North American Mounds

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Abstract
North American mounds have been a topic of interest and curiosity since the 16th century when Europeans began their explorations of North America. Even though early written accounts of Native Americans and the mounds existed prior to the 19th century, they were largely ignored, and early 19th century theories regarding who built the mounds stem from racist beliefs that the Native Americans were inferior and incapable of building them. Ultimately, these attitudes towards Native Americans led to the “Myth of the Mound Builder” theories. In this paper, current research on mounds is discussed, including the discovery of new sites, the application of current methods, and the contemporary development of interpretations and theories. The future of mound research is explored, with regard to the present-day focus on preserving mounds and improving the relationship between Native Americans and anthropologists. Serpent Mound in Ohio is used as a case study in order to illustrate the changes in how mound research has been conducted.

Introduction
In the 16th century, when Europeans began their explorations of North America, they were astounded by the size and quantity of earthen mounds built by Native Americans and their ancestors. Beginning as early as 3500 B.C., ancient Native Americans constructed mounds throughout eastern United States and Canada, from the Great Lakes to the Gulf of Mexico (Young and Fowler 2000). These earthworks were large and small, geometric and figural; one of the largest mounds, Monk's Mound at Cahokia, a mound site in Illinois actually has a larger base circumference than the great pyramid of Khufu in Egypt, as well as the Pyramid of the Sun at Teotihuacán in Mexico (Young and Fowler 2000). Some of the mounds were found to have served as tombs, while others appeared to be elevated bases for houses, temples, or other communal buildings. These earthen structures numbered in the hundreds of thousands (Young and Fowler 2000).

In this paper, the earliest mound exploration and descriptions are included to give an overview of the history of mound related research. This is followed by an examination of the historical theories from the 19th century which reflect the social and political mores of the time which held that Native Americans could not have built the mounds. Current areas of research surrounding the mounds as well as present theories, methods, and interpretations are discussed. The future of mound research is also explored, including the need to conduct that research in an intellectual and social environment that includes mound preservation and the development of co-operative relationships between
Native Americans and archaeologists. A case study of Serpent Mound in Ohio is included to illustrate the changes in mound related interpretations, methods, and theories over time.

**Exploration and Earliest Descriptions**

**16th Century**

Hernando de Soto, a 16th century Spanish explorer, lead one of the first European expeditions into the modern-day United States and is the first European on record to have crossed the Mississippi River (Garlinghouse 2001). In his travels through the southeastern United States (including Florida, Alabama, Mississippi, Arkansas and Texas), de Soto encountered many different mound-builder peoples. He had previous experience as a conquistador in Central and South America, taking part in the conquests of Native peoples in present-day Nicaragua, Mexico and Peru (Waldman 2009). While de Soto’s expeditions were undertaken largely in pursuit of gold, his writings on the mounds remain extremely valuable as some of the earliest written accounts of North American mounds. He observed Native Floridians living in fortified towns with lofty mounds and plazas, and believed that many of the mounds were used as foundations for priestly temples (Garlinghouse 2001:42; Waldman 2009). One of de Soto’s men, known as the ‘Gentleman of Elvas,’ wrote the earliest known description of mounds, describing a house situated on a “very high hill which had been artificially built as a fortress” (Gentleman of Elvas 1933[1557]).

The Spaniard Garcilaso de la Vega provides a description of mound building in Florida in 1539:

> You may know therefore that the Indians of Florida always try to dwell on high places, and at least the houses of the lords and caciques are so situated even if the whole village cannot be. But since all of the land is very flat, and elevated sites... are seldom found, they build such sites with the strength of their arms, piling up large quantities of earth and stamping on it with great force until they have formed a mound from twenty-eight to forty-two feet in height (Vega 1951[1605]:170).

Vega’s account was written from oral recollections and other accounts from the men who had accompanied de Soto to North America, and in general, second-hand sources can be significantly less reliable than those provided by original observers (Silverberg 1968). Vega’s account was not published until more than sixty years after de Soto’s exploration, and was compromised by “flights of rhetorical fancy, doubtful details, and picturesque embellishments” (Henige 1986:2,4). Vega never set foot on the continent of which he wrote. Moreover, even first-hand sources have their problems: sixteenth-century world views of new peoples and a new continent, both largely viewed as opportunities for conquest, must be taken into consideration (McEwan 2006).

In the 1560s, artist Jacques Le Moyne accompanied French settlers to Fort Caroline in northeastern Florida where they observed Native American groups building mounds and making use of existing ones. Le Moyne created a series of watercolours depicting native life and the mounds. While most of his paintings were lost in a Spanish attack on Fort Caroline, engravings taken from them
were published in 1591 by a Flemish company. Among these was a painting depicting the burial of a Native American chief (see Figure 1) (Garlinghouse 2001:42; Silverberg 1968:19). However, some researchers, including J.T. Milanich, an American anthropologist and archaeologist specializing in Native American culture in Florida, do not believe Le Moyne was the creator of this image, nor that this image accurately represents native Floridians. Milanich, noted that the headdresses greatly resemble those worn by the indigenous Tupinamba people from Brazil. He also noted that the wooden clubs appear to be from the Amazon and that the shell on the top of the mound is not native to Florida (Milanich 2005).

17th & 18th Century

Despite the vast size and quantity of earthen mounds, they still went unnoticed by some early explorers, and most early accounts on ancient Native Americans make no mention of them. In 1673, the Canadian explorers Louis Joilet and Jacques Marquette floated right by the mounds in Cahokia without even noticing them, possibly assuming the mounds were natural hills. Father Louis Hennepin, who travelled with the La Salle expedition in 1698 and wrote a detailed account of Native American life in Cahokia, wrote nothing on the mounds (Young and Fowler 2000).

Maturin Le Petit, a Jesuit priest, and Le Page du Pratz, a French explorer, both observed and reported on the Natchez people (a group of Native Americans who were located in present-day Mississippi and who were part of the Mississippian culture as will be discussed further on) and their mounds. Le Petit was there in 1619, while du Pratz arrived in 1758. Both observers were amazed by the large mounds on which temples were built for the Natchez people to worship the sun and commune with their gods (Garlinghouse 2001).

Other later explorers made mention of the mounds as well, although, not all of them were able to observe the builders of the mounds. In 1769, the French general Georges Collot visited the area close to the Cahokia region, making a map to illustrate some of the mounds to the southeast. General George Rogers Clark, an American soldier, led an expedition to capture British posts during the American Revolutionary War. His expedition brought him to Cahokia in 1775 where he wrote a letter to the editor of American Museum magazine describing “the large works of the Mississippi”. Clark's diary also contained descriptions of a collection of mounds 10 miles south of Cahokia (Young and Fowler 2000).

Thomas Jefferson exhibited great interest in the mounds, excavating one on his property in Monticello, Virginia in 1784. His aim was to examine the contents of the mound in an attempt to determine their origin. Jefferson cut a trench through a small mound, observing layers of human bones at different depths which were separated by sterile layers of soil. He recorded the internal structure, and determined that there were around 1,000 skeletons which had been deposited over the course of hundreds of years. Jefferson’s excavation was unique in its time; he was not interested in looting the mound, he simply wanted to gather information to better understand who had built the mounds (Garlinghouse 2001).
19th Century

In 1804, William Clark, brother of George Clark, spent a winter at Camp DuBois (at the mouth of Wood River in Illinois) along with Meriwether Lewis during their famed expedition. There, after breaking through the ice of a frozen swamp, Clark stumbled across a circle of nine mounds he thought might be a Native American fortification. He also reported seeing large quantities of “earthenware” and “flints.” Today, this site is known as the Grassy Lake site, and only one mound still exists (Calloway 2003).

The first visitor to Cahokia to write a detailed account of the mounds was Henry Brackenridge who was deeply interested in the mounds. In 1811, Brackenridge visited St. Louis (known as Mound City for years due to its large quantity of mounds) and the surrounding area where he came across large concentrations of mounds. He wrote a letter to his friend Thomas Jefferson, describing his observations and later published his findings. After reaching a particularly large mound, Brackenridge, “was struck with a degree of astonishment, not unlike that which is experienced in contemplating the Egyptian pyramids. To heap up such a mass must have required years and the labours of thousands” (Brackenridge 1814).

In 1858, Canadian geologist and explorer, Henry Hind, opened a mound near Gainsborough Creek in Southwestern Manitoba after Native Americans told him it was an old Mandan Village:

“on a point between a small brook and the river we found a number of conical mounds…Our half-breeds said it was an old Mandan village…We endeavored to make an opening into one of the mounds, and penetrated six feet without finding anything to indicate that mounds were the remains of Mandan lodges” (Hind 1971[1860]:299).

While Hind did not acknowledge the Native Americans as the mound builders, his report did contain Native American oral traditions on the mounds origins, something unique to its time (Dyck 2009).

Collectively, mounds truly are a testament to the great architectural and engineering capabilities of ancient Native Americans, as well as illustrating their creativity, ingenuity and devotion to spiritual or religious beliefs (Garlinghouse 2001). However, it was not always believed that it was the ancient Native Americans who built the mounds. In fact, many people denied the possibility of Native American involvement in the mounds, despite the early accounts and drawings describing and depicting the mounds and the people who built them.

The Myth of the Mound Builders:
Historical Theories

Virtually all archaeologically relevant data collected up to and slightly after the 18th century was incidental to other pursuits. In most cases, the object of keeping notes on the Native Americans was to produce a “book of literary merit” (Willey and Sabloff 1993:12-13). For early explorers, the Native Americans and their culture were of interest and worth noting, and they wrote about the mounds up until the 18th century. However, due to various reasons which mostly reflect the social and political mores of the 19th century, these accounts were largely set aside and ignored. In the 19th century, the Native Americans as intelligent, sophisticated members of society were largely
dismissed. Mound builder theorists in the early 19th century had made the mound builder origins into a ‘romantic mystery,’ postulating that some sort of super race built the mounds, as it was inconceivable that the Native Americans had built such complex structures (Darnell 1974). This dismissal of Native Americans led to the “Myth of the Mound Builders.”

The Theories

Theories put forth in the 19th century on the origins of the mound builders, focus on who could have built the mounds, ranging from divine creation, to inhabitants from lost continents, to migrations from Old World civilizations and more. The individuals writing these theories were mostly well-educated professionals, ranging between politicians, physicians, and newspaper journalists and editors. One thing that most of the theorists had in common was that they all believed the true mound builders were a civilized, skilled and advanced race, far superior to what they believed Native Americans were.

In 1787, American botanist, naturalist, and physician, Benjamin Smith Barton published an account which stated that the mound builders were Vikings who had died off after settling the New World (Young and Fowler 2000). In 1820, Caleb Atwater, an American archaeologist, wrote that the mound builders were Hindus from India who later moved on to Mexico (Renfrew and Bahn 2004).

Josiah Priest, a leatherworker and American nonfiction author in the early 19th century, claimed that the mounds were built by Egyptians, Israelites, Greeks, Chinese, Polynesians, or Norwegians. In writing about a large mound from Ohio used for burial purposes, he declared that the magnitude of the mound and number of dead found in it denoted a population much greater than what could have been supported by ‘mere’ fishing and hunting. Priest questioned who could believe that the “common Indian” had created the mounds as they required so much labour and scientific calculation in their construction. (Priest 1833).

Ephraim Squier, a newspaper editor, and Edwin Davis, a physician, explored over 200 mounds in the Mississippi Valley and published their findings in a series of books created for the Smithsonian Institution’s Contribution to Knowledge series (Young and Fowler 2000; Squier and Davis 1973[1848]:VIII). While their accounts contain some of the most descriptive and significant information on the mounds, they were also proponents of the idea that mounds were created by a ‘super race.’ In Ancient Monuments in the Mississippi Valley, they declared that the mounds were created by a race that possessed a degree of knowledge far superior to that possessed by the hunter tribes of North America. They believed that the mounds were created for defensive or ritual and sacred purposes and exceeded anything of which the 19th century Native Americans were capable (Squier and Davis 1973[1848]).

Apart from the fact, however, that the Indians were hunters averse to labor, and not known to have constructed any works approaching in skillfulness of design or in magnitude those under notice, there is almost positive evidence that the mound-builders were an agricultural people, considerably advanced in the arts, possessing a great uniformity throughout the whole territory which they occupied, in manners, habits, and religion, -a uniformity sufficiently well marked to identify
them as a single people, having a common origin, common modes of life, and as an almost necessary consequence, common sympathies, if not a common and consolidated government (Squier and Davis 1973[1848]).

Another theory came from Ignatius Donnelly, a mid-19th century Minnesota congressman who claimed the mound builders were actually the survivors of the lost continent of Atlantis. Donnelly maintained that Plato’s description of a civilized, utopian island in Plato’s Republic was not a fable, but actually veritable history. Donnelly believed that Atlantis was where civilization began and that the mythological gods and goddesses of Greece were its rulers. Atlantis sank, but some of its inhabitants escaped and populated other areas of the globe, including North, Central and South America, Europe and India. He compared artifacts from around the globe with those of the mound builders, declaring similarities that link all the populations with Plato’s Atlantis. Similarities between the man-made structures in the Mississippi Valley and those in Egypt, Mexico and Peru were noted, and he held these to be irrefutable proof of the connection between Atlantis and the North American mound builders. According to Donnelly, hostile nations from the north attacked the mound builders, forcing them to retreat and fall back to their kindred races in Central America which is why they were no longer present in North America (Donnelly 1882).

While most theories of this time period denied that ancient Native Americans created the mounds, Samuel Haven, a librarian for the American Antiquarian Society, amassed a considerable amount of knowledge on American archaeology. This knowledge became the basis for his 1856 book in which he concluded that the mounds had been built by ancestors of the living Native Americans. Haven's argument was not readily accepted, but he paved the way for John Wesley Powell and Cyrus Thomas (Renfrew and Bahn 2004).

John Wesley Powell, who was appointed Director of the Bureau of American Ethnology in 1879, and Cyrus Thomas, an ethnologist and entomologist, were opponents of the mound builder myth. In 1881, Powel hired Thomas to be the ‘slayer of the mound builder myth’. Interestingly, Thomas initially believed in the existence of a separate mound builder race (Silverberg 1968). Over seven years, Thomas conducted a massive archaeological study of thousands of mounds in the United States and proved that the mounds were actually the work of many different native cultures all from North America. In his report, Thomas felt that Squier and Davis’ theories were not always justified. He discussed how the mound builder myth was continually adopted without question or protest for a long time. Thomas concluded that the mounds were built by various Native American groups who differed in customs, habits, arts and beliefs, and that they were largely sedentary (Thomas 1894).

Social and Political Mores and Theory in the 19th Century

The theories mentioned in the previous section state that whoever the mound builders were, they were a civilized and skilled people. This created a dilemma for the people writing the theories who did not want to believe that the Native Americans with whom they were familiar, and whom they deemed inferior to themselves, could be the descendants of
such advanced people. Their problem was in fitting contemporary Native Americans into the larger, European view of human history, instead of describing Native American customs and ways of life, and recognizing the Post-contact context that affected existing mound cultures. Anthropological theory in 19th century America was predominantly focused on a very linear ‘evolutionism’ (Darnell 1974) which was ultimately flawed by racial prejudice, ethnocentrism and ‘armchair speculation.’

Anthropologists during this time tended to evaluate other cultures in comparison to their own which they believed to be superior (Barrett 1996). Professional biases were compounded by the general public opinion that Native Americans “could not have produced that archaeologically attested art and archaeology of the Mississippi Valley” (Darnell 1974:174). Moreover, the production of many early written accounts on mounds were based on data supplied by untrained amateurs instead of information obtained through professionally and carefully conducted fieldwork. The myth of the mound builders arose easily from this research milieu; many views of the Native Americans were ethnocentric and written accounts were prejudiced by hearsay.

Current Research, Theories, and Methods and New Interpretations

Ethnologists in the 19th century failed to recognize differences between Native American tribes, and often agreed with the notion that having “seen one Indian, you had seen them all” (Bieder 1986:3). Descriptions of Native Americans became coloured by the theories and assumptions that Native Americans were inferior, a common belief at the time. These assumptions greatly affected the development of American anthropological and archaeological theory and method, which have undergone considerable changes since their beginnings, and subsequently affected interpretations of mounds (Bieder 1986). Today, old and new sites are all benefiting from new theories and improvements in archaeological methods. Previously excavated sites are being re-evaluated with different techniques to achieve more accurate dates and arrive at conclusions on past lifeways of the mound builders. Some of the more recent approaches and methods in mound research include cognitive archaeology, salvage archaeology, isotopic analysis, geoarchaeological approaches, and the relationship between mounds and astronomy.

Who Built the Mounds?: Adena, Hopewell, Mississippian

The evidence compiled by Thomas (1894) largely silenced any doubters questioning who built the mounds, providing archaeological evidence linking the mounds with ancient native Americans. More recent archaeological evidence has distinguished three major mound building cultures: the Adena, Hopewell, and Mississippian (Garlinghouse 2001).

The Adena culture radiated from the Ohio River Valley into Kentucky, West Virginia, Indiana, Pennsylvania, New York and Alabama between 1000 B.C. and 200 A.D. They were primarily hunters and gatherers, but they also grew plants, including sunflowers, pumpkins, and gourds. The Adena built conical and dome shaped burial mounds and some effigy mounds. They also crafted a range of stone, wood, bone, and copper tools (Waldman 2009).
Their successors, the Hopewell culture, were centered in Ohio and Illinois, and appeared around 200 B.C. until 700 A.D. The Hopewell tradition was more widespread than the Adena, and spread from their original centre as far as Wisconsin, Louisiana, Florida and New York. Hopewellians built larger earthworks than the Adena, including some as high as 50 feet and as wide as 200 feet. They built large effigy mounds and geometric enclosures. They also participated in long distance trade, incorporating obsidian, copper, and shells into their intricate artifacts, such as figurines, jewelry, and pottery. Hopewellians practiced agriculture, growing corn, beans, and squash (Waldman 2009).

From 700 A.D.-1500 A.D., the Mississippian culture thrived along the lower Mississippi River and spread north along major floodplains with communities which exhibited complex social stratification, ranked societies or chiefdoms, high population density and elaborate ceremonialism. They grew crops and built large ceremonial mounds and some mounds with possible fortifications (Garlinghouse 2001; Lewis and Stout 1998). These prehistoric groups shared an agricultural economy centred on maize, beans, squash, and other crops. Mississippian societies spoke different languages but shared symbols and decorative motifs. They formed a hierarchy of different sites and planned towns around mound centres. In general, the dominant architectural feature of Mississippian societies was one or more large plazas surrounded by buildings set on platform mounds (Lewis and Stout 1998:xi).

Technology & Methods

Thomas Jefferson is now credited with conducting the first scientific excavation in the history of archaeology (Renfrew and Bahn 2004). Since that time, archaeological methods have undergone significant changes and improvements, from excavation methods to dating methods. In more recent years, there has been a shift from excavating mounds to a focus on protecting and preserving them. There has also been a shift toward multidisciplinary approaches which will be explored further in discussing the Watson Brake site.

An interstate highway was set to be built through the Cahokia mounds in the 1950s which led to one of the first examples of salvage archaeology being used on a large scale. At the time, there was no possibility of rerouting the highway or of preserving the mound as highways had precedence over historic sites. According to the ‘Federal Aid Highway Act’ of 1956, a maximum of one tenth of one percent of the budget of federal project was set aside for ‘salvage archaeology’- a sub-discipline of archaeology designed to work within strict budgets and timelines with preserving and recording the past. The information found by archaeologists during the excavations of Cahokia led to the site being deemed too important to demolish, and it was subsequently saved. Today, the Cahokia site is considered a National Historic Landmark, a UNESCO World Heritage Site and is a popular tourist destination (Young and Fowler 2000).

Mound A at Toqua in Tennessee has been excavated several times. The initial dates obtained for this site in the 1970s have proven to be problematic due to substantial error ranges. However, additions and refinements to existing methodology, such as archaeomagnetic dating and AMS radiocarbon dating, have provided opportunities for obtaining new and more accurate dates for this site, placing the Toqua mound’s creation in the 10th century. Essentially, when
absolute dating methods were initially used, they were not as accurate as they are today, and many of the dates obtained when they were first introduced are now problematic for today’s interpretations of site duration and settlement systems (Koerner 2011). One problem with the dates had to do with sample size; a large amount of carbon was required in order to process a radiocarbon date and as such, limited what could be dated. This has been resolved with AMS dating, which allows for the use of much smaller samples. The cost was also high, and as there was not yet appropriate funding for research, this limited what could be dated. On top of all of this, radiocarbon dating technology in the 70s generally provided rather imprecise dates with error ranges which were usually in excess of up to one hundred years (Koerner 2011).

Isotopes accumulate in the body during an individual’s life from the food they ingest. Bone recovered from archaeological sites can be analyzed based on its isotopic value for information regarding the diet and nutrition of ancient peoples. Isotopic analyses of 272 human burials from a mound at Cahokia have revealed status and gender related differences. Anthropologists noticed that high status individuals ate much more animal protein and had a different diet from lower status individuals, although in general there appeared to be a large reliance on maize. Mass graves of young adult females were found to have more skeletal indicators of poor health and nutritional stress. This illustrates the hierarchical organization and social inequalities of their settlements, as well as the capabilities of improved archaeological methods to help better understand the past (Ambrose 2003).

Geoarchaeology is a multi-disciplinary approach incorporating techniques from geography and other earth sciences to examine mound stratigraphy and the micromorphology of soils and sediments from archaeological sites. Through this approach, the complexity of mound construction has been revealed, and indicates the cultural significance of mounds may be largely reflected in their materials and arrangement. Mounds from Cahokia and Poverty Point have revealed information on the organization of labour, and pace of construction, from using this approach. It has now been determined that the creation of these mounds required considerable skill, engineering skills, and attention to symbolic and ritual meaning. Large mounds often show signs of planning and site preparation, generally involving landscape alteration, such as some type of base or pit (Sherwood 2011). These improved technologies and approaches have led to new theories and interpretations of these important earthworks.

New Theories & Interpretations

Past research is being reexamined and reassessed in an expanding and changing technological context. While the initial focus on mounds research in the 19th century was on who had built the mounds, there has been a shift away from this toward why the Native Americans built these mounds. Early historical records are now being examined and compared with current archaeological data. Even accounts written by individuals who believed in a separate mound builder race may contain valuable observations. For example, Squier and Davis’s drawings include mounds which no longer exist, and new mound sites have been found which have provided dates older than previously thought. The
The focus of mound research is now about ‘reconstructing’ the history of the ancient Native Americans and their legacy. The Etowah site in Georgia is one example of a site being reexamined and reassessed.

Squier and Davis had concluded that most mounds were used either for defense, or sacred purposes, but current research shows that mounds had additional functions (Squier and Davis 1973[1848]). The late 14th century Etowah site is one of the few Mississippian period mound towns known to have had fortifications. The site was first studied in the 1920s, and the presence of a defensive wall was confirmed in a 1962 excavation. This discovery led to investigations into why fortifications were necessary. Some researchers argued in the past that due to competition over arable land, people were forced to protect their land and thus built fortifications. However, reexaminations of the Etowah site have led current archaeologists to believe that Etowah’s fortifications were not used solely for defense, but as a strategy by leaders in order to instill a sense of community and solidarity among their people. At Etowah, archaeologists have concluded that the wall surrounding the site was constructed to define it as a space different from the neighbouring area and was possibly used as a means to define Etowah as a sacred space. These conclusions are based on geophysical data which does not show the regularly spaced bastions around the perimeter of the wall which would be expected of a defensive feature (Bigman 2011).

Cognitive archaeology is the study of past ways of thought from material remains, and is one way of ascertaining meaning from the mounds (Mollenhoff 2003; Renfrew and Bahn 2004). This type of archaeology focuses on symbols and meanings in relation to understanding prehistoric ideas and cosmologies (Hegmon 2003). These methods have been applied to effigy mounds, and anthropologists such as Birmingham and Eisenberg who have studied mounds in Wisconsin, believe that the earthen forms were created in order to express the builders’ theology and cosmological beliefs. In this framework, and drawing from current Native American belief systems, they have interpreted various mounds as representing specific beliefs. For example, effigy mounds in the shape of birds are said to represent the powerful sky spirit, bears and other animals represent the great earth spirit, while long-tailed creatures represent the underworld or water spirit (Birmingham and Eisenberg 2000). Cognitive archaeologists have also interpreted the ritual of mound building as being symbolic of a renewal of the world (Mollenhoff 2003), illustrating the use of Native American oral traditions in archaeology. Archaeologists are accepting that native oral traditions contain important information about the values and beliefs which relate to sites, features, and artifacts, and as such are essential resources (Dongoske 2000).

One theoretical approach that has gained in popularity is that mounds are linked with astronomy. The cosmological significance of the iconography, architecture, and placement of the mounds in North American mound sites is being explored (Hegmon 2003). Archaeologists believe the Cahokian mound builders planned and organized their ceremonial centre in regards to their astronomical beliefs, and were particularly concerned with positioning their earthworks and other structures in alignment with the sun for the equinoxes and solstices. In excavations near Monk’s Mound, archaeologist Warren Wittry found postholes meant to hold large posts arranged in a circular pattern, and it is believed these were arranged
in relation to the solstices (Aveni 2001). Birmingham (2010) believes effigy mounds were built by Native Americans to serve as three-dimensional cosmological maps. Kira Kaufmann (2005), an anthropologist, also believes effigy mounds serve a cosmological purpose. Ray Hively, a physicist, and Robert Horn, a philosopher, studied the possible astronomical significance of mounds in Newark, Ohio. They found evidence that the earthworks were laid out as a lunar observatory (Hively and Horn 1982).

New Sites and Interpretations: Watson Brake

The Watson Brake mound complex in Louisiana is a good example of how various approaches are being used on mound interpretations and excavations, and illustrates the benefits of improved dating techniques. Discovered in the 1970s, Watson Brake was found to be 2000 years older than previous mound complexes and dates back to the Archaic Period. Prior to this find, most archaeologists believed the first earthworks had been built 3500 years ago at Poverty Point in Louisiana, and initially the Watson Brake mounds were thought to have been created by the Poverty Point culture. Excavations at the site included a multidisciplinary team including soil scientists, geomorphologists, biologists, paleontologists and physicists. The Watson Brake mounds were dated to between 5400-5000 years ago, thus making it the oldest known mound complex in North America. Improved dating techniques allowed Saunders and his team to take 25 different radiocarbon dates, 6 luminescence dates from buried soil samples, quartz, and grains, as well as soil and faunal analysis of fish and deer. These dating methods, coupled with the multidisciplinary approach to studying the mounds, allowed for a more holistic look at the site and interpretations concerning what the mound builders ate, and possibilities regarding why the mounds were built. It is thought that Watson Brake may have been built as a communal response to environmental stress caused by droughts and flooding which created an unpredictable food base (Saunders 2005).

History of Interpretations: Serpent Mound, Ohio, a Case Study

The Serpent Mound, situated on Brush Creek in Adams County, Ohio was first reported in the surveys by Squier and Davis (1973[1848]), who referred to it as the most extraordinary earthwork discovered in the West. They discuss similarities of the serpent symbol among different nations, noting its prevalence in Egypt, Greece, and among the Celts, “Hindoos,” and Chinese. Squier and Davis believed the connection of the serpent symbol with other parts of the world could help shed light on the origin of the American race. They lump the Serpent Mound in with their chapter on sacred enclosures, and postulated that this mound, like the others in the West, was either for military or religious purposes (Squier and Davis 1973[1848]).

Frederic Ward Putnam, an American naturalist and anthropologist, was instrumental in the preservation of the Serpent Mound. Upon noticing in 1885 that it had become more damaged, Putnam took immediate measures for its preservation, seeking donations from wealthy Bostonians. He received the donations, and handed the land over to the Peabody Museum for perpetual preservation in 1886. Beginning in 1886, Putnam spent three years protecting and exploring the Serpent Mound. Putnam, like Squier and Davis, believed the mound had religious significance and further posited that the similarities between the
Serpent Mound and a mound in Argyleshire, Scotland were more than simply coincidence. Putnam mentions finding human remains and various artifacts in the surrounding area, but he makes no mention of who the mound builders were (Putnam 1890).

It has been accepted that it was ancient Native Americans who built the mounds since Thomas’ (1894) study, and now current research has been able to date when the mound was built, and infer its possible astronomical significance. In 1995, archaeologists Fletcher and Cameron excavated a small portion of the Serpent Mound. While generally attributed to the Adena culture based on the mounds proximity to Adena burials, radiocarbon dates obtained from the excavation dated the site to the Late Prehistoric period, and is now thought to have been built by the Fort Ancient Culture (descended from the Hopewell tradition). Fletcher and Cameron have also made inferences about the possible astronomical significance of the Serpent Mound, observing how the head and tail of the serpent align with the summer and winter solstices (Fletcher et al. 1996).

In 1900, the site was given to the Ohio Historical Society, and is now run by the Arc of Appalachia Preserve System; a non-profit organization specializing in the protection and preservation of Native American sites in Ohio. A National Historical Landmark, Serpent Mound Park is now a tourist destination, with an interpretive centre and a path built around the mound for visitors (Serpent Mound 2011).

Future Research

There has been a definite shift in the research and theories from who made the mounds to why the mounds were created and more recently, to how to protect and preserve them. One of the ways the mounds are being preserved is in making them into tourist destinations which helps educate the public and can bring in revenue. Another important ongoing issue is the relationship between archaeologists and the living ancestors of the Native American groups who built the mounds.

Preservation

When European settlers began clearing forests and vegetation for farming in North America, they began to uncover mounds and earthworks which astonished them and made them question who had built them. Today, many of these mounds are covered over with grass, trees, weeds and shrubs. Thousands have been damaged or lost completely; cut into by ploughs, looted, scarred by livestock grazing and destroyed by modern development. The majority of early investigations of the mounds were quite destructive, and mounds were often looted due to their array of grave goods. Highways and interstates cut through mounds, and the average person often does not even know one when they see one. Few people were aware of the great legacy left behind by the ancient Native American people (Garlinghouse 2001).

Preservation of mounds is becoming one of the more common archaeological methods. In 1997, the Ancient Mounds Heritage Area and Trail, funded by the Louisiana government was established in order to create an inventory of the earthworks in the northeastern part of the state. The long-term goal was to create self-guided tours of the so-called “Mound Trail,” to raise the public profile of the mounds, and to encourage landowners of mounds to become involved. In 2005, 40 mounds in the area received plaques with
information on their history, and additional information was provided in a tour booklet. In order to improve the appearance of the mounds, the sites were cleared of unwanted vegetation and removed from cultivation in order to prevent any further damage. Several landowners-mostly farmers-became very involved in the process of clearing the mounds, removing farm equipment and ceasing to graze their animals on them. This initiative also hoped to serve as a benchmark for other states to consider similar projects. (Saunders 2006). While it is hard to gauge whether the project has been a success—there is no publicly available information on it and the self-guided tours do not bring in revenue, the Mound Trail is mentioned on several Louisiana tourism sites.

Reconstruction of sites is another form of preservation that has been used, and involves recreating or restoring a damaged or destroyed site. Some scholars are opposed to reconstruction, believing it to be a fraud, and have made attempts to abolish this method as an interpretive device (Jameson and Hunt 1999). Regardless, structures in mound sites have undergone reconstruction. Ocmulgee National Monument in Georgia had a prehistoric earthlodge restored. The Cahokia mounds, Moundville in Alabama, Pinson mounds and Chucalissa mounds in Tennessee, and the Etowah mounds in Georgia all have reconstructed structures (Jameson and Hunt 1999).

Another preservation initiative took place at the University of Wisconsin-Madison. The university is home to the 480 hectare Arboretum which was built in an area with pre-existing mounds built by three different ancient Native American groups. A survey of the mounds in the Lost City Forest area was undertaken by students at the university, who recommend creating access paths to the mounds, the removal of trees, brush and other invasive plants on and near the mounds among other things. Through this process, it became clear to the students that caring for the mounds is a long-term commitment and management plans need to be updated constantly. Other things the students noted were the numerous opportunities for additional research on the mounds in restoration ecology, horticulture, and ethnobotany, making mound preservation a multidisciplinary field. In 1985, Wisconsin set the precedent as the first state to enact legislation against the disturbance of any sites which may contain human remains under the Burial Sites Preservation Law. The Ho-Chunk (also known as the Winnebago), are descendants of mound-builders from the area and have also drafted guidelines for mound maintenance (YoungBear-Tibbetts 2009).

Archaeologists and Native Americans-Who Owns the Past?

While archaeological theory and method have largely moved away from the racist tendencies prevalent prior to the 20th century, there are still issues surrounding the discipline and its methods concerning mounds. These issues include relations between Native Americans and archaeologists, questions about who owns the past, and access to the mounds. Since Cyrus Thomas’ (1894) landmark research on mound builder culture, professional archaeologists have largely held control over the narratives concerning the mounds and the ancient Native Americans who built them. Mann (2005) explains that in general, North American archaeology has been dominated by the white middle class.
As mentioned earlier, there has been a push towards the preservation and protection of mounds in recent years, with some sites being commemorated as state or federal heritage sites. Mann (2005) points out that many preservation attempts have been undertaken at the expense of the Native Americans whose ancestors created the mounds. In making the mounds into historic sites, access to them has become limited, restricting native access to the use of what some consider sacred landscapes. The Choctaw, descendants from early mound builder cultures and originally from southeastern United States, regard Nanih Waiya mound in Mississippi as their "Mother Mound." Nanih Waiya is the focus of their origin stories, but the mound has become part of a state park, leaving the present-day Choctaw feeling alienated (Mann 2005:7,8). A Choctaw elder describes how many present-day Choctaw do not see the mound as a sacred site but rather, as a historic site declaring that, "Our Mother Mound is not even ours. It has been given away" (Carleton 1996). This lack of acknowledgement of the relationship between Native Americans and the mounds continues to place the mound builders and their present-day ancestors into separate categories. It has also added to the divide between archaeologists and Native Americans. Mann believes that the effects from this could be as damaging to contemporary Native groups as the mound builder myth was to their ancestors (Mann 2005).

The relationship between archaeologists and Native Americans is constantly changing and adapting. Native American groups have denounced archaeologists for the desecration of their ancient sites, graves, and ancestors and for failing to respect their cultural values. Native American groups have attempted to cease or control archaeological research, which has led to moral and legal crises for archaeologists (Trigger 1980). It is true that until recent decades, archaeologists gave little thought to who owned ancient sites and antiquities. In recent years, it has been questioned whether archaeologists should be allowed to excavate sites with ancient remains of groups whose modern descendants object to it, but where laws permit. Some Native American groups have been vocal concerning the question of who owns the past, and have exerted political influence, prevented excavations, or called for the return of collections from museums and other institutions. The creation of NAGPRA (Native American Graves Protection and Repatriation Act) in 1990 required around 5000 federally funded institutions to create an inventory of all Native American skeletal remains and any funerary or sacred objects in their possession and to return them upon request. But what about archaeological research? Not all Native groups are interested in housing or reburying such materials, while some groups hope to open their own museum, or are content with having the remains be studied before reburial (Renfrew and Bahn 2004). NAGPRA allowed Native Americans to have a more than equal status with the researchers studying their ancestors and has made it essential for archaeologists to deal directly with Native Americans (Downer 1997). Ultimately, the future of mounds research requires that archaeologists and Native American groups compromise and work together.

Linear Mounds National Historic Site (LMNHS) located in Southwest Manitoba provides an interesting example of the difficulties of mound preservation and ownership. LMNHS is attributed to the Devils Lake-
Sourisford Burial complex and is dated to 900 A.D. - 1400 A.D. (Syms 1979). Parks Canada lists the site as being “non-operational,” meaning that it has no on-site staff and no visitor services (Parks Canada 2007). The main issue surrounding the LMNHS lies in the differences of opinion between Parks Canada, local community members, and the Dakota, whose ancestors built the Linear Mounds. Essentially, community members closest to the mound site want the site to become a tourist destination (Parks Canada 2007), while the Dakota will not consider interpretive activities at the site until bodies of their ancestors (which were removed in the early 1900s) are repatriated (Kives 2013). Parks Canada’s official stance states that they want to build relationships with local community members, but that all actions at the site will be taken with respect to Native American groups and their views (Parks Canada 2007). As such, Parks Canada is making attempts to work with both groups. However, their stance on keeping the site non-operational as per the Dakota’s request, has largely undermined their relationship with local community members (Parks Canada 2007). Until repatriation moves forward, the LMNHS is surrounded by a barbed wire fence and Parks Canada discourages people from visiting the site (Kives 2013).

Florida Boy Scout Council (who owned the property at the time) on one condition: that all the human remains would be reburied following their analysis. After the remains were studied for information about health, diet and demography, Milanich honoured the agreement for reburial, a process which Milanich was not expecting to take nearly two years to achieve. During this time, Milanich was faced with new conditions, such as dealing with new owners of the land, and questions surrounding who has control over the remains and who will conduct the reburial (Milanich 2009).

Archaeologists and Native Americans Working Together

In 1973, archaeologist Elden Johnson urged professional anthropologists to make responsibilities to Native Americans an important commitment (Johnson 1973). To date, there are countless positive examples of coordination of efforts and shared goals between Natives and archaeologists, including at Head-Smashed-In Buffalo Jump in Alberta and the Serpent Mound in Ontario. While Head-Smashed-In is not a mound site, the important role played by the Blackfoot people in the development of the interpretive centre and its inclusion on the UNESCO World Heritage list testifies to long-term cooperative relationships. The involvement of the Blackfoot people is an ongoing process, and they continue to play a major role in the operation of the site. The majority of interpreter positions are held by Blackfoot people, and they are deeply involved in the curation and placement of artifacts in the centre. The Head-Smashed-In site has become much more than an interpretive centre for the Blackfoot people, who have come to claim it as their own, and use it for weddings, funerals, meetings of elders and other ceremonies (Brink 2008).
Serpent Mounds Park is located in Keene, Ontario, along the banks of the Indian River. David Boyle, a teacher and archaeologist, discovered the Serpent Mound in 1896, and is largely responsible for its preservation. Boyle excavated part of the mound and found skeletons and pottery inside. Almost immediately, Boyle began to lobby the Ontario government to preserve the site as a provincial park, an ancient historic site, and a native burial ground. Initially, the government resisted, having just founded Algonquin Park in 1893 and not thinking it necessary to form another public park. In 1933, the Hiawatha band of Mississauga Nation purchased the property and leased it to the Ontario Department of Lands and Forests, and in 1956, it was turned into a provincial park (Boyle 2011). Today, Serpent Mounds Park serves as a family campground and is owned and operated by the Hiawatha First Nation who assumed stewardship in 1995. In 1982, Serpent Mounds Park was designated a National Historic Site of Canada (Serpent Mounds National Historic Site of Canada 2010).

Since Europeans first encountered Native Americans and wrote about the mounds, there have been substantial changes in the related research, theory, methods, and interpretations. The general public consensus at the peak of the mound builders myth was that Native Americans were ‘savages’ and the literature and anthropological theories reflected this belief, putting forth claims that literally anyone other than Native Americans had constructed these grand earthworks. Current archaeological research is focused on why Native Americans built the mounds and on reexamining information obtained from previous excavations. New theories surrounding mounds often link them with cosmological interpretations, and new methods allow for inferences on ancient diet and lifeways. An example of the changes in interpretations, methods, and theories over time is given in the case study on Ohio’s Serpent Mound. The future of archaeological work on mounds lies largely in the realms of preservation and protection, with tourism playing a key role as well. Some of the main issues being faced by archaeologists and to which they will continue to be faced with are the relationships they have with the Native American people whose ancient ancestors constructed the mounds. Cooperation between archaeologists and Native Americans is essential. Native Americans should be involved with the archaeological research and archaeologists need to continue to respect and understand the values and beliefs of the Native Americans.
Figure 1- How the Chief is Buried

(Exploring Florida: A Social Studies Resource for Students and Teachers 2001)
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