

Symbols, Glyphs, and Rock Art: Petroglyphs

Teacher Version

In this lesson, we will learn about the ways people conveyed their messages throughout history. We will look into the development of communications and language, particularly symbols and glyphs, with an emphasis on petroglyphs.

Next Generation Science Standards:

- MS-ESS2-2. Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.
- HS-ESS3-1. Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.

Prerequisites: Good for all students

Complete List of Materials:

- Prepared plaster of paris disks (1-2 per student)
 - 1 box plaster of paris (about 4 lbs per 12 disks)
 - 7" paper plates - *must be heavy duty
 - Water
 - Tub or bucket
- Paint brushes
- Tempera paint in earth tones (brown, yellow, orange, red, tan)
- Round toothpicks or nails
- Petroglyph Symbols worksheet (one per student)
- Message Challenge – cut into individual messages (one message per student)

Preparation and Lab Notes:

****Note to teacher:** Preparation for plaster slabs must be done at least 2 days in advance to allow drying time. Make plaster of paris mix according to box directions. Pour mix onto paper plates. Hold each plate up and tap bottom of plate to bring bubbles to the surface of plaster mix – this will allow the working surface (the bottom of each slab) to be smooth. It is fine if you still see bubbles on the surface of the plaster. Allow to dry. Prepare a minimum 1-2 slabs for each student. At the beginning the lesson, prepare plaster slabs for petroglyph carving by painting with tempera paint.

1. Write your name on the back (bumpy) side of each plaster-of-paris slab.
2. Carefully pop dried slabs off plates and flip upside down. The smooth surface will be the front of your petroglyph.
3. Paint the front surface of the plastic slab using an earth-tone tempera paint.
4. Allow the slabs to dry (about 20 minutes). Slabs should be dry by part 2 of the lab; if not, use a hair dryer to dry the paint.


Key Concepts:

- **Glyphs** are elemental symbols, intended to represent an understandable character.
- **Rock art** are markings made by humans onto natural stone. They are found all over the world, usually found in protected areas such as caves or overhangs. Generally, they were ways of communicating by leaving pictures instead of words. As people and communities moved from place to place, it was a way of leaving messages for future inhabitants. The two main types of rock art are:
 - **Pictographs**, which are drawn or painted, and
 - **Petroglyphs**, which are chipped or carved into rock.
- **Desert Varnish** is the dark, manganese-rich coating on protected rock surfaces that is chipped away by Native American peoples to create petroglyphs.







Introductory Mini-lecture:

Throughout history, people have constantly sent messages to other people. At times, a message needed to be kept a secret (cryptography), and at other times, everyone needed be able to understand it, even if they didn't speak the originator's language. There are many symbols that most people recognize, which can convey either tangible things, or ideas and feelings. Many of these are universal symbols - you don't need to speak the same language (or even be able to read) in order to understand the symbol. These days, emojis are often used as a way of communication.

For example,

This picture:	represents this thing:	and conveys this feeling or idea:
	Hourglass	Passage of time

What do the following symbols mean?

This picture:	represents this thing:	and conveys this feeling or idea:
	<i>Heart</i>	<i>Love</i>
	<i>Smiling Face</i>	<i>Happiness</i>
	<i>Arrow</i>	<i>Up</i>
	<i>Money</i>	<i>Greed</i>
	<i>Skull and crossbones</i>	<i>Danger, poison, death</i>
	<i>Thumb</i>	<i>OK, yes</i>

There are times when messages need to be left for people who will follow. For example, if there is a dangerous cliff ahead, you may see a sign like this to warn people who may come in the future:



There are no words, but generally speaking, everyone can decipher what the sign is trying to convey. But this wasn't always the case. Sometimes the meaning of the message was only known to those who knew the code.

Part 1 – Pictographs

During the turn of the 20th Century and especially during the Great Depression, many displaced workers were roaming around the United States. These people couldn't stay in the same place for long – they had a nomadic lifestyle because they were looking for work. They would often use the railway system to navigate or travel - and these people became known as hobos (you may think of them as bums or drifters, but back then the term 'hobo' was very specific – people who traveled around for the sole purpose of looking for work, and having to leave because of the lack of work). Hobos followed a strict moral code, but not everyone accepted them - so life was hard and dangerous.

Life was difficult in these times, and not everyone was given the opportunity to go to school. Many teenagers dropped out and adopted the hobo lifestyle (in the 1930's, there were around 250,000 teen hobos wandering the US) – so many hobos were illiterate. They learned to leave notes for each other giving information on safe places to camp, find a meal, dangers, etc. These messages, left in symbol form, became known as the Hobo Code.

Examine the following picture:



from: <http://www.antiquearchaeology.com/blog/the-hobo-code-the-secret-language-of-americas-working-class/>

Q1. Using the Hobo Code guide, try to decipher the message.

Kind lady lives here, religious talk will get you food, and you can sleep in the loft here.

The Hobo Code was prevalent in 20th century America, but pictographs have been in use for thousands of years. As the earliest known form of writing, pictographs have been discovered in ancient Mesopotamia, Egypt, and China.

In the American Southwest, many examples of pictographs and petroglyphs can be found. The messages may have been because the creator was sharing information about a valuable hunting ground, or marking his or her territory, or leaving a spiritual mark. In many National Parks such as Canyonlands, Capitol Reef, Petrified Forest, and Zion, ancient rock art panels show the relationship between people and place.

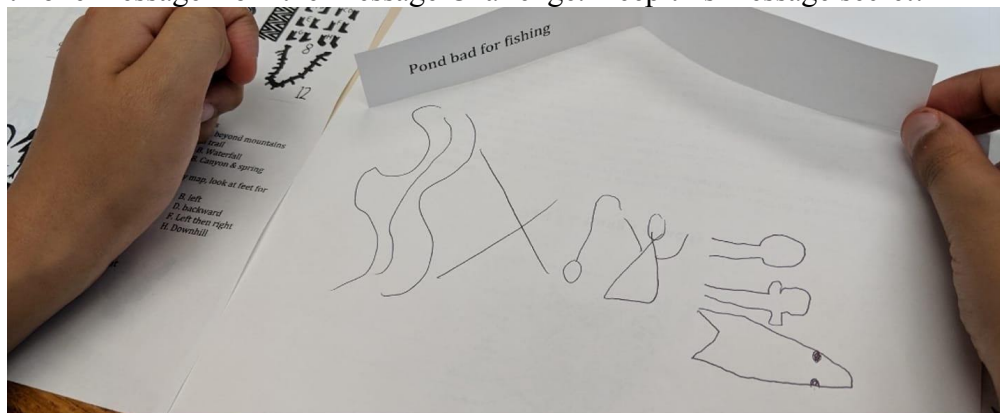
There are many purposes for rock art, but we can only guess at the exact meaning of each piece. Generally, it was a way of communicating by leaving pictures instead of using words. As people and societies moved from place to place, it was a way of leaving a message for future inhabitants. Images were often left in caves, overhangs, or other protected places to keep them safe from the elements.

Procedure:

Imagine you are part of a tribe that is migrating away from your current village but have important information for any future tribes. How will you leave your message?

Cut apart messages from the Message Challenge sheet. Pass out messages and Petroglyph Symbol Charts to students.

1. Begin with one message from the Message Challenge. Keep this message secret!



2. Using the Petroglyph Symbol chart, draw a petroglyph to deliver your information. Keep in mind not all ideas are listed on the symbol chart; you may need to find your own universal icon to convey your message!
3. Trade pictographs with a partner.
4. Try to decode the message you received.
5. Come up with your own messages to encode and pass on.

Part 2 – Petroglyphs

Rock art, or markings on natural stone made by humans, is found all over the world. The main forms of rock art are pictographs and petroglyphs. Other rock art forms include earth figures. Pictographs are painted images or symbols. Paints were created using natural pigments such as ochre and iron oxides, creating colors including reds, yellows, browns, and blacks.

Petroglyphs are images or symbols carved into rock. They were created with tools like bone, wood, or rock. Often times, petroglyphs stand out clearly on rock because figures are carved into the **desert varnish** that covers the rock surface. Desert varnish is the red to black coating found on exposed rock surfaces consisting of minerals, most often manganese and iron, and caused by bacterial microorganisms that live on the rock. Bacteria take these elements out of the environment, oxidize them, and cement them onto the rock along with clay and other particles. Varnish that has more manganese is darker (black) in color, while iron produces red or orange. It may take thousands of years for a complete coat of desert varnish to form, so it is not often found on surfaces that easily erode.

Q2. Why don't petroglyphs erode away?

They are created on protected surfaces of rock. Because it takes thousands of years for desert varnish to form, it can only be found on surfaces that are protected from erosion. Figures carved into the varnish are also similarly protected.

You can now try creating your own petroglyphs.

Procedure:

Pass scratch paper and painted slabs back to students.

1. Using the Petroglyph Symbol chart, write a message or create a symbol/glyph from your imagination on your scratch paper.
2. Carefully copy your message onto your plaster slab.
3. Carve your drawing onto your slab using a toothpick or nail. The deeper you carve, the clearer your image as the paint is removed and the lighter plaster shows through.
4. Display your rock art on a flat surface to prevent breakage.



Appendix A: Hobo Code

from Dreyfuss, Henry. *Symbol Sourcebook: An Authoritative Guide to International Graphic Symbols, 1972.*

NO USE GOING THIS DIRECTION	THIS WAY	HIT THE ROAD! QUICK!	OR	GOOD ROAD to FOLLOW	ROAD SPOILED, full of other hobos
DOUBTFUL	HALT	THIS IS THE PLACE	DANGEROUS NEIGHBORHOOD	THIS COMMUNITY indifferent to hobos	NOTHING to be GAINED HERE
YOU CAN CAMP HERE	FRESH WATER, SAFE CAMPSITE	DANGEROUS DRINKING WATER	O. K., ALL RIGHT	GOOD PLACE for a HANDOUT	ILL-TEMPERED MAN LIVES HERE
WELL-GUARDED HOUSE	OR	THE OWNER IS IN	THE OWNER IS OUT	A GENTLEMAN LIVES HERE	THESE PEOPLE ARE RICH
KIND LADY LIVES HERE	KIND WOMAN, tell pitiful story		OR	FOOD HERE if you WORK	RELIGIOUS TALK gets FREE MEAL
IF YOU ARE SICK, they'll care for you	DOCTOR HERE, WON'T CHARGE	FREE TELEPHONE	ALCOHOL IN THIS TOWN	OR	YOU CAN SLEEP in HAYLOFT
KEEP QUIET	HOLD YOUR TONGUE	BARKING DOG HERE	VICIOUS DOG HERE	BEWARE of FOUR DOGS	EASY MARK, SUCKER
THE SKY is the LIMIT	TROLLEY STOP	GOOD PLACE to CATCH a TRAIN	THIS IS NOT A SAFE PLACE	MAN with a GUN LIVES HERE	BE PREPARED to DEFEND YOURSELF
DISHONEST PERSON LIVES HERE	COWARDS, will give, to get rid of you	YOU'LL BE CURSED OUT	A BEATING AWAITS YOU HERE	POLICE HERE FROWN on HOBOS	AUTHORITIES HERE ARE ALERT
THERE ARE THIEVES ABOUT	CRIME COMMITTED, not safe for strangers	JUDGE LIVES HERE	COURTHOUSE: PRECINCT STATION	OFFICER of LAW LIVES HERE	JAIL