated 10 October 1730, the fur trader Pierre Gaultier de Varennes de la Vérendrye mentioned obtaining information from various groups of Cree Indians.³³ Much of this information, concerning lands to the west and northwest of Lake Superior that were then virtually unknown, was in map form. Some of these maps have survived, though none, apparently, in their original form. The closest to an original is a crude compilation from several Indian

sources showing the drainage systems between the head of Lake Superior and the northern end of Lake Winnipeg.³⁴ The map indicates that the information for the area near the latter lake is based on a map drawn by Cree Indians. It shows prairies occupied by the Assiniboeles and Sioux to the west and southwest of what we may now infer to be Lake Winnipeg. This was probably the first map to indicate the existence of the wheatgrass prairies of the Canadian and Dakotan plains. Far less boldly the map shows a "River of [or from] the West," (*Flouve de L'ouest*), passing prairies on one side and a "Mountain of Bright Stone" (*Montagne de pierre Brillante*) on the other. This river terminates at the edge of the map, where "the waters begin to ebb and flow" (*Commencemens de flux et reflux*).

This map, or one or more transcripts of it, evidently came into the hands of three eminent French cartographers. In 1754 Philippe Buache merely reproduced it as an inset to his elegant map of western Canada.³⁵ In 1730 or soon after, Guillaume de l'Isle rescaled the map and pasted it as an insert on a manuscript map of North America.³⁶ In doing so, he placed Lake Winnipeg and the source of the Mississippi in the same longitude as the Gulf of California, and both the Mountain of Bright Stone and the source of the River of the West were located almost on the Pacific Coast. This false geography was widely disseminated in 1743, when it was incorporated in Nicolas Bellin's "Carte de l'Amerique Septentrionale."³⁷

The supporting evidence is far from conclusive, but it would appear that the Crees' information was correct according to their principles of mapping and that it was the French cartographers' interpretations of topologically arranged information which were wrong. The River of the West as conveyed by the Cree Indians was not what was later to become known as the Saskatchewan River (i.e., a great river flowing from the west) but the thirty-to-forty-mile-long Echimamish River, a small, east-bank tributary of the Nelson River by which Cree Indians, using the Hayes River, traveled west on an important route inland from Hudson Bay. I

further believe that the "Mountain of Bright Stone" was not a prominent peak within the Rocky Mountains but an important painted stone very near to the portage between the headwaters of the Hayes and Echimamish rivers; that the prairies near the Echimamish were not grassy openings in the forest, of the type already familiar to the French, but swampy openings, of which there are many to the east and northeast of Lake Winnipeg; and that "the place where the waters begin to ebb and flow" was not a tidal zone near the Pacific Ocean (Bellin's River of the West was actually represented as flowing toward the west) but the area around the twenty-pace-long portage between the Echimamish and Hayes rivers, which, to quote an early nineteenth-century explorer, was "remarkable for the marshy streams which rise on each side of it, taking different courses."³⁸

It is not my purpose to review in any detail the collection and use of Indian maps by the staff of the Hudson's Bay Company as they moved southwestward through the forests into the grasslands during the last few years of the eighteenth century; by the Spaniards during their brief period of exploration on the middle Missouri in the late eighteenth century; or by American explorers from Lewis and Clark onward.³⁹ Five maps embracing all or parts of the plains of what are now Alberta and Montana were collected from Blackfeet Indians by the Hudson's Bay Company surveyor Peter Fidler in 1801-1802, and at the Mandan villages in the late winter or early spring of 1805, William Clark collected two similar maps of the upper Missouri and Yellowstone basins.⁴⁰ These are relatively well known, but an even more remarkable map collected at approximately the same period has virtually escaped attention. Drawn on paper with a watermark dated 1801, it has names that appear to be in the hand of the fur trader David Thompson, as does the endorsement on the verso: "Indian Chart Rocky Mountains."⁴¹ Although there is no reason to doubt the source of information, the latter part of the endorsement is a misnomer, as the map shows the rivers and lakes from Hudson Bay westward

to the Canadian Rockies and from Lake Athabaska southward to the Great Plains in what are now Alberta, Saskatchewan, and the Dakotas—an area of more than one million square miles.

INDIAN INFLUENCE ON PRINTED MAPS

Only rarely can one demonstrate the influence of Indian maps on the maps of explorers and on the printed maps on which they in turn had an influence. Eighteenth- and early nineteenth-century cartographers seldom cited the sources of their information or explained the ways in which they selected from and modified it. For the most part one can only infer the Indian contributions. One line of inference is that maps made by whites often represented with some degree of truth the geography of areas well beyond the frontiers of exploration. For example, Peter Pond's map of 1785 shows the South Saskatchewan, Assiniboine, Qu'Appelle, Souris, and upper Missouri rivers and depicts, albeit schematically, the range of mountains, "called by the natives Stony Mount," in which the first and last of these rivers have their source.⁴² Having traded in what are now western Minnesota, southern Manitoba, and southern Saskatchewan between 1774 and 1777, Pond probably obtained this information from Indians.

Other lines of inference can be deduced from the general characteristics of maps made by Indians. First, Indians frequently failed to distinguish on their maps between river courses, portages, and trails, which to them were merely parts of a single communication network. Second, they would represent small rivers of strategic route significance as equal to or greater in importance than hydrologically major rivers. Third, arrows indicated the direction of travel, which, as often as not, was opposite to the direction of the river flow. Fourth, in the absence of any sense of or need to use absolute scale or direction, shapes and patterns were grossly distorted. When copied by explorers who had little knowledge of these characteristics and in-

corporated by cartographers who had even less, such patterns often appear to us, in the light of our knowledge of the geography, as so erroneous as to have been based on little more than myth. Had the plains not had an aboriginal population, this may well have been the case, but in fact, many of these patterns were derived from Indian sources. We need to reexamine early white maps of the region in order to recognize the seams where the *terrae semicognitae*, as communicated by the Indians, are welded to the *terrae cognitae* of the Europeans, Canadians, and Americans—for example, where rivers *appear* to cross, to bifurcate downstream, or to flow uphill.

Indian maps often incorporated pictographic conventions, especially those relating to quantity. Camps, villages, and tribes, for example, were frequently represented on their maps by clusters of dots (or of symbols) approximately proportional in number to their respective importance, or by symbols (such as circles) the sizes of which denoted relative importance. Such techniques are found on several of William Clark's transcripts of maps made for him by Indians, though we do not know whether he was faithful in the manner in which he copied them. It is interesting that Collot's "Map of the Missouri," which is generally supposed to have incorporated the results of Truteau's expedition up the Missouri in 1794-96, uses clusters of between two and five tepee symbols to denote the locations of Plains Indians tribes far to the west and northwest of the limit of Collot's explorations.⁴³ This device, together with the strange representation of the courses of the rivers of the central and northern plains, the naming of the "Yellow [Rocky] Mountains according to the Indians living on the Missouri," and the use of a different proportional symbol to represent the tribes of earth-lodge dwellers of the east-central plains and domed-house dwellers of the Great Lakes region, suggests that much of Truteau's information may well have been obtained directly or indirectly from Indians in map form—perhaps from those whose "delineations on skin" he praised so highly.⁴⁴

THE WAY AHEAD

Given that the outer limit of the mapping of the plains by whites in the eighteenth and early nineteenth centuries was frequently several hundred miles in advance of their exploration, it is reasonable to suppose that Indians supplied much of the information about these fringe zones. The more we understand about the maps known to have been made by Indians, the more we will understand about the whites' representations of these *terrae semicognitae* on their maps, about the false geographies that were thus disseminated, and about the consequences thereof for those who were then beginning to push forward the limits of the *terrae cognitae*. These relationships are an important source of Indian-white misunderstanding that, to date, has barely been recognized by scholars or, indeed, by those involved in litigations regarding Indian land claims. Historians of cartography ought to be contributing far more to the elucidation of these former misunderstandings, not only within the context of the Great Plains but for the continent as a whole. To do so they will need to increase their knowledge of both the real world and the Indians' worlds in the past. They will also need to apply more sophisticated conceptual approaches to problems of cartographic interpretation.

NOTES

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1. William Bray, "Observations on the Indian Method of Picture Writing," *Archaeologia* 6 (1782): 159-62; "The relation of the navigation and discovery which Captaine Fernando Alarchon made by order of the right honourable Lord Don Antonio de Mendoca Vizeroy of New Spaine . . ." [in 1540], in Richard Hakluyt, *The Third and Last Volume of the Voyages, Navigations, Traffiques and Discoveries of the English Nation . . .* (London:

George Bishop et al., 1600), p. 438. Bray explains and reproduces marks made by a Delaware Indian on a tree by the Muskingum River, which show several events of war in relation to the sites of Fort Pitt and Fort Detroit and the courses of the Allegheny, Monongahela, and upper Ohio rivers. Alarchon describes how, on request, an Indian on the lower Colorado River drew a map of the river and settlements upstream.

2. Early modern writings on Indian, as distinct from Inuit, maps and mapping include: Cottie A. Burland, "American Indian Map Makers," *Geographical Magazine* 20 (1947-48): 285-92; Delf Norona, "Maps Drawn by Indians in the Virginias," *West Virginia Archeologist* 2 (1950): 12-19, and "Maps Drawn by North American Indians," *Bulletin of the Eastern States Archeological Federation* 10 (1951): 6; and Robert F. Heizer, "Aboriginal California and Great Basin Cartography," *Report of the California Archeological Survey* 41 (1958): 1-9. Recent and in general more interpretative contributions include: John Warkentin and Richard I. Ruggles, *Historical Atlas of Manitoba* (Winnipeg: Historical and Scientific Society of Manitoba, 1970), pp. 72-73, 86-91; David H. Pentland, "Cartographic Concepts of the Northern Algonquians," *Canadian Cartographer* 12 (1975): 149-60; Wayne Moodie and Barry Kaye, "The Ac Ko Mok Ki Map," *The Beaver*, Outfit 307, no. 4 (Spring 1977): 4-15; Louis De Vorsey, "Amerindian Contributions to the Mapping of North America: A Preliminary View," *Imago Mundi* 30 (1978): 71-78; Thomas D. Thiessen, W. Raymond Wood, and A. Wesley Jones, "The Sitting Rabbit 1907 Map of the Missouri River in North Dakota," *Plains Anthropologist* 24, pt. 1 (1979): 145-67; and G. Malcolm Lewis, "The Indigenous Maps and Mapping of North American Indians," *Map Collector* 9 (1979): 25-32, and "Indian Maps," in Carol M. Judd and Arthur J. Ray, eds., *Old Trails and New Directions: Papers of the Third North American Fur Trade Conference* (Toronto: University of Toronto Press, 1980), pp. 9-23. To date there has been only one monograph on the subject: Rainer Vollmar, *Indianische Karten Nordamerikas: Beiträge zur Historischen Kartographie* (Berlin: Dietrich Reimer, 1981).

3. Klaus F. Wellmann, *A Survey of North*

American Indian Rock Art (Graz, Austria: Akademische Druck- und Verlagsanstalt, 1979), p. 131.

4. David S. Gebhard, *Indian Art of the Northern Plains* (Santa Barbara: The Art Galleries, University of California, 1974), p. 13.

5. Thomas F. Kehoe, "Stone 'Medicine Wheel' Monuments in the Northern Plains of North America," *Proceedings of the 40th International Congress of Americanists, Rome, 1972*, 11:184.

6. [A Chickasaw Indian], "Nations Amies et Ennemies des Tchikachas . . . le Sept Septembre 1737," transcribed by Alexander de Batz, MS, General Correspondence of Louisiana C.13, V.22, Archives des Colonies, Paris.

7. Alice C. Fletcher, "Star Cult among the Pawnee: A Preliminary Report," *American Anthropologist*, n.s. 4 (1902): 730-36.

8. Pawnee (Skidi band) celestial chart on an oval elk skin, undated but collected at Pawnee, Oklahoma, in 1906 from a Skidi named Big Black Meteor. Artifact, 65 x 43 cm., no. 71, 898-10, Department of Anthropology, Field Museum of Natural History, Chicago.

9. Ralph N. Buckstaff, "Stars and Constellations of a Pawnee Sky Map," *American Anthropologist*, n.s. 29 (1927): 279-85.

10. Selwyn Dewdney, *The Sacred Scrolls of the Southern Ojibway* (Toronto and Buffalo: University of Toronto for the Glenbow-Alberta Institute, Calgary, Alberta, 1975), chap. 5.

11. Non-Chi-Ning-Ga (Iowa), Untitled map of the Upper Mississippi and Missouri drainage systems between Lake Michigan and the Great Plains showing "the route of my (Ioway) forefathers—the land that we have always claimed," presented at a council between Indians of the Mississippi and Missouri in Washington, D.C., on 7 October 1837. MS, 104 x 69 cm., Record Group 75, Map 821, Tube 520, Cartographic Branch, National Archives, Washington, D.C.; "Map of the Country formerly occupied by the Ioway Tribe of Indians from a map made by Waw-Non-Que-Skoon-A An Ioway Brave," in Henry R. Schoolcraft, *Information Respecting the History, Condition, and Prospects of the Indian Tribes of the United States* (Philadelphia: Lippincott, Grambo, 1853), vol. 3, plate 30, facing p. 256.

12. Richard I. Dodge, *The Hunting Grounds of the Great West* (London: Chatto and Windus,

1877), p. 414.

13. John D. Hunter, *Manners and Customs of Several Indian Tribes Located West of the Mississippi*, . . . (Philadelphia: J. Maxwell, 1823), p. 209.

14. Jean Baptiste Truteau, "Remarks on the Manners of the Indians living high up on the Missouri," *Medical Repository*, 2d hexade, 6 (1809): 56.

15. Amos Bad Heart Bull and Helen Blish, *A Pictographic History of the Oglala Sioux* (Lincoln: University of Nebraska Press, 1967), no. 198.

16. Jacob J. Brody, *Indian Painters and White Patrons* (Albuquerque: University of New Mexico Press, 1971), p. 25.

17. White Bird (Northern Cheyenne), Untitled painting of the Battle of the Little Big Horn done on muslin in 1894-95, 171 x 249 cm, no. 407, West Point Museum, United States Military Academy, West Point, New York.

18. Howling Wolf (Cheyenne), Nos. 1 and 2 of a set of twelve paintings made in a commercial sketchbook between 1878-81, owned by Mrs. A. H. Richardson and on loan to the Joslyn Art Museum, Omaha; reproduced in Karen D. Petersen, *Howling Wolf: A Cheyenne Warrior's Graphic Interpretation of His People* (Palo Alto, Calif.: American West, 1968), plates 1 and 2.

19. Howling Wolf (Cheyenne), Postal Card addressed to his father Minimic at Fort Marion with a pictographic map done at sea in July 1877 after leaving Savannah, Georgia, showing coastline and major settlements along the route from St. Augustine, Florida, 7.6 x 13.0 cm, Francis Parkman Papers, Massachusetts Historical Society, Boston, Mass.; reproduced in Karen D. Petersen, *Plains Indian Art from Fort Marion* (Norman: University of Oklahoma Press, 1971), plate 43.

20. Bull and Blish, *Pictographic History*, nos. 103, 129, 170, 177, 197, 198, 218, 297, and 301.

21. Bull and Blish, *Pictographic History*, no. 197.

22. Sitting Rabbit (Mandan), Untitled painting on canvas of the Missouri River from Standing Rock Reservation to the Yellowstone confluence, MS [1906-1907], in seven sections, in all 44 x 707 cm, no. 679, State Historical Society of North Dakota, Bismarck.

23. Thiessen, Wood, and Jones, "Sitting Rabbit 1907 Map."

24. Gero-Schunu-Wy-Ha (Oto), A map of the middle Missouri and upper Arkansas Rivers with names and legends added by Captain William Armstrong, or a member of his military party of 1825. One legend states, "This Map was Sketched by an Otto Indian Called in that language Gero-Schunu-wy-ha, i.e. the man that is very Sorry—He was a member of the war party traced hereon—Aug. 12, 1825." MS, 53 x 42 cm., RG 75, Map 931, Cartographic Branch, National Archives.

25. W. Raymond Wood, *Notes on the Historical Cartography of the Upper Knife-Heart Region* (Columbia: American Archaeology Division, College of Arts and Science, University of Missouri, 1978), pp. 62–63.

26. This map, made by an Indian named Miguel, perhaps from within what is now southern Texas, has proved difficult to interpret, but it certainly includes San Gabriel in the Rio Grande valley, New Mexico, and possibly Mexico City; it almost certainly represents rivers, trails, and settlements on the Texas coastal plain and southern Great Plains. The map is endorsed "Pintura que por mand^{do} de Don Fran^{co} Valverde . . .," 1602. MS, 31 x 43 cm., Estante 1, Cajon 1, Legajo 3/22, Ramo 4, Archivo General de Indias, Seville.

27. George P. Hammond and Agapito Rey, "Don Juan de Oñate, Colonizer of New Mexico, 1595–1628," part 2, *Coronado Cuarto Centennial Publication, 1540–1940*, vol. 6 (Albuquerque: University of New Mexico Press, 1953), pp. 872–73.

28. Waldo R. Wedel, "Archaeological Remains in Central Kansas and Their Possible Bearing on the Location of Quivira," *Smithsonian Miscellaneous Collections* 101, no. 7 (1942): 18–20.

29. Lawrence van den Bosh, Untitled pen-and-ink manuscript map of the lower Mississippi valley that was accompanied by a letter dated North Sassifrix, 19 October 1694. MS, 32 x 38 cm., no. 59, Edward E. Ayer Collection, Newberry Library, Chicago.

30. Cacique (Chickasaw?), "A Map Describing the Situation of the several Nations of Indians between South Carolina and the Mississippi; was Copied from a Draught Drawn upon a Deer Skin by an Indian Cacique and Presented

to Francis Nicholson Esqr. Governor of Carolina." MS (ca. 1720), 114 x 142 cm., CO 700, North American Colonies General, No. 6 (2), Public Record Office, London.

31. Christian Brun, "Dobbs and the Passage," *The Beaver*, Autumn 1958, pp. 27–29.

32. "A New Map of Part of North America from the Latitude of 40 to 68 Degrees. Including . . . the Western Rivers and Lakes falling into Nelson River in Hudson's Bay as described by Joseph La France a French Canadese Indian who Traveled thro those Countries and Lakes for 3 Years from 1739 to 1742," in Arthur Dobbs, *An Account of the Countries Adjoining to Hudson's Bay* (London: J. Robinson, 1744).

33. "Continuation of the Report of the Sieur de la Vérendrye touching upon the discovery of the Western Sea (Annexed to the Letter of M. de Beauharnois, of October 10, 1730)," French and English versions in Lawrence J. Burpee, ed., "Journals and letters of Pierre Gaultier de Varennes de la Vérendrye and His Sons," *Publications of the Champlain Society* no. 16 (Toronto, 1927), pp. 43–63.

34. Untitled manuscript map of the rivers and lakes between Lake Superior and Lake Winnipeg of which the parts adjacent to Lake Winnipeg are indicated as "Carte Tracée Par Les Cris," undated but supposedly 1728–29. Original in the Archives Nationales, Paris; photographic copy in the National Map Collection, Ottawa, H2/902-19 (1728–29).

35. Philippe Buache, "Reduction de la Carte tracée par le Sauvage Ochagach et autres, . . ." an inset of "Carte Physique de Terres les plus eleves de la Partie Occidentale du Canada . . .," in *Considerations géographiques et physiques sur les nouvelles découvertes au nord de la grande mer . . .* (Paris: Imprimerie de Ballard, 1753–54), part 3.

36. Guillaume de l'Isle, Manuscript map of North America with pasted-on copy of an Indian map, undated but supposedly 1730, Bibliothèque Nationale, Département des Estampes, Paris, Serie Vd, vol. 22.

37. Jacques N. Bellin, "Carte de l'Amerique Septentrionale . . .," in Pierre F. X. de Charlevoix, *Histoire et description de la Nouvelle France . . .*, vol. 1 (Paris: Nyon, 1744).

38. John Franklin, *Narrative of a Journey to the Shores of the Polar Sea in the Years 1819,*

20, 21 and 22, vol. 1 (London: John Murray, 1823), p. 63.

39. Richard I. Ruggles of Queens University, Kingston, Ontario, has recently undertaken a major program of research on the history of the cartography of the Hudson's Bay Company between 1670 and 1870. Soon to be published as a Hudson's Bay Record Society publication, this includes an authoritative review of Indian maps and mapping on and around the Canadian prairies. See also James P. Ronda, "'A Chart in His Way': Indian Cartography and the Lewis and Clark Expedition," *Great Plains Quarterly* 4 (Winter 1984): 43-53. More information on this subject should become available within the next few years with the publication by the University of Nebraska Press of a new edition of the journals of the Lewis and Clark Expedition. Although nineteenth-century accounts by American explorers contain many references to overlanders soliciting route information from Indians, they are often unspecific as to the geographical extent and content of the information and the mode in which it was transmitted: John D. Unruh, Jr., *The Plains Across* (Urbana: University of Illinois Press, 1979), pp. 156-57. Unruh's doctoral dissertation treats the same subject in somewhat greater detail: "The Plains

Across: The Overland Emigrant and the Trans-Mississippi West, 1840-1860" (Ph.D. diss., University of Kansas, 1975), pp. 224-25.

40. Five transcripts of maps made by Black-foot Indians in 1801-1802, Peter Fidler's manuscript journal, E3/2, fol. 103-107, Hudson's Bay Company Archives, Winnipeg; two transcripts by William Clark of maps made by Indians in the winter or early spring of 1805, both showing the Missouri River from the Mandan villages to the Yellowstone River, Coe Collection, Beinecke Library, Yale University.

41. Manuscript map in ink on paper with the watermark "I. Taylor 1801" and endorsed on the verso, "Indian Chart Rocky Mountains," 38 x 50 cm., Manuscript Collection, Royal Commonwealth Society, London.

42. "Copy of a Map Presented To the Congress by Peter Pond a Native of Milford in the State of Connecticut . . . New York 1st March 1785 . . .," MS, 71 x 53 cm., Add. MS 15, 332-C, Department of Manuscripts, British Museum, London.

43. "Map of the Missouri . . .," in Georges H. V. Collot, *A Journey in North America*, . . . (Paris: A Berstrand, 1826), atlas volume.

44. Truteau, "Remarks on Manners of Indians."