

The image features a leopard print background. A white rectangular box with a thin, dark border is centered in the upper half. Inside the box, the text "Outdoors@theNATE" is written in a green, sans-serif font, and "NATEBOOK" is written below it in a bold, black, sans-serif font.

Outdoors@theNATE
NATEBOOK

Welcome to the Park

Outdoors@theNATE
NATEBOOK



Set within over 100 acres of natural prairie landscape, The Nathan Manilow Sculpture Park is Illinois' largest outdoor sculpture museum, showcasing 31 artworks on the campus of Governors State University. With a focus on education, exhibition, and conservation, the park is a haven for exploration, where wonder emerges around every corner—inspiring opportunities for interactive learning and appreciation of modern sculpture. Free and open to the public, dawn until dusk 365 days a year.

NATHAN MANILOW
SCULPTURE PARK
... where wonder emerges

 **Governors State**
UNIVERSITY



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PRAIRIE SCIENCE

WHAT IS A PRAIRIE?

An **Ecosystem** is made up of all the plants, animals and living organisms, plus their environment in any part of the world. A prairie is a type of grassland. Today, many grasslands are used for farming, and approximately 70% of the food produced for humans comes from these regions.

An **ecosystem** has living parts (biotic) and non-living parts (abiotic). The abiotic parts include air, water, soil, rock and climate. The living parts include **plant and animal communities**—specific populations of organisms.

A **Prairie** is *both* an ecosystem *and* a community of plants and animals. Natural ecosystems that have been less changed by humans usually have a bigger variety of plant and animal communities.

The Nathan Manilow Sculpture Park is set in 100+ acres of natural prairie landscape, making it Illinois' largest outdoor museum space.

PRAIRIE PLANTS

DID YOU KNOW? Illinois nickname is "The Prairie State?" The original Illinois prairie ecosystem contained as many as 300 plant species. The *variety* of an ecosystem's biotic (or living) community is often referred to as its *biodiversity*.

The greater the **biodiversity** of an ecosystem, the more kinds of plants and animals are found there.



Field Rotation 1981
Sculptor: Mary Miss
Earth, wood, steel, water
Commissioned with the assistance of the National Endowment for the Arts

Mary Miss's landscape sculpture, **Field Rotation**, gives us a great chance to think about the importance of open space, prairie plants, and the role of wildlife in our communities. By standing on the central mound, we can see over the poles and the grasses – it's a peaceful place!



How do prairie plants differ from other plants or the grass in my neighborhood?

Their roots are much deeper so they help stop erosion! They also control water flow better than turf grass.

Plants you will find in the Nathan Manilow Sculpture Park



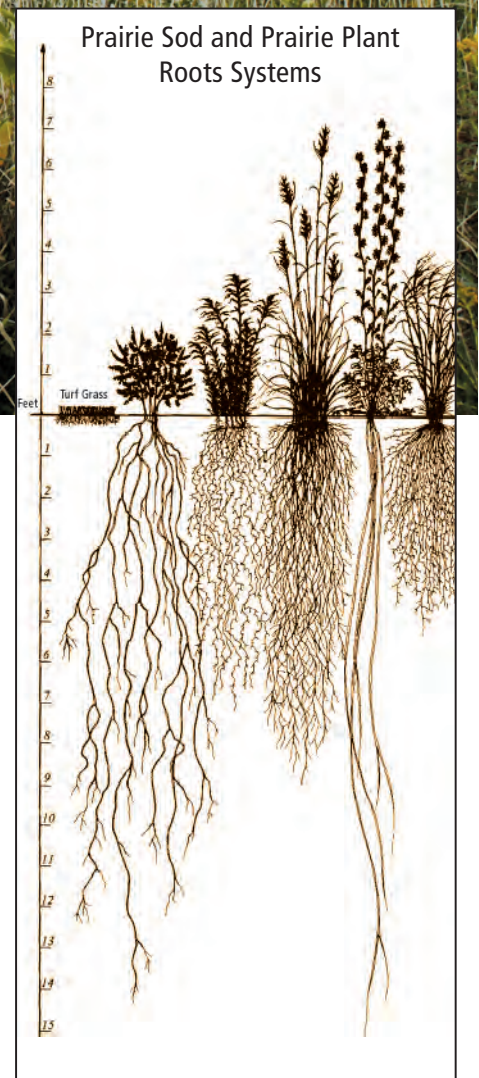
New England Aster
(*Symphotrichum novae-angliae*)



Big Bluestem
(*Adropogon gerardii*)



Yellow Coneflower
(*Ratibida pinnata*)



"The tough prairie sod is a great conserver of soil and water. Sod acts like a giant sponge catching and holding rainwater. As a result, the amount of water runoff from the prairie is small compared to land where there is no strong network of roots to absorb the rain. The roots also bind the soil tightly to the earth, protecting it against erosion."

("Prairie Ecosystem," <http://www.blackfootedferret.org/prairie.html>. July 5, 2000)

PRAIRIE ANIMALS

Animals need **food, water, shelter and space** to survive. Insects and reptiles are food for some wildlife.

A **habitat**, or living environment, provides all four of these needs. So, a **prairie is now an ecosystem, a community, and a habitat.**

Ecosystems are dynamic, meaning they are always changing from year to year, but on average a habitat can support only so many animals, based on size, weather, food and other factors.

Animals you might see in the Nathan Manilow Sculpture Park

All species contribute something toward the proper functioning of an ecosystem. Human beings sometimes destroy parts of an ecosystem without thinking about its importance to the whole. One example of this has been with snakes. But snakes, as middle-order predators, play a very important role in keeping balance in an ecosystem – they are a threat to invasive species and are food for other predators.

The rule of thumb is this: Never eliminate wildlife just because you don't like it! If an animal causes a problem, first try to discourage it. If this doesn't work, talk to an Illinois Department of Natural Resources biologist. Most animals are protected by law. Remember, each species has an important role in building and maintaining the best possible wildlife habitat.

Coyote



White-tailed Deer



Beaver



Hawk



Snowy Egret

BIRDLIFE

Prairie plants provide a good habitat for grassland birds. Many birds only live in certain habitats that specifically meet their needs. Some of the birds found in grasslands stay year-round. Others nest there in the summers and fly south for the winter. Here are a few of the birds that can be seen in prairie habitats in Illinois:

Bobolink

Eastern Meadowlark

Henslow's Sparrow

Northern Harrier

Greater Prairie Chicken

Short-eared Owl

Upland Sandpiper

Grasshopper Sparrow

Why are migrating birds important to a prairie?

As members of ecosystems, birds play many roles. They are predators, seed dispersers, and ecosystem engineers. They eat agricultural pests!

THE ART



Mary Miss

Mary Miss is an American woman sculptor who has made artworks so large they are called “Land Art” or “Earth Art.” She is interested in how artists can help fix the complex issues of our times—making environmental sustainability into real physical experience for people is one of her primary goals. She likes the idea of parks as “living labs,” where people can interact and learn.

She was asked to come to the Nathan Manilow Sculpture Park and make a big sculpture. 23 students at GSU worked hard with Mary Miss over the summer of 1981 to build everything you see – the 125 poles that spiral out in a pinwheel pattern from the central mound, the wooden structure, and the towers.

How might this landscape-based sculpture help this prairie ecosystem?

- The mound helps control storm water runoff
- The poles serve as bird perches
- The walled garden serves as a mini-irrigation system

TECHNOLOGY

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Technology can be defined as the tools that human-beings have developed over the period of human history to assist us in creating, doing, or thinking about things. Technology can be very simple – if you have ever used a screwdriver and a screw, you have used an example of simple machine technology. (And the technology of a screw goes all the way back 2,200 years in history to a Greek Mathematician, Engineer, and Designer named *Archimedes!* [Ar-kem-EE-deez])

Sometimes **technology** is so simple, it's hard to believe it's technology!

When you ride a bicycle with multiple gears, you're using technology. There are centuries of technological development in the gears that make it easy for you to go up hills. Even a simple wheel with an axle is an example of technology!

If you have ever ridden in a boat, you were taking advantage of theories about floating that Archimedes (yeah – THAT Archimedes) came up with 2,000 years ago!

When we hear about technology in our modern world, it often means the use of computers. Computers are tools whose lightning-fast abilities help doctors diagnose diseases, made it possible for the United States to send a satellite cruising past the planet Pluto at the outer limits of our Solar System, and can predict tomorrow's weather (well, even computers can be wrong sometimes!).

Technology is the application of scientific knowledge for practical purposes. It's what some people call "applied science."

Circle examples of technologies shown below.



Talk about it! Why are these or are they not examples of technology?

So, technology can be simple or complex. We use technology to help us create things. Artists use technology in different ways to help them create things. Some artists use simple technology and some artists use up-to-the-minute computer technology to design and then make their creations. It all depends on what sort of art they want to make!

THE ART

All three of these sculptures are in the **Nathan Manilow Sculpture Park**. **Can you guess which artist used a computer to create their final form?** If you guessed the middle one, you would be right!



Untitled 1982
Joel Shapiro
cast bronzes

Joel Shapiro's sculpture does not have a title. Why do you think he didn't want to put a title on it? Many people think his sculpture looks like a person with their arms stretching out. Or maybe a break dancer doing a quick turn on his head. Artists call this "figurative abstraction" because the form reminds us of the human figure. One of the fun things about Joel Shapiro's sculpture is that, when you get close to it, it looks like wood. That's because wood was the material he used to make his first model.



Windwaves 2010
Yvonne Domenge
painted steel

Yvonne Domenge is an artist who was born, lives, and works in Mexico City, Mexico. She likes to make sculpture that makes us think about nature. Can you think of why she wanted to call this sculpture Windwaves? When art reminds us of nature, we sometimes call it "organic abstraction" or "biomorphic abstraction." Her first model of Windwaves was only about 18" across. She used a computer to enlarge the sizes of all the shapes and designed in 3 sections so it could be made and then screwed together. Computers help artists realize their vision – they don't create the vision!



Illinois Landscape No. 5 1975
John Henry
painted steel

John Henry used welding technology to create the long rectangular elements which make up his sculpture. He designed this artwork especially for this hill. It is an example of "site specific" art because it really wouldn't fit in anywhere else. How is John Henry's sculpture different from Windwaves? Its straight lines and hard angles make it an example of "geometric abstraction."

Talk about it!

Why do you think Yvonne Domenge needed a computer to design the shapes for her sculpture? Is Yvonne Domenge's sculpture any less of an artwork because she used a computer to help her create it instead of just using her own hands?

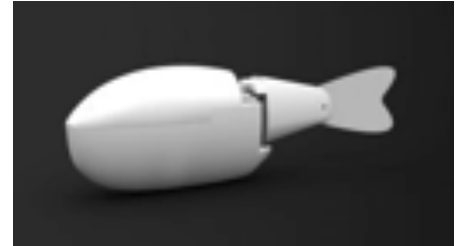
As you know, sculpture is 3-dimensional – it has height and width and depth. Here are some things to consider when creating anything in 3 dimensions.

SCALE, PROPORTION, TEXTURE, AND BALANCE

Both scale and proportion are related to the comparative sizes of elements in an artwork.

Scale refers to the relative size of an object (in its entirety) to another. In art the size relationship between an object and the human body is significant. In experiencing the scale of an artwork we tend to compare its size to the size of our own bodies. We feel pretty big when we stand next to Joel Shapiro's Untitled. When we walk to John Henry's large yellow sculpture, suddenly we feel small. The scale of the two sculptures is very different.

Proportion refers to the relative size of parts of a whole (parts within an object). We often think of proportions in terms of size relationships within the human body. If we took one of Joel Shapiro's sculpture's arms and tried to make it part of John Henry's artwork, even though it's the same shape, its proportion to the yellow sculpture is all wrong and it would look out of place.



DID YOU KNOW?

In 2012, NYU-Poly constructed a robotic fish and placed it in a tank of golden shiners. After simulating the tail movements of a leader fish, the robotic fish was eventually accepted and became their leader.



Texture is the surface feel of the sculpture. John Henry and Yvonne Domenge's sculptures are smooth and slick, while Joel Shapiro made sure the texture on his sculpture looked like wood.

Balance is concerned with "visual equilibrium." The most recognized example of this is a weighing scale. Now, stand across from your classmate. Try standing on one foot and holding yourself steady.

Is he/she able to stand perfectly straight?



ENGINEERING

Engineers use the principles of science and math and critical thinking skills to find solutions to design challenges. They are the link between ideas and inventions and the creation of finished products we find in stores that meet our daily needs. Many engineers **develop new products**.

The creation of art, or sculpture, is no different. Sometimes, a **sculptor needs to be an engineer, solving complex engineering issues** in order to create their art.

Sculpture is the form of the visual arts that functions in **three dimensions**. The design of sculpture involves the **physical manipulation of materials** to form something new from something that already exists.

Most sculpture used to be made by carving wood or molding clay into forms, but since the late 19th and early 20th centuries, a period in the art world called **Modernism**, sculptors exercised more freedom in using other materials and processes in their designs.



We will look at two examples of **modern sculpture** made from **Automobile Tires**, and **Welded Steel**...

SERENDIPITY is twelve feet high, made of long wooden blocks that are covered with stretched tire rubber and held together with long steel bolts. The tires are cut into pieces of varying length, width and shape—and fastened onto wood or metal to make rhythmic patterns.

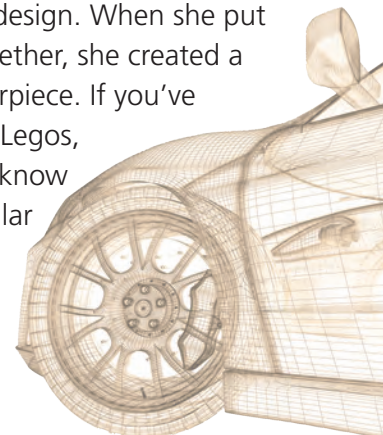


Serendipity, 1998
Sculptor: Chakaia Booker
rubber tires, wood, steel
Loan courtesy of the artist



DID YOU KNOW?

For **Serendipity**, Chakaia Booker first created over 100 “logs” in 4 swappable sizes. This is called “modular” design. When she put them all together, she created a 40 ft. masterpiece. If you’ve played with Legos, you already know about modular design!



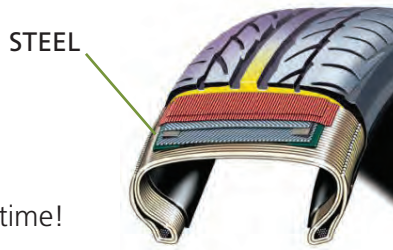
Why use rubber tires?

Rubber is...

- **Elastic** – it flexes and stretches!
- **Waterproof**
- **Durable** – it's strong and lasts for a long time!
- **Able to withstand heat**
- **Rubber becomes sticky** when hot and **stiff** when cold.

Tires are...

- Made of **natural and synthetic** (or man-made) rubber
- **Reinforced with chemicals** that make them last longer
- **Able to grip and bond** to a surface when in motion or hot
- Made to **hold air pressure** and **resist puncture** from sharp objects
- **Protected** by steel belts under the rubber



About the Artist

Chakaia Booker is best known for her work with discarded automobile tires. In the 1980s, she decided to make public sculptures and wanted to use a material that would be durable outdoors – to weather any condition. Tires were cheap and easy to find. She sees her use of tires as a personal statement on people's relationship to the environment and our responsibility for keeping it clean and not contaminating it.

Compare **SERENDIPITY** to **IL LANDSCAPE NO. 5**



IL LANDSCAPE NO.5 is 134 ft. long, and is typical of John Henry's work. Through the careful arrangement of simple angles, the artist has created a structure weighing many tons yet it seems effortless. But it is also so big a viewer can easily move between its pieces, experiencing it from both inside and out.

Why use steel?

Yield Strength – Steel can handle or hold a lot of weight or pressure!

Toughness – ability to resist cracking

Ductility – the degree of response to stress and strain to reduce the risk of cracking

Weldability – to generate heat and melt the steel to be able to connect pieces at joints

Durability – the ability to withstand corrosion from weather

Illinois Landscape No. 5, 1976

Sculptor: John Henry

(American, b. 1943)

welded and painted steel

Commissioned by the GSU Foundation with assistance from the National Endowment for the Arts

About the Artist

John Henry is an American sculptor whose geometric forms have been associated with the **Minimalist Movement**. Minimalists favored the use of prefabricated **industrial materials** and simple, repeated geometric forms together with the physical space occupied by the artwork.



DID YOU KNOW?

The students at GSU call this piece of art "French Fries!"

MATH



The elements of design – both natural and manmade - are not by chance but can be described through the use of numbers.

What do these naturally occurring items have in common?



Their structure reflects a recurring system of numbers in nature called the Fibonacci Ratio.

The **Fibonacci Ratio** is essentially the series of numbers:

0, 1, 1, 2, 3, 5, 8, 13, 21, 34, ...

The next number is found by adding up the two numbers before it.

- The 2 is found by adding the two numbers before it (1+1)
- Similarly, the 3 is found by adding the two numbers before it (1+2),
- And the 5 is (2+3),
- and so on!



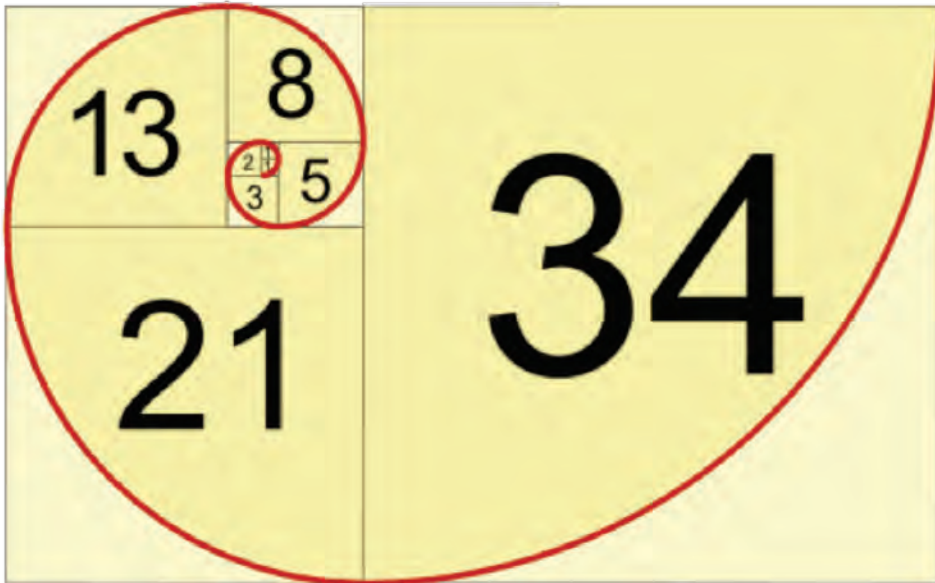
One way these spirals can be made by beginning with a 1 x 1 box.

Add another 1 x 1 box.

Add a 2 x 2 box

Add a 3 x 3 box, etc

When we make squares with those widths, and connect the corners diagonally, we get a nice spiral.



Do you see how the squares fit neatly together?

For example 5 and 8 make 13, 8 and 13 make 21, and so on.

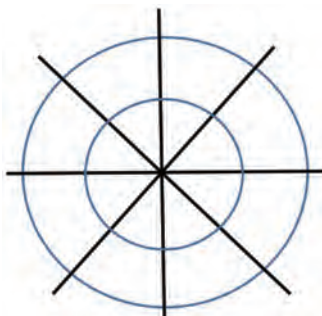
DID YOU KNOW?

That famous artists like Mozart (music) and Leonardo da Vinci (painting) used the Fibonacci Sequence to help them create their masterpieces?

The Fibonacci sequence isn't used only in the visual arts. Hip-Hop composers **Mos Def** and **Talib Kweli** used this as inspiration for their song **Astronomy** (8th Light), "Now everybody hop on the one/ the sounds of the two/It's the third eye vision, five-side dimension/ the 8th Light is gonna shine bright tonight."

During your visit to the Park, we will make a human Fibonacci curve and pretend we are part of the natural world (which, technically, we are!)

We will begin with this pattern and use our bodies to form the mathematical curve.



Many times artists look at nature for their ideas. And sometimes, they think about Math, too.



James Brenner (jamesbrenner.com) is a sculptor who makes really big artworks. He makes sculpture that people can play with or walk into or sometimes just look at.

The Nathan Manilow Sculpture Park owns one of James Brenner's sculptures. It is a favorite because it's a maze and you can run through it. He made it in 1987 and he named it **Passage**.



Why do you think he named this sculpture **Passage**?

He based his artwork on the Fibonacci ratio....but instead of starting at the inside of the curve, he started on the OUTSIDE!

Resources for Prairie Science Section:

For more information on Mary Miss's other large Earth Art pieces, see www.marymiss.com.

Illinois Prairie Ecosystems: http://www.museum.state.il.us/muslink/prairie/htmls/eco_il.html

Department of Natural Resources: <http://dnr.state.il.us/education/prairie/games.htm>

Illinois Natural History Survey: <http://www.inhs.uiuc.edu/Prairie> Research Institute: <http://prairie.illinois.edu/about-inrs.shtml>

Living with Illinois Wildlife: <http://web.extension.illinois.edu/wildlife/>

Building a Prairie: <http://www.dnr.illinois.gov/OI/Documents/April09LargeScalePrairie.pdf>

Other Sculpture Parks nearby:

Koehnline Museum, Oakton Community College <http://www.oakton.edu/museum/>

Skokie Northshore Sculpture Park <http://www.sculpturepark.org/>

Cedarhurst Art Center <http://www.cedarhurst.org/>

Nathan Manilow Sculpture Park: www.govst.edu/sculpture

John Henry: <http://johnhenrysculptor.com>

James Brenner: www.jamesbrenner.com

Chakaia Booker: www.chakaiabooker.com

Chakaia Booker at the National Museum of Women in the Arts:

<http://nmwa.org/explore/artist-profiles/chakaia-booker>

Mary Miss: www.marymiss.com

Yvonne Domenge: <http://www.domenge.com/en/> (Also has Spanish option)

<https://www.youtube.com/watch?v=94-MMta-kAg>

Resources for Technology Section:

<http://www.techasart.org/Artists.html>

<http://char.txa.cornell.edu/language/principi/principi.htm>

<http://www.visual-arts-cork.com/sculpture.htm>

<http://www.projectarticulate.org/principles.php>

<http://crazyfacts.com/tag/technology/>

Technology and Sculpture: YouTube https://www.youtube.com/watch?v=5I0o5_QOibk

Resources for Engineering Section:

<http://www.sciencekids.co.nz/engineering.html>

<https://www.heritagepreservation.org/PDFS/TodayforTomorrow.pdf>

http://www-tc.pbskids.org/designsquad/pdf/parentseducators/ds_pe_event_guide_kinetic_sculpt.pdf

Properties of rubber: <http://science.howstuffworks.com/life/botany/rubber-info1.htm>

Why use steel for sculpture: <http://jxtamorph.com/the-steel-faq-using-steel-for-sculpture/>

Engineering in sculpture: Arthur Ganson - <http://web.mit.edu/museum/exhibitions/ganson.html>

Resources for Math Section:

<https://www.mathsisfun.com/numbers/fibonacci-sequence.html>

<http://www.mensaforkids.org/teach/lesson-plans/fabulous-fibonacci/>

Archimedes: <http://archimedespalimpsest.org/about/history/archimedes.php>





Draw a picture of the sculpture that you would like to create and give it a name. Make sure you sign your name so everyone will know you designed it!

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SCULPTURE PARK
... where wonder emerges

www.govst.edu/sculpture



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University Park, IL 60484