CERHAS
Center for the Electronic Reconstruction of Historical and Archaeological Sites
University of Cincinnati

EarthWorks : *Virtual Explorations of the* ***ANCIENT OHIO VALLEY***

TEACHER'S GUIDE: Grades 6 - 12

To the Teacher:

Welcome to the EarthWorks exhibit! Here you will find suggestions for making the best use of a class visit to the exhibit with students. The EarthWorks program consists of a network of videos, each about 1 to 1 ½ minutes long. At the end of each, a "choice" screen appears; other choices are available through buttons at the top of the screen. Discussion and questions can follow each video as the choice is made for the next one. Don't worry too much about the order of scenes. The program was designed for exploration, not forced march. The path below features three earthwork sites: Hopewell, Serrpent, and Newark. If you are short of time, you can visit only two, or one. The topic of preservation fits well at the end whatever your choice.

The theme of this path through the program is the astonishing accomplishments of the Ohio Valley earthwork builders and the variety of purposes of the earthworks The path ends with the topic of preservation.

Ohio Social Studies Standards:

Following the suggested program path with discussion and follow-up activities will contribute to students' achievement of these Ohio state social studies standards:

1. *History:* Students use materials drawn from the diversity of human experience to analyze and interpret significant events, patterns and themes in the history of Ohio, the United States and the world.

2. *Geography:* Students use knowledge of geographic locations, patterns and processes to show the interrelationship between the physical environment and human activity, and to explain the interactions that occur in an increasingly interdependent world.

3. *Citizenship:* Students use knowledge of the rights and responsibilities of citizenship in order to examine and evaluate civic ideals and to participate in community life and the American democratic system

4. *People in Societies:* Students use knowledge of perspectives, practices and products of cultural, ethnic and social groups to analyze the impact of their commonality and diversity within local, national, regional and global settings.

5. *Social Studies Skills and Methods*: Students collect, organize, evaluate and synthesize information from multiple sources to draw logical conclusions. Students communicate this information using appropriate social studies terminology in oral, written or multimedia form and apply what they have learned to societal issues in simulated or real-world settings.

Note that the follow-up activities also meet standards in Language Arts and Science related to writing, observing and gathering evidence.

Orientation

Note that texts for the video segments suggested below are to be found at the end of this Guide. You may wish to review them before visiting the museum.

If the class is completely unfamiliar with the topic of Ohio mounds and earthworks, or if you want to coordinate this experience with other American history you are covering, you can begin with a look at the "Timeline" videos, available through a button at the top of the sreeen once the introductory scene has played. And/or go over the Time and Map walls that form part of the exhibit.

Begin by assigning a student "driver" to the kiosk; you may want to change drivers from time to time. Tell students that this program allows for exploration and choice, so they will have some choices as you go along.

Suggested Program Path:

1. *The Great Valley* (begins when you touch the screen while the "loop" of images is playing).

   Explain you're going first to the Hopewell site because it is the site for which the chief earthwork building culture was named.. Select:

2. *Hopewell Mound Group*

   Next you want to dive straight into the largest mound to see what it's about. Select:

3. *Ceremonial Center*

   Point out that at some point, the ceremonial center was filled up, or decommissioned; and then the people covered it all with earth to make the huge mound shown in the previous scene. There is no clear record of why they did this sort of thing. Ask students why they think the people made such a hill (ideas may include to create a permanent monument; to protect the graves and materials from erosion or robbery; to re-enfold the center in mother earth; or other possibilities).

   At this point, students will choose their path. You may end up at any of the following scenes, and the order is not important. Once you have visited them all, go on to No. 4 in this sequence. (If you are short of time you can skip some here.)

   a. *Burials:* This scene explains more about treatment of the dead.
   b. *Deposits:* Here is more explanation about the way objects were left here.
   c. *Copper Shapes:* Computer reconstruction of one amazing deposit.
   d. *Ceremonial Robe:* Computer reconsturction of the highly decorated robe in which one person was buried.
   e. *Bear:* The profusion of bear images in Hopewell artistry, and a traditional Native American tale that may help explain it.
   f. *Precious Materials:* This culture's artistry and the trade networks that supported it.
   g. *NAGPRA and respect:* A Miami leader remarks on the issue of respect for graves versus archaeology; this scene links to preservation issues. You may want to save this for the end (see final notes).

   From the Culture Menu, Select:

4. *Ceremonial Gatherings*
   This scene suggests some of the many purposes for which the enclosures were built. Discuss with students how we today fulfill some of these purposes:i.e., where do we go for burials? To

remember great events? For weddings, spectacles, family reunions?. Does the shape of such places, like churches or stadiums, have special meaning for the community?

Now for a view of how the people lived day to day. Go to "Home" then select:

5. *A Hopewell Settlement*: Reconstruction of a typical "homestead."

   Discuss the size of this "settlement." Normally we expect people who build large monuments to live in cities, where the work of many can produce enough to support rulers and artisans, needed to plan and build. This culture is an exception. They seem to have gathered periodically to build, and continued work over generations. This can be compared with the construction of cathedrals.

   Here, students may choose among some of the aspects of daily life featured in the choice page. They can view one to all of these recommendations:
   a. *Textiles:* About the woven cloth the people made.
   b. *Gardening:* What plants were cultivated in small gardens.
   c. *Inside a House:* How people lived indoors and outdoors.

   Explain that now you want students to see a completely different kind of earthwork. Serpent Mound was built by a later culture but one that still was using the idea of mounding to mark the earth significantly.
   Some students may have been to Serpent Mound. Ask for their impressions. Point out that it is considered to be one of the great ancient monuments of the world.

   From the "All Sites" menu, select:

6. *Serpent Mound:* A Mississippian era effigy on the edge of a crater.

   Be sure students know what is meant by the serpent being "aligned" to the solstice sunset: it points to the spot on the horizon where the sun sets on that day. Talk about the usefulness of such a marker for people without a written calendar.
   Select:

7. *Mississippian Serpent:* Explanations for the serpent shape.

   Here, allow students to choose and move about among any of these scenes (Note: "Naming These Cultures" pops up as a choice, but may be too difficult for many students, so avoid it unless there is special interest.)
   a. *History:* How Serpent Mound was saved from the plough.
   b. *Effigies:* About huge ancent earth images.
   c. *Serpent Path:* A bit of Indian lore, still surviving, which may link back to ancient uses of the Serpent Mound

   Explain that you are going to Newark next because of its extraordinary purpose connected with the moon. Note that students' choices here will have to be restricted because of the wealth of material. Hit the "All Sites" button, then choose:

8. *Newark Earthworks: :* Geometric earthworks covering 4 square miles.

   Point out that the only remaining parts of the Newark complex still remaining are the Great Circle (visitable as an Ohio state monument) and the Octagon (now leased to the Moundbuilders Country Club). Discuss impressions if anyone has visited them. Explain that these are the most impressive huge remains from the culture visible today. Next, from the culture menu, select:

9. *The Octagon:* The extraordinary precisely built octagon of earth walls.

Why build it? Explain that experts thought the Octagon-Circle combination at Newark might be pointing at something, possibly some spot on the horizon where a star, the sun, or the moon rises or sets This is called an "alignment." Here is the story of two professors who went to look for parts of the complex which might point to sunrises or sunsets (solar alignments). Select:

10. *Architecture of Alignments:* Discoverers of the alignments at Newark tell what they found.

    Review this scene to further explain the meaning of what has been said. The Octagon-Circle turns out to point to the northernmost rising of the moon along the horizon. The moon rises at various points along the eastern horizon in its complicated cycle. The northernmost rising happens only every 18.6 years. It is astonishing that the people kept such perfect track of the moonrises, over generations, in order to build the Octagon to perfectly mark them. You may want to show the scene again after explanation.

    Students may choose here:
    a. *Ancient Observatories:* The practice of astronomical alignment in general.
    b. *Moon:* The ongoing significance of the moon for Eastern Woodland Indians.

    Next, go back one scene to the choices from *Architecture of Alignments*. Then, choose the top of screen button, "Site Features." Select:

11. *Golf and Prayer:* Uses of the mounds today.

    This scene is about a Cherokee woman who was arrested for praying during golf games at the Octagon; it introduces the topic of public access and preservation.
    This incident could be the subject of student research, or folded into more general research topics on public versus private access and use of publically owned areas.

    From the Culture menu, choose:

12. *Preservation:* Why earthworks need to be preserved

    Ask students if they can think of things they themselves can do to help with preservation. Some starter ideas can be found at the foot of the display panel about preservation.

Follow-up Acitivities for Home or Classroom

1. Plan a visit to a Hopewell site that interests you. Describe the main things you hope to see there. Prepare a list of questions to ask about the site. Then, either visit the site in person or find out about it from the Web or library sources. Try to answer your own set of questions.

2, Consider how people use visual alignment to reinforce beliefs. For example, to the people of the Fort Ancient culture, the alignment of Serpent Mound to the solstice sunset suggested the importance of the sun's movements to farming and probably to animal populations. Investigate alignment along the mall in Washington, D.C. Draw or describe the alignment of the Capitol and the Lincoln Memorial. What ideas are being reinforced there? How do other buildings on the mall take part in the alignment?

3.. Invent an earthwork combining features of known earthwork sites. Be ready to explain your earthwork's location and features.

4. Describe or draw a public memorial in your town. Report on the purpose of the memorial and the means that the builders used to to make the memory last. Is the memorial still doing the same job today? Do you think people will have equal reverence and recall of what is memorialized in a hundred years? Compare this memorial to the ancient mounds and earthworks.

5. At Newark, debate is continuing over ownership and access to the Octagon and Circle now leased by Moundbuilders Country Club. Research the controversy; you can reach relevant articles on the Web. Conduct your own classroom debate on the question of stewardship: Who should have control of ancient earthworks, and who should be allowed access?

6. Use the wall map at the exhibit, or another map, to find the earthwork or mound site nearest to you (even if you are far away). "Adopt" the site: brainstorm ideas on how you might help preserve it. Send your list of ideas to the land owner or agency in charge, and ask for more. Gain approval to put at least one of the ideas into action.

7. Use a U.S. history textbook or other history resources to find out the likely impact of the following events, positive or negative, on Ohio Valley earthworks in the past:

-The opening of the Northwest Territory to U.S. settlers
-The Treaty of Greenville
-Foundation of the Smithsonian Institution
-Invention of motorized farm machinery
-Modern laws requiring "salvage archaeology"

Texts of Program Path:

1. The Great Valley

Two thousand years ago, long before the first Europeans settled in North America, rich lands just beyond the Appalachians were home to an extraordinary culture.

Among the tributaries of the Ohio River, Native people created not only mounds, but great temples of timber, earthen enclosures of vast size and precision, and objects of refined artistry – all reflecting the meaning of life in this bountiful region.

Welcome to the Great Valley of the Ohio. Travel these hills and rivers. Explore these earthworks, and discover this amazing ancient culture, now lying almost hidden under our busy modern world.

2. Hopewell Mound Group

Here along the North Fork of Paint Creek, the ancients built probably their most revered sanctuary. Walls and ditches enclose a hundred and twenty-seven acres. To the north, they climb to the upper terrace; to the east is a perfect square. Water is on all sides.

Archaeologists call this the "type site," meaning they have named the whole culture after this location (It was Mordecai Hopewell's farm in the eighteen-nineties.) Yet it is anything but typical.

It is the largest of the geometric enclosures. It contains the smallest, and the largest mounds. The most spectacular burials were found here, and the most astonishing deposits of precious objects.

Not much is visible on the ground today. Even so, in the summer of two-thousand-one, using advanced remote sensing instruments, National Park Service staff discovered a new circular earthwork out here among these mounds.

The Paint and Scioto Valleys are the heartland of this ancient culture, with the richest concentration of their geometric earthworks.

3. The Ceremonial Center

On this level part of the site, Hopewell people planned their largest ceremonial space. First, they scraped away grass and earth to reach a clay layer. They mixed clay and water to create a very hard floor surface. It's been called "Hopewell concrete!"

No one yet knows what features were built here first. But over several generations, people were performing ceremonial rituals here. They dug pits and built fires. They covered certain areas with stones, or multi-colored clay. Buildings large and small were erected here, to shelter or enclose the ceremonies.

They brought many precious things to the site, often breaking and burning them before placing them in ritual deposits. Two of these were so large they are called "The Great Deposits." And, people were buried here: one hundred and two in all just within this single, ceremonial space.

3a. Burials

The people buried here at the ceremonial center were attended with the fullest ritual and care. Although the early archaeologists' excavations of these special places cannot be undone, their records, and the artifacts, tell us much about the people, and their ways of life and death.

Some of the burials were first burned in another location, then the remaining ash and bone swept together and re-deposited here. Most were buried unburned, though, stretched out in log tombs.

Inside buildings, some of the tombs were covered with mounds. Its possible that burying, mounding, burning, and depositing precious objects, were all going on at once: a concentrated mix of human effort and vision, with the elements of earth and fire.

3b. Deposits

Before the great earthworks were built, Native groups in the Ohio Valley were already burying their dead, with meaningful objects; and also creating offerings, things left as gifts to the earth or the spirits. At the earthwork sites, these traditions flowered amazingly. Some funerals resulted in tomb deposits like this one at Seip, where thousands of pearls accompanied four people.
Deposits unrelated to specific burials included a wide variety of objects, from panpipes to stone figurines. Often the objects were ritually broken, sometimes burned. Occasionally, deposits were paired: at the Hopewell site, pearls were contrasted with obsidian in one mound, while in another it was mica and copper. Perhaps two groups of people brought offerings, and both were needed to complete the idea. Sometimes, unworked exotic materials like crystal quartz or obsidian, and even the scraps from crafting them, were deposited. This practice reached its height in a mound at the Hopewell site, where over eight thousand flint discs – pieces handy for working into points or tools – were neatly lined up and buried. Such deposits suggest reverence for the material itself.

3c. The Copper Shapes

Flat hammered copper shapes were found piled on top of one low mound in the ceremonial center. People may have worn them here as part of their costumes, or carried them on poles or banners, and then laid them down in tribute: maybe a memorial ceremony for the ones already buried beneath. Look at the variety!

There are copper spools for the ears, and bracelets; also natural forms, like fish, bear claws, bear teeth, a deer antler. And, there are abstract forms that may have many meanings.

3d. Ceremonial Robe

A man buried in the Great Mound at Hopewell wore a robe that looked something like this.

The fabric featured a colored design, on which were sewn many shell beads and freshwater pearls – and bear teeth, some pearl-studded and incised like this. A necklace of bear claws, with a fur piece, resembles the ones still worn by certain Bear Clan members. Teeth and claws may symbolize bravery in hunting, or a connection to rebirth (since a hibernating bear re-awakens every Spring).

The antler headdress, like others throughout Native history, shows this man taking on the spirit of an animal.

On his chest, abdomen, and back, were copper plates like these, common to this culture, which may have meanings related to parts of the body and to spiritual power.

3e. Bear

The image of the bear appears again and again in objects crafted by the earthwork builders. Not only the bear itself... but many bear claws...bear teeth...and even a mound in the shape of a bear paw. Among Eastern Woodland tribes, the bear is known not only as a healer, one who has the ability to restore life, but also as the strongest of the animals. It may be that in ancient times, native men set out to gain bear claws and teeth as proof of their own strength and association with the bear spirit. Shawnee storyteller Neeake tells a traditional tale about a great fight between man and bear:

Ah ki-to. Listen, I will tell you a story. The grandfathers and grandmothers tell me that in the time before this there were great monsters that walked on the earth. We know this is true because sometimes we find their great bones, sticking from the streambanks. During this time, people were afraid. For you never knew if when you stepped from your wigewah, your home, there might not be a monster, standing right outside of your door, just waiting to grab you and eat you up. So people were afraid. Until one day, a Shawandase man stood up. And he said, "Great One. Give me strength. I will go out, fight all the monsters. Kill them all. So Kichamanitou gave that man strength, and he went out. Fought all the monsters, killed them all. Except one: the Great Bear, Mukwah. They came together, and they fought for many, many days, but their strength was the same. Mountains trembled, trees fell, streams ran backward, but their strength was the same. Until – the bear slipped. The man wounded him. But as the man jumped back, the bear's claws reached out and – he wounded him. And they stood there, and they looked at each other. The bear spoke! "Brother, it's enough. You bleed, I bleed. You are strong, I am strong. Together, we will be very strong."

From that day, the Shawandase and the Bear have been brothers. Each gives life to the other. And he gave us a gift, a scar. Whenever we paint it, whenever we see it, we remember who we are. That we are Shawandase, slayers of monsters, ones who stand between the people and the monsters of this world...

3f. Precious Materials

Many kinds of objects were left under mounds. We have only hints of the perishable ones, like textiles that were preserved only by the salts from corroding copper. The more permanent objects show the people's great artistry, and their fascination with unusual, luminous materials.

Like the generations before and after them, these people were master flintknappers. They created long, narrow chips called "bladelets" that could be used for very fine cutting and incising. Quartz crystals, flowering out of the flint, were prized, and shaped for ritual use. Razor-sharp obsidian was also fashioned into blades, including oversized ceremonial ones.

Shiny mica was cut into many shapes, or used as a mirror, or spread in sheets over the dead, as at this tomb at Mound City. Shells and fresh water pearls were transformed into thousands of beads for necklaces or embroidery. Sheets of hammered copper were formed into earspools, or made into plaques or fanciful shapes, or headdresses.

Most of these precious materials were brought from far away, maybe by pilgrims visiting the earthwork sites. Their light-catching qualities may connect them with the spirit world.

3g. NAGPRA and Respect

In nineteen-ninety, the United States Congress passed the Native American Graves Protection and Repatriation Act. NAGPRA was intended to protect burial sites and return human remains and associated items to modern native descendants.

The law marks a new respect on the part of non-natives for Indians' beliefs and feelings; yet it has stirred other questions: Do modern tribes have rights to places and artifacts of cultures vastly older than theirs? Should the most ancient things be displayed for everyone, or put away as the people who buried them intended? Miami tribal official Julie Olds:

When it comes to remains of our ancestors, we prefer those things are not on display. We feel very strongly about reburial. If there are items that belong with that individual, we also feel very strongly about the need for those things to remain with that individual. They were put there for a purpose, and they need to remain for that same purpose. The difficulty lies in the ancient things.

...there's so much we don't really know, when you speak of the ancient things, that it's a difficult decision.

Today, the Miami tribe is encouraging its people to go see educational displays of unearthed ancient native objects as long as they feel personally comfortable. But all the tribes are struggling with this question: How to respect the ancestors and their rituals, and yet also show their children, and the world, what those ancestors actually achieved?

4. Ceremonial Gatherings

The great earthwork complexes were places to gather. Since there were no large settlements, people must have come from great distances, both to build and to use them. They were probably celebrating events on their calendar, like the movements of the moon, or the harvest; and of course funerals and memorials for the dead, who were considered part of the ongoing community. Wise elders probably laid down judicial decisions, too.

The festivals were also a time for exchanging marriage partners, along with ideas on many subjects. And all such gatherings would have included a lot of feasting, dancing, and gift-giving.

So the huge shapes probably had special meanings, maybe symbolizing the different groups of people who assembled here, or their beliefs about the nature of the world, the earth and the sky, or death and the world of the spirits. They still convey powerful messages, about the earth, the heavens, order, and time**.**

5. A Hopewell Settlement

The builders of the earthworks seem to have lived in tiny settlements like this: just a single extended family would build a house or two, maybe a storage shed.These were loosely clustered near established earthwork sites. For big ceremonies, or during earthwork building projects, there may have been many of

these set up close to the earthworks.It’s interesting that “midden,” their garbage, is the best evidence we have of settlement patterns and ways of life.

6. Great Serpent Mound

On a slight slope, near a set of ancient burial mounds, a great earthen serpent seems to slither westward. It is huge...beautiful...mysterious. If it were really to move, it would fall into the enormous natural crater which it faces. But this snake has rested here for a thousand years, still staring precisely, every June twenty-first, into the summer solstice sunset. That alignment suggests that one of the effigy’s purposes was to mark the turning of the year so that planting and gathering and hunting could be planned. But the serpent certainly had other meanings for its builders, who were connected to the widespread “Mississippian” cultural world.

7. Mississippian Serpent

Carbon dates have shown that the Great Serpent was probably built by people of the "Fort Ancient" tradition, who followed centuries after the Hopewell.

The parts of this creature's head can be compared to drawings of rattlesnakes incised on shells by related Mississippian peoples:

The great eye. The poison glands. The heat-sensing organ.

We still respect and fear poisonous snakes. To the builders of this effigy, the serpent had more meanings, connected probably with the sun's control over the growth of crops, and the cycle of the seasons.

7a. History

The Great Serpent was built some time between A.D. ten-twenty-five and twelve-fifteen. The builders scraped soil from the hard subsurface, then marked the serpent's shape with clay, ashes, and stones, before building up the form with mounded earth.

Squier and Davis recorded the Serpent in eighteen-forty-six; but by eighteen-sixty, it was already being reduced by farming and treasure hunters.

In eighteen-eighty-three, Frederick Ward Putnam of Harvard University
first visited the Serpent, and began a successful campaign to buy and restore it.

Harvard gave The Great Serpent Mound to the State of Ohio in nineteen-hundred, and today it remains a State Memorial open to the public. Each year on the summer solstice, people with many different interests in the site gather here, recognizing the beauty and power of this place.

7b. Effigies

Masters of earthen architecture, the Hopewell worked mostly in abstract forms: lines, circles, squares, octagons.

Their successors a few hundred years later were still shaping earth; but they favored animal forms, called effigies. Only a few have been found: one near Newark called the "alligator," a set of stone serpents near Fort Ancient, and probably the most famous effigy in the world, The Great Serpent Mound.

We're not sure why these images were created; although there is some connection with the sun.

Perhaps a greater mystery is why some effigy mounds, like The Great Serpent, are so enormous: In fact, nobody on the ground can see the whole creature at once. Far to the north (in Wisconsin) and even farther to the south (in Peru), other peoples created enormous effigies too. Perhaps they were meant to be seen by the stars, or by the sun itself: messages being relayed between the earth and the heavens.

7c. The Serpent Path

Various Native traditions and stories are associated with Serpent Mound. Mekajay Shawnee chief Frank Wilson tells one that connects the mound with a ritual of spiritual cleansing:

If you count the curves in the Serpent, there's seven of them, you know, there's seven curves before it gets to the head. And seven, the way I was taught, for the Shawano people, is the seven gates that one must go through to reach spirituality, or enlightenment, as people call it. To become a dawan, a medicine person. So each curve, a person walked the snake. They walked the serpent. And there were certain things they had to accomplish on each curve of the snake's back. And as they accomplished this they moved on, and when they reached the head, they reached a point where everything was completely stripped away except their spirit.

8. The Newark Earthworks

Newark, Ohio: with its Courthouse Square and leafy streets, this is a typical town of the American heartland. Seventeen centuries ago, this was a center for a very different culture. Here, American Indians built the largest geometric earthwork complex in the world. Enormous enclosures connected by walled roadways were spread across more than four square miles.

This was the most spectacular of many such earthworks, concentrated along the tributaries of the Ohio River, marking the people's beliefs, rituals, and sense of community.

Today only fragments remain, although here at Newark we can still walk among these vast shapes, and feel how they direct our eyes and footsteps.

9. The Octagon

This octagon and its adjoining circle are the most precise of all the remaining earthworks. They're a half-mile across, perfectly formed, and exactly level. The circle's diameter is one thousand and fifty-four feet, an interval that also perfectly constructs the Octagon.

The walls are just at eye-level, keeping us enclosed, and forming an artificial horizon. Even the gateways are visually blocked by these smaller mounds. Inside this huge, perfect work of geometry, our eyes are drawn across from one point to another, and on to the real horizon beyond.

Poles and banners probably marked the gateways. We can imagine grand processions approaching along these wide roadways.

10. An Architecture of Alignments

Two Professors from Earlham College went looking for astronomical alignments at the Octagon. Ray Hively is an astronomer, and Bob Horn is a philosopher:

Horn: *And so we went out to initially survey the site to find solar alignments.*

Hively: *And one of. . . We looked. . .*

Horn: *And to show how easy it was to find solar alignments.*

Hively: *Yeah, well that was the whole idea. We wanted to show students that we could find solar alignments anywhere we looked for them. So we surveyed the major symmetry axes, we surveyed the lines along the earthen walls, the lines between vertices and mounds, and I thought, well, we'll get a bunch of alignments to the solstice points from this. And the first shocking fact was that, in spite of some claims to the contrary, there were no solar alignments at Newark.*

So since it wasn't the sun, the next thing to try was, of course, the moon:

Hively: *And, uh, that's when I was shocked to find that the major symmetry axes of the circle-octagon combination, as well as 4 of the 8 walls, all align very precisely with extreme rise and set points of the moon, which illustrated very nicely the 18.6 year cycle in the motion of those extreme rise and set points.*

10a. Ancient Observatories

Early societies lived close to the patterns and rhythms of nature, of the universe. Their first monumental constructions often marked these patterns:

Stonehenge, in England, was built so its heel-stone would point to the sunrise on the longest day of the year. Long lines in Peru were aimed at the appearance of certain stars just before rainwater from the mountains would fill the canals. And the Hopewell built vast geometries, like the Newark Octagon, to mark the movements of the moon.

This wasn't just what we call "astronomy" today; these huge public works were not merely scientific instruments. Archaeoastronomer Anthony Aveni:

I think its change of time that matters in many of these cultures, that one would mark those significant, shall we call them "hinges in the fabric of time" (think of time as a doorway), these hinges when critical changes take place, when food shortages might occur, when the animals who are normally killed might migrate or leave; I mean, these are the points of tension in the calendar.

I think this is a marvelous way of connecting the eco-sphere, the ecological environment, with the heavens. And maybe we modern astronomers tend to cut off the heavens from the rest of the world, from the mountains, the water, the plants, the animals, to which, I think, most ancient cultures would have forged a connection.

10b. Moon

Nipahuma, our mother who goes by night, the first mother, the mother of all mothers, nurtured her children, and then when her purpose was complete she returned to the spirit world; but before she left she told first man and woman that she would never forget them. She continues to watch over us at night as the Moon. The children promised to remember Grandmother Moon whenever she appeared in the sky... --Lenape storyteller Hitakonanu'laxk**.**

Grandmother Moon holds an important place in the traditions of Eastern Woodland tribes. Her phases mark a lunar month, the basis for a natural calendar; and also the continuity of human life. Delaware Grand Council Chief Linda Poolaw:

But the moon is a woman...we identify her as 'she.' And in some beliefs that...one of the Canadian sisters has taught me that when our people go, our females, and that moon is full, they're dancing around the moon. And that's when we have our ceremony, and we talk to them, and we send them our prayers, so

they can take them on to the Creator. But every time I see the full moon, I think about, you know, our ancestors, my mother and all of them, dancing around the moon. And that's a good thought, a good thought.

11. Golf and Prayer

The Newark Octagon complex is owned by the Ohio Historical Society, a non-profit corporation largely funded by the state. Because the Society has leased the land to the Moundbuilders Country Club, public access is restricted while golf is being played. The Club claims that it has maintained the land with care, and that without the golf course, development would probably have destroyed the earthworks long ago. But pressure has grown to open the earthworks more fully to the public. In two thousand two, a woman of Cherokee heritage was arrested for trespassing when she went to pray at the earthworks during golf time. Barbara Crandell explains why she was willing to risk arrest: the ancestral connection she feels to the earthworks:

They built these things so we would remember who we are. Don't lose track of who you are! When I go to the mound, I feel a great welling up of pride and love for my people. I love my ancestors. I love their bones. That's the way I was brought up. I have great reverence for them. And every one of those mounds, I know their hands lovingly gathered the dirt, and put it there. And I can feel their hands patting me, when I go there. So that's why I think it was left as a trail for native people to follow. Go there and connect with your ancestors, so you can walk a good path. It is terrible that people are not allowed to go to these places. I mean, they're not just for Indian people. I mean, I connect with them, maybe in a different way. But all peoples should be able to go there. They should be able to go there and see this wonderful sight. And I'd like to have it open for everybody.

12. Preservation

In the mid-nineteenth century, the surveyors who made all the excellent drawings of the earthworks, were already regretfully noting their destruction. Squier and Davis, in 1847:

...the leveling hand of public improvement, and most efficient of all, the slow but constant encroachments of agriculture, are fast destroying these monuments of ancient labor, breaking in upon their symmetry and obliterating their outlines. Thousands have already disappeared, or retain but slight and doubtful traces of their former proportions.

What they called "public improvement," we call "development." And it continues to cut and obscure the hills and valleys of the region. Subdivisions, shopping malls, industries, and even schools, are still devouring the land in which the last traces of these ancient cultures slumber. And Ohio is far behind most other states in enacting any preservation laws to stop it.

Archaeologist Bill Dancey:

We are just slowly but surely destroying the archaeology of Ohio. I think the people of Ohio need to wake up to the fact that they have some of the most intriguing archaeological ruins of the entire Midwest, and they are the one state which is in the dark ages as far as historic preservation goes.