

MAPPING AN ENCHANTED SOLITUDE: CARTOGRAPHIC REPRESENTATIONS OF YELLOWSTONE NATIONAL PARK, U.S.A.

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BACKGROUND AND OBJECTIVES

Created in 1872 as the worlds' first national park, Yellowstone National Park in Wyoming, U.S.A is an international model of natural and cultural resource protection as well as park development, management, and planning. Although the history and evolution of the park are well documented in the scholarly literature, the evolution of cartographic representations and geographic knowledge of the region is often overlooked. This paper addresses that gap in the literature by exploring historic cartographic representations of Yellowstone Lake, a prominent region in the park, and the social processes of gathering and representing geographic knowledge of that region.

Located in Yellowstone National Park, Wyoming, USA Yellowstone Lake is in a continental and mountainous location in the United States (Figure 1, Source: National Park Service). The lake is positioned atop the Yellowstone Plateau in the Rocky Mountains. It is the largest lake in Yellowstone National Park and one of the world's largest natural freshwater lakes. The lake's geological history leaves it centered over a large volcanic caldera. Along the shoreline of the lake there is a considerable amount of thermal activity owing to the lake's volcanic origins. Yellowstone Lake is 692 kilometers deep at its deepest point with an average depth of 225 kilometers (Whittlesey 1988). The lake is 20 miles (32 kilometers) long, 23 kilometers wide, and expands across a total of 219 kilometers square miles. With 177 kilometers of shoreline Yellowstone Lake has more than 121 kilometers of that shoreline beyond the reach of any major road (Bach 1991). The average elevation of Yellowstone Lake is 12,442 kilometers. Located at 44° 27' North and 110° 03' West, high winds, cold lake temperatures, heavy winter snowfall, and freeze over are all part of the lake's mountain climate.

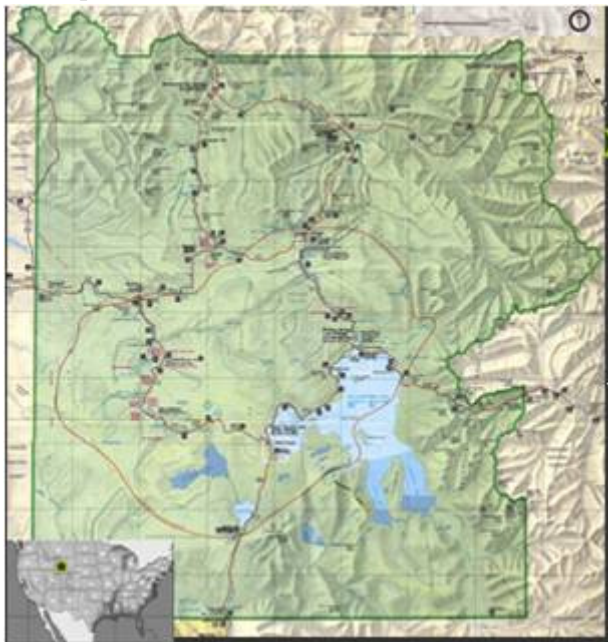


Figure 1.

Yellowstone National Park, Wyoming is an exceptional place. It is the first national park in the United States and the world. It is one of the larger United States national parks, including more than 2.2 million acres of land. Yet the cartographic histories of the park and, more specifically, Yellowstone Lake have received relatively little attention in the scholarly literature. Previous studies of the park have included the park's early exploration history. Yet, little of this history has focused exclusively on the cartographic evolution of mapping the park and discussing the social processes that contributed to those mapping strategies. The three objectives of this paper include 1) chronologically presenting the cartographic history of Yellowstone Lake and the evolution of representing the lake's features and 2) connecting this

cartographic evolution with the social processes of gathering, sharing, and representing geographic information and 3) discussing the implications and interplay between representing space, power and territoriality in creating and propagating spatial knowledge. This paper presents maps of this region in chronological order of publication from the first written map of Yellowstone Lake in 1810 to more contemporary representations of the region.

APPROACH AND METHODS

Historians, geographers and media scholars have proposed theoretical approaches to studying the creation and representation of geographic knowledge. Mapping is a cultural activity whereby social groups may record, represent, and communicate spatial knowledge (Harley and Woodward 1987). Further, this mapping involves the interplay of powerful social and cultural forces as groups compete to control and represent spatial information, at times using this aspect of map creation to lay claims to territory or to appropriate spatial knowledge from other groups and claim it as their own (Cosgrove 2001; Harley 2001; Harley and Woodward 1987; Wood 1993). This is not a passive process. For example, in the case of indigenous groups, they may act as informants for sharing geographic knowledge with other groups making claims to their territory but they might also resist this process and complicate it by offering confusing and conflicting information about locations. Piper (2002) describes this situation in the case of the power dynamics between explorers seeking to better understand new lands but distrusting native knowledge and indigenous groups that guided the explorers and shared geographic information about these locations. In the context of the United States, maps became a powerful medium for representing western lands and asserting territorial claims to this region as explorers, settlers, and Native Americans competed for territorial claims (Schulten 2001).

Several cultural and historical geographers suggest the importance of studying landscape change and changing landscape images over time. Donald Meinig (1979) offers a useful mode of interpretation when examining the early travel and exploration accounts of Yellowstone Lake. Meinig's ten versions of a landscape decipher how different intellectual traditions inform the viewing and appreciation of a landscape. This mode of analysis is useful for early travel accounts since early explorers produced different verbal and visual depictions of Yellowstone Lake. These varying descriptions arise from a combination of elements that include, but are not limited to: the route that they followed around the lake, the mountains that they climbed to gain a higher perspective on the lake, and the tools with which they measured the physical environment. The variety of experiences, traveling routes, and equipment resulted in diverse depictions of the Lake. In addition, these reported experiences of Yellowstone Lake were informed by the intellectual traditions carried in the minds of the explorers. In an age before remote sensing, a limited number of Yellowstone Lake maps are available since few individuals undertook the challenge of exploring, mapping, measuring, and depicting Yellowstone. Geographic information about the lake was gathered by a variety of people, over many years, with different motives for entering the area. Groups that contributed to the spatial understanding of the lake included Native American inhabitants and seasoned visitors as well as Euro-American trappers, prospectors, military personnel, and early adventurers. Understanding the route that travelers and explorers followed to and around Yellowstone Lake helps to illuminate their visual encounters with the lake and the maps they produced.

Using archival evidence, historical interpretation, and field-based observation, this paper explores the evolving social and cultural process of cartographically representing Yellowstone Lake from 1810 to 1991 and how this process came to not only define the circumference and depths of the lake but also the boundaries world's first national park. I collected my archival data from the Yellowstone National Park Research Library and Archives in Mammoth, Wyoming and the Montana State University Special Collections (Haynes Collection) at the Renne Library in Bozeman, Montana. This record set consists of both historical written records and photographs. Other records that I used included superintendent correspondence to concessionaires and park visitors and United States Department of the Interior guidebooks, information circulars, and maps found in the Yellowstone National Park Archive. I also used historic photographs from the Yellowstone National Park Photo Archives to supplement the mapping and interpretation of this national park landscape over time. I developed this set of methods because previous cultural landscape reconstructions for Yellowstone Lake had not been completed before and an accurate study of this area required consulting a variety of sources.

RESULTS

Native Americans have a long history of occupying using Yellowstone Lake. Often Native American people living in the area—Bannock, Crow, Sheep Eater, and Shoshone peoples—would relate their knowledge of the landscape to Euro-American explorers seeking routes of travel or information for mapping purposes. This is sometimes a difficult process because few of these maps have survived in

material form over time although there is “documentary evidence [that] describes specific instances when cartographic or geographic evidence was communicated to explorers by Indians” (Galloway 1998, 223). Osborne Russell, a Euro-American explorer, trapper, and mountain man of the American West kept a journal of some of his exploits in the American West. His record provides examples of communication about geographic information between trappers and Native Americans. During an encounter with a Native American group Russell identifies as the Tibuboes (People of the Sun):

One of them drew a map of the country around us on a white Elk Skin with a piece of Charcoal after which he explained the direction of the different passes, streams etc From them we discovered that it was about one days travel in a SW direction to the outlet or northern extremity of the Yellow Stone Lake, but the route from is description being difficult... (Russell 1955, 27).

This information not only served as geographic guidance for the trapper but it also represented a type of collaborative mapping between peoples.

By the time Euro-Americans began formal mapping and surveys of Yellowstone in the early 19th century, there were many non-European groups who lived near Yellowstone Lake and seasonally used its resources. Native Americans had a system of mapping the lake and understanding its location; however, these native systems of mapping were re-inscribed by Euro-Americans in an effort to colonize the area and eventually develop it. Native Americans shaped route finding at Yellowstone Lake by establishing and using trails that were later used in the development of roads, bridle paths, and camping areas.

The first appearance of Yellowstone Lake on a Euro-American map was a product of the transcontinental Lewis and Clark Expedition. William Clark’s *A Map of Part of the Continent of North America* (circa 1810) shows Yellowstone Lake as a large, rounded, mountain-encircled body of water labeled “Eustis Lake.” Although the members of the Corps of Discovery did not travel into the present day boundaries of Yellowstone National Park, the lake’s presence was known. Native Americans knew Yellowstone and used its resources on a seasonal basis. It is very likely that Native American groups shared some of their knowledge of the Yellowstone Plateau with Euro-Americans who then included this information on maps. Fur trapper and explorer John Colter traveled through the Yellowstone area after his assignment with the Lewis and Clark Expedition. After his travels, he shared his knowledge of the region with his former superior William Clark for inclusion in Clark’s manuscript map. This map served as a physical manifestation of Euro-American efforts to create symbols of their power and presence in the Yellowstone Plateau. It included references to Native American knowledge and occupancy of the area although it does not directly credit these sources. For example, a river just southeast of the lake is labeled as Mick-kaa-api-pee, likely an indigenous name for this feature.

Samuel Lewis’s 1814 engraving (FIGURE 2, Source: Yellowstone National Park (YNP) Archives) of William Clark’s manuscript map made some alterations to Clark’s earlier depiction of the lake. For example, Lewis’s 1814 engraving elongates the lake’s shape with greater variation along the eastern shoreline. Many of the Native American place names are more legible on this latter map because of the darker print and larger lettering.

Even though Clark did not travel to the lake during his time in the Yellowstone area, his inclusion of Yellowstone Lake on his map is important. Incorporating Yellowstone Lake into his map reflects the prominence of the lake in the lore and accounts of explorers in the area. It also reflects the use of second-hand, oral, and informal accounts of the lake provided by Native Americans and by at least one trapper. Instead, it is a printed verification of the cartographic contribution of trappers and Native Americans. By including Colter’s route in the map, Clark was referencing this source of geographic knowledge of the area. In turn, by including many Native American place names on his map and the location of some groups of Native Americans, Clark was recording their presence in the area and providing written proof of their contribution to mapping this area.

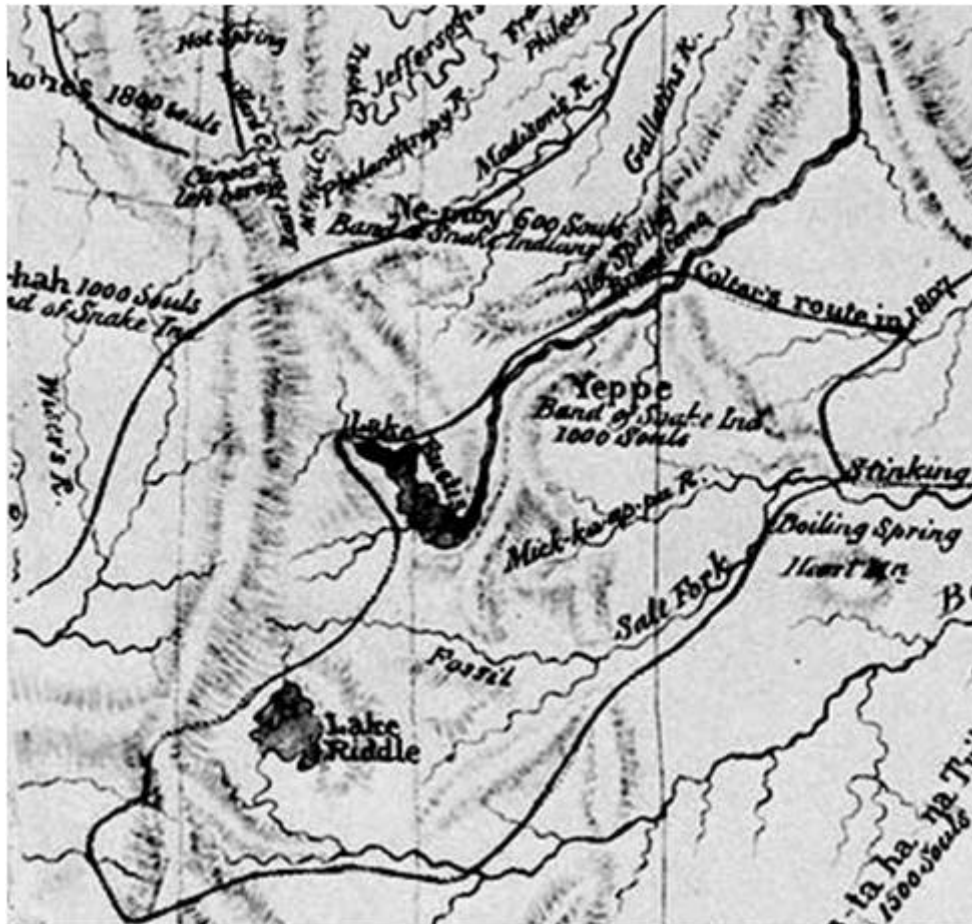


Figure 2.

By 1868, many people had traveled through the area and had provided “extensive...yet fragmentary and often contradictory” information from their sojourns (Haines 1974, 41). Many Native American hunters and Euro-American trappers, prospectors, missionaries, and military personnel traveled through the Yellowstone area. Although Yellowstone Lake became an increasingly well-known part of the intermountain West for fur trappers, army personnel, and other explorers (Haines 1974; Whittlesey 1988; Walsh 1993), depictions of the lake on maps did not change significantly until the later 1860s.

Throughout the 1860’s information about Yellowstone Lake continued to be gathered and recorded in various forms, however, this information was partial, inaccurate, and often exaggerated. In 1864, John C. Davis and a group of fellow travelers ventured “into the park just above the lake, and immediately found ourselves in the midst of the wonders of this enchanted land” (Haines 1974, 30). The lake also attracted stories that grossly exaggerated its character. In 1868, Leigh Freeman wrote that Yellowstone Lake was “so clear and so deep, that by looking into it you can see them making tea in China” (Haines 1974, 39).

Although such descriptions of Yellowstone Lake contributed to images of the region during the 1860’s, there were few new maps of the area produced during that time. In 1869, David Folsom, Charles Cook, and William Peterson organized a trip into the Yellowstone Plateau that marked a shift in this trend. This small group did not bring instruments to measure the features they encountered, but they did record their findings and their accounts of the trip reflect the accuracy of their observations. Their route followed the lake’s north shore.

Upon his return from the 1869 trip to Yellowstone, Folsom collaborated with Walter deLacy and created a revision of deLacy’s 1865 Yellowstone map. The result of their efforts was a map published in 1870 (FIGURE 3, Source: YNP Archives). The image of Yellowstone Lake has changed considerably in this map. The 1870 map illustrates a divided Yellowstone Lake with two arms or bays. The elongated southern arm is the receptor of the “Main Fork” river, and the bulbous west arm shows a “Hot Springs” area (probably West Thumb thermal area). Another major addition to this map is its depiction of islands at Yellowstone Lake (three are shown). These revisions reflect Folsom’s recent trip to Yellowstone Lake and his observations of the lake from the northern shoreline where islands were visible but the extent of the bays was obscured by the shoreline and forest.

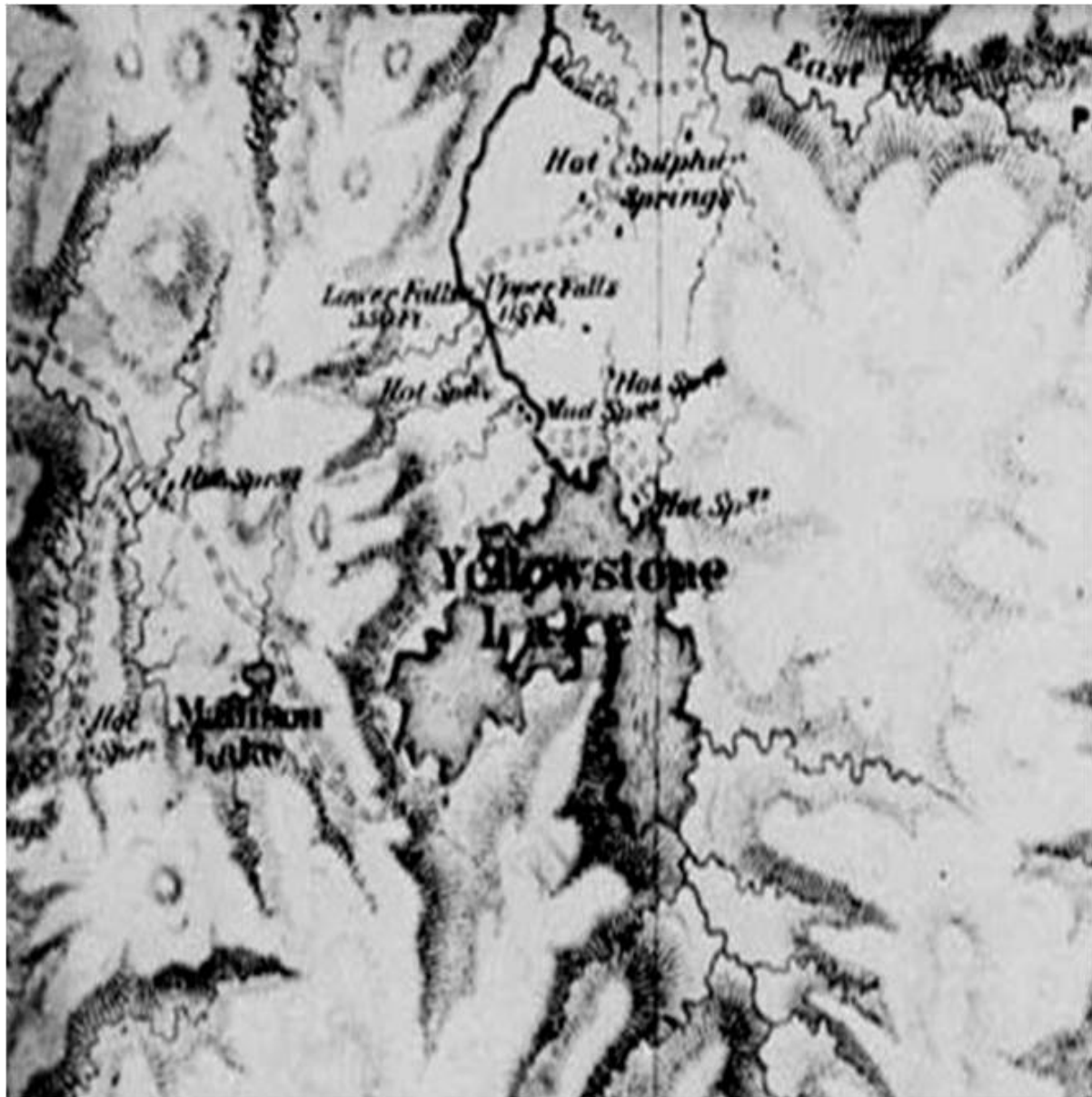


Figure 3.

The 1870 deLacy map also reveals the continued efforts of Euro-Americans to represent the area as an uninhabited wilderness open for potential economic development. This map shows a marked contrast to Lewis's engraving of William Clark's map from the early 1800's. Unlike Lewis's engraving (or Clark's manuscript map), deLacy's 1870 map does not record Native American place names or the locations of Native American groups. The 1870 map has a lot more empty spaces bereft of landmarks or labels which could be interpreted as unsettled landscapes or wilderness areas. This could be attributed to Native American depopulation across the Yellowstone Plateau throughout the 19th century from migration, illness, and armed conflict with advancing Euro-American settlers.

The year 1870 marked a shift in the method of accumulating mapping data for Yellowstone Lake. This was the year that the first organized "scientific" expedition entered the area. While the Folsom Expedition certainly was an organized group and their travels and observations aided the mapping effort of the lake, they did not enter the Yellowstone area equipped with the equipment, funds, and personnel to measure and catalog their observations. The Washburn Expedition or Yellowstone Expedition left Montana in late summer 1870 and returned from a trip into the Yellowstone region with volumes of new information about the area. Spurred by the accumulating first-hand accounts of the Yellowstone Plateau, advocates of western expansion deemed it necessary to fund and organize a formal group of explorers to the area. The demand for new knowledge of Yellowstone reflected the growing number of Euro-American settlers in the region, the interest in cataloging natural resources in the Yellowstone region, and growing conflict between Euro-American and Native American groups to use and access the area.

The Washburn Expedition traveled with the intent of exploring the region and documenting what they found: They brought scientific instruments to measure the local topography and kept written records of their experiences. Fearing hostile encounters with Native American peoples in the area, the expedition was accompanied by an army escort under the supervision of Lieutenant Gustavus Doane.

Two notable maps were published by expedition members from the 1870 Yellowstone Expedition: General Henry Washburn's 1870 Route of Washburn Party 1870 and Lieutenant Doane's 1870 Map of the Route of the Yellowstone Expedition (FIGURE 4, YNP Archives). The maps that Washburn and Doane produced were official government documents and they altered the cartographic representations of the lake from previous maps. The group traveled around the east, south, and western shorelines of the lake yet, the maps drawn by this group still show inaccurate contours for the lake. These errors are not due to the lack of exploring prowess by the group. During their adventures, they walked and rode around the south, west, and eastern lake shore, climbed several mountains to take barometer readings, attempted to float a raft on the lake, and camped each evening in the heavily wooded forest by the lake. The routes and the peaks that they climbed afforded views of many portions of the lake, but the heavily wooded and hilly areas adjacent to the lake obstructed views across the lake. Indeed, such birds-eye perspectives on the lake would not be realized until airplanes flew over the region.

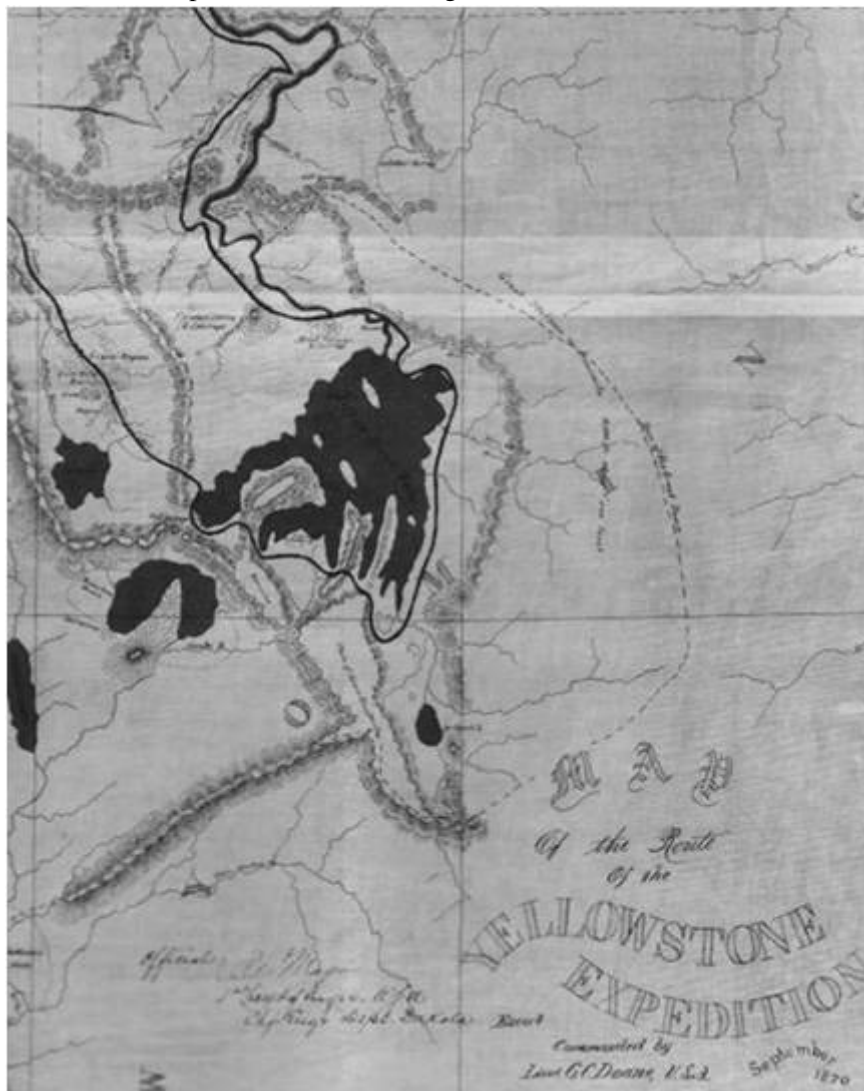


Figure 4.

Unlike previous maps of the area, the official maps improve upon the size and shape of the lake's arms. No longer merely a two bay area, the lake is shown to have four distinct narrow bays. The islands are also mapped more accurately. The area of greatest accuracy on Washburn and Doane's maps is along the east shore where the party spent most of its travel time. Although the party certainly encountered signs of Native American activity at the lake, neither map shows native trails, place names, or camps. The members of the party recorded references to active and current use of Yellowstone by Native Americans in

their journals but they also dismissed the impact and pervasiveness of indigenous groups in the area and from the map.

The Washburn Expedition was quickly followed by other organized, scientific survey parties into Yellowstone. In 1871, two government sponsored parties traveled to Yellowstone to document Washburn's findings and to gather more detailed geographic information. Under the auspices of the recently created United States Geological Survey of the Territories, Ferdinand V. Hayden led expeditions into the Yellowstone Plateau in 1871, 1872, and 1878. The 1871 expedition was a joint venture between the U. S. Geological Survey and the United States Army Corps of Engineers. Captain John W. Barlow and Captain David P. Heap led the U.S. Army Corps of Engineers group. Both the Hayden expedition and the Barlow-Heap expedition produced maps of Yellowstone Lake and combined, they gathered more data about the area than any previous Euro-American led expedition. Their contribution to the understanding of the lake and the Yellowstone area may be attributed to the extended time they stayed in the area and the large size of the groups.

Hayden completed a report of his expedition's findings-- Preliminary Report of the United States Geological Survey of Montana and Portions of Adjacent Territories; being a Fifth Annual Report of Progress (Preliminary Report)—which included many of the sketches and written observations taken by the group. His report was published in 1872 and it included a map of Yellowstone Lake drawn by E. Hergesheimer (FIGURE 5, Source: YNP Archives). The U.S. Corps of Engineers also produced a map from their travels around Yellowstone Lake. The Sketch of the Yellowstone Lake and the Valley of the Upper Yellowstone River reveals a very similar picture of Yellowstone Lake to the map created by the U. S. Geological Survey. The U. S. Geological Survey party launched the expedition geared with the tools and the personnel to make formal measurements of the lake; they traversed the shoreline of the lake, measured their distance with an odometer, and camped along the shoreline. Hayden's Preliminary Report was widely reproduced in guidebooks of Yellowstone National Park. Many early guidebook writers did not travel to the park, but instead copied passages and maps from early accounts of the area and used them to describe the environmental settings of the park (Meyer 1996, 43).

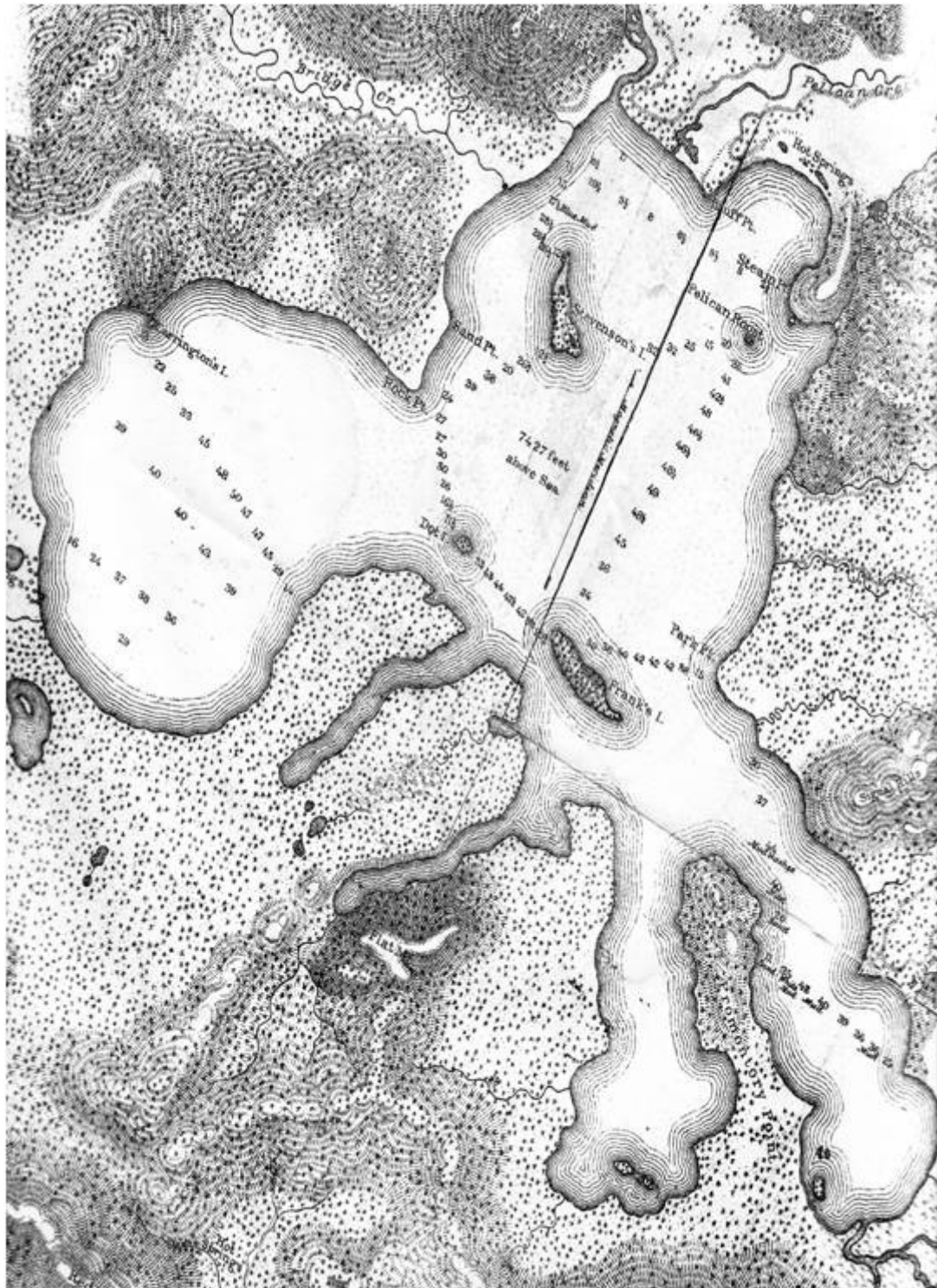


Figure 5.

After the establishment of Yellowstone National Park in 1872, there was still a demand to map its boundaries and features with greater detail. Government surveys were funded with orders to enter the park and gather more geographic data. The United States Geological Survey, established in 1879, improved the clarity of mapping from Hayden's reports (Walsh 1999, 271). The first topographic map of Yellowstone National Park was produced in 1896 by the U.S. Geological Survey. The Topographical Map of Yellowstone National Park and North Western Wyoming included many named features in the park and an enhanced topography of Yellowstone Lake. The 1896 topographic map accurately shows the lake's arms, islands, and topographical contours, and many place names. The 1896 topographic map was the first in a series of topographic maps of the lake, periodically updated with later versions appearing in 1961, 1972, 1982, and 1986, and 1991. Maps after the Hague surveys also showed a marked improvement in the

accuracy of topographical measurements around the lake; more sophisticated instruments were used to measure the lake's features.

After the establishment of Yellowstone National Park in 1872, maps of Yellowstone Lake reflected new place names and other cultural features. The new park attracted development and an increasing number of tourists. Early park superintendents, such as Philetus Norris were keenly interested in exploring the lake to scout for potential sites to develop. By the turn of the 20th century, Yellowstone Lake had been well traveled and mapped using European cartographic conventions. Maps that highlighted cultural features of the lake began to appear more regularly. An example of this style of map is P.W. Norris's map of 1881 (FIGURE 6, Source: YNP Archives). Norris's rendition of Yellowstone Lake includes a number of place names and localities not included on earlier maps. Examples of these types of features include numbered camps, large, circled stars printed near places of interest, trails, and place names such as "Concretion Cove." Norris created a series of these maps based on accumulated knowledge of the lake from previous travel accounts as well as from his own experiences boating and traveling around the lake. A version of this map accompanied each of his annual reports to the Secretary of the Interior and eventually he included the 1881 version in a Yellowstone guidebook he authored. Norris uses symbols and words that he attributes to the Native American presence at the lake but his representation of their former dwelling on the lake is more an act of appropriation than recognition of established and respected settlements. By the late 1880s, Native Americans were being relocated to reservations in a forced exodus from their seasonal homes at Yellowstone Lake



Figure 6.

CONCLUSION AND FUTURE PLANS

This paper argues that historical maps are more than simply guideposts for exploration or testaments to surveying technology; they are valuable texts for exploring the historical, social and cultural processes of representing multiple and often conflicting sources of geographic data. The results of this research deepen the understanding of how social processes work to shape cartographic representation and provide a detailed cartographic history of an overlooked but important region of the world's first national park.

Future plans for this research include creating a public education website that offers broad access to historical maps, photographs, sketches, historical journal accounts, park superintendent reports, and oral histories of Yellowstone Lake and, more broadly, Yellowstone National Park and region. Model websites for this project include online, free public access to historical documents and images such as Europeana.edu that offers public access to documents from many different European museums, libraries, archives, and audio visual collections (Europeana.eu, "About Us"). Gallica offers online visitors access to digitized documents at the French National Library and provides an excellent example of ways to structure and present vast amounts of historical materials in an organized and accessible format for the general public (Gallica.bnf.fr). The author of this paper recently completed a multi-year project for Grand Canyon National Park that included the creation of a public education website, community lectures, historic walking tour maps, and K-12 educational materials. This paper is intended as a launching point for a similar project focused on Yellowstone National Park that would make historic maps, journals, photographs, postcards and other archival materials available to the public and provide interpretation of these materials.

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