

VOICES CARRY: WHISPER GALLERIES AND X-RATED ECHO MYTHS OF UTAH

Be careful what you say in the canyons of Utah! Acoustic experiments at many rock art sites have revealed that petroglyphs and pictographs are typically located at places with unusually strong sound reflection (Waller 2005). Indeed, petroglyphs were recently discovered in Arch Canyon, Utah, via echolocation (Allan and Waller 2010). Examples are given of rock art sites at which voices carry for unexpectedly long distances, giving rise to whisper galleries and other echo focusing effects. Such complex auditory phenomena were considered to have supernatural causes, and echo spirits were believed to dwell within the rocks. Great Basin mythology will be presented that includes tales of echo spirits in which sexual content is integral to the storyline.

In the process of conducting archaeoacoustic recording experiments to document the relationship between sound reflection and rock art, the author has often experienced the exasperation of interfering background noises that seem particularly magnified at these sites. Voices carry at rock art sites for unexpectedly long distances—a phenomenon known as a whisper gallery effect due to sound focusing. While such conditions may not make it easy for isolating and recording the pure echo effects at a given location, the phenomenon of the whisper gallery effect is interesting in itself, and deserves attention as it may also have contributed to the motivation for the placement of rock art.

Sabine (1922:255–276) described the following six world-famous whispering galleries that continue to be tourist attraction marvels even in the twenty-first century:

- 1) The Dome of St. Paul's Cathedral in London, first considered scientifically by

Sir John Herschel, who stated that “the faintest sound is faithfully conveyed from one side to the other of the dome, but is not heard at any intermediate point” (Sabine 1922:272).

- 2) Statuary Hall in the Capitol at Washington, D.C. “The visitor to the gallery was placed at the center of curvature of the ceiling and told to whisper, when the slightest sounds were returned to him from the ceiling. The effect was much more striking than one would suppose from this simple description. The slight lapse of time required for the sound to travel to the ceiling and back, together with one's keen sense of direction, gave the effect of an invisible and mocking presence. Or the guide would place the tourists at symmetrical points on either side of the center, where they could, with the help of the ceiling, whisper to each other across distances over which they could not be heard directly” (Sabine 1922:257).

- 3) The vases in the Salle des Cariatides in the Louvre in Paris (Sabine 1922:269–270).

- 4) St. John Lateran in Rome (Sabine 1922:266–268).

- 5) The Ear of Dionysius at Syracuse in Sicily (Sabine 1922:274–276). As described centuries ago by Swinburne (1790:104–107), “It is 18 feet wide and 58 high, and runs into the heart of the hill, in the form of a capital S; the sides are chiseled very smooth, and the roof covered, gradually narrowing almost to as sharp a

point as a Gothic arch; along this point runs a groove, or channel, which served, as is supposed, to collect the sounds that rose from the speakers below, and convey them to a pipe in a small double cell above, where they were heard with the greatest distinctness... The echo at the mouth of the grotto is very loud; the tearing of a piece of paper made as great a noise as a smart blow of a cudgel on a board would have done; a gun gave a report like thunder that vibrated for some seconds...”.

6) The Cathedral of Girgenti [Agrigento] (Sicily), where “the slightest whisper is borne with perfect distinctness from the great western floor to the cornice behind the high altar, a distance of 250 feet. By a most unlucky coincidence the precise focus of divergence at the former station was chosen for the place of the confessional. Secrets never intended for the public ear thus became known, to the dismay of the confessor and the scandal of the people” (Sabine 1922:264–266; see also New York Catholic Protectory 1873 for a similar description).

Whisper gallery effects are due to the reflection of sound from surfaces with low absorption, together with a spatial shape that focuses the sound waves at a distant location, as well as contributions from refraction and diffraction, such that the sound waves are stronger than the direct waves would be expected to be. Echoes are such a complex auditory phenomena that they were considered supernatural, and were explained by echo spirits dwelling within the rocks.

This article includes examples of rock art sites located in whisper galleries, and will put sound reflection into cultural perspective by presenting examples of Great Basin echo mythology in which sexual content is integral to the storyline. Descriptions of the characters in these echo myths relate to rock art subject matter, which can often

be graphically sexual in content. This is consistent with the scientifically testable Rock Art Acoustics theory that rock art locations and subject matter both relate to the auditory sense.

WHISPER GALLERIES IN UTAH

Sound was experienced as carrying unusually far due to sound reflection, giving notable whisper gallery effects, at the following sites tested in Utah in 2009:

- Anasazi Ridge
- Black Point
- Bock’s Canyon
- Parowan Gap East
- Parowan Gap Narrows

To give one specific example, at Bock’s Canyon, when I was high up on a canyon wall at the panel depicted in Figure 1, I could distinctly hear every word of a personal conversation between a married couple far below at the spiral design in the bottom of the canyon. It would be worth the



Figure 1. Bock’s Canyon, Utah. An example of a rock art site with remarkable whisper gallery effects.

considerable effort of designing and carrying out an experiment to quantitatively measure and document the extraordinary sound propagation at such rock art sites as contrasted and compared to ordinary flat terrain.

GREAT BASIN ECHO MYTHOLOGY

The cultural significance of sound reflection is underscored by the numerous echo myths from around the world that contain supernatural explanations of echoes. A few of these myths are paraphrased below. It is interesting that sexual content is integral to these echo myths, which are included here since they go hand-in-hand with the whispering gallery theme of this paper.

“First Tale” (Hopi)

“In the Beginning there were only two: Tawa, the Sun God, and Spider Woman, the Earth Goddess... They were the first lovers and of their union there came into being those marvelous ones the Magic Twins—Puukonhoya, the Youth, and Palunhoya, the Echo” (Mullett 1979:1). (See also Waller 2006 regarding acoustic testing to substantiate interpretations of possible depictions of the Divine Echo Twin at echoing rock art sites)

“Wind Woman Became Echo” (Chemehuevi)

“Wind Woman imitates Dove’s voice; steals her boy; Dove’s son becomes a young man; Wind Woman makes him to copulate with her so often that his penis becomes large and heavy; four girls who are his cousins reduce his penis to normal size; Archer hides him; lures Wind Woman into cave, closes it; she became the Echo” (Laird 1976:158–159).

“Tso’apittse” (Shoshone)

One woman had a baby, a baby boy.
Tso’apittse said “Give me that little boy. I want to hold him. I want to pet the baby.”
She stole the baby.

The boy grew bigger.
Tso’apittse kept pulling the boy’s penis.
It grows long.
Then the boy is grown, and Tso’apittse marries him.
Every time Tso’apittse comes home she wanted to have intercourse with him.
She says “Come now, take out your penis.”
The boy is a man now.
He goes to hunt mountain sheep.
A man he meets gives the boy a mountain sheep to eat; makes fire.
The boy gives the mountain sheep heart to Tso’apittse.
She hits the ground with it all night.
Tso’apittse goes to get the meat; wishes for wind, gets the meat, runs home, finds boy is gone.
He meets a woman gathering seeds for food.
The woman hides him in her gathering basket.
Tso’apittse comes and says “Where’s my man?”
The woman says “I haven’t seen him.”
Tso’apittse says, “Look that little basket is crooked.”
The boy gets out and runs away; meets Coyote hunting jackrabbits.
Tso’apittse comes and says to Coyote “Where is my man?”
Coyote is making an arrow.
Tso’apittse looks the other way.
Coyote takes the boy out of the butt of the arrow.
Boy runs away.
A bird who lives on top of the rocks hides the boy.
The bird is going to make an arrow. He has a stone pestle and puts it between his legs so that it looks like a penis.
Tso’apittse looks at the bird, sees what she thinks is a penis and says “I want that.”
The bird says “All right, I’ll give it to you.”
This bird had a cave for a house
He says, “Come, let’s go into the cave.”

So he and Tso'apittse go into the cave and he gives it to Tso'apittse.

The cave begins to get small and Tso'apittse says, "What is happening to the cave?"

The bird says, "When I have intercourse with my wife, the cave always does this."

Then the cave got smaller and smaller and the little bird got out the tiny hole that was left.

When he gets out, the entrance shuts up tight.

The bird saw the boy's long penis and said, "That's no good, let's cut it off."

So he cut it off.

Tso'apittse became echo.

(Smith 1939:137-139)

CONCLUSIONS

In conclusion, be careful what you say in the canyons of Utah. Rock art locations are typically echo rich, and voices carry. The subject matter of rock art is consistent with descriptions of characters described in echo myths, including ithyphallic anthropomorphs (Figure 2). Thus, to people who were familiar with the stories of sexually obsessed echo spirits presented above, the large penis could have been an image that immediately sprang to mind upon hearing echoes. The phallus thus also would have been an easy way to represent and evoke the echo story to the viewer, and thus could have been a symbol for the echoes heard at rock art sites.

The sexual content of echo myths, together with the sexually graphic or sexually symbolic content of rock art seems to be revealing of the psychological thought processes of ancient humans.

The author speculates that auditory illusions of depth (see Waller and Arsenault 2008) may have led to myths of penetrating through the rock

surface, which in turn may have been linked in the brain to thoughts of sexual penetration. It is interesting to note the frequency with which echo myths have a sexual connection. The very first sex act, according to Hopi tradition, resulted in the conception of the Echo Twin. Parallel to the Great Basin myths presented above, the very reason the mythical Greek nymph Echo was punished and became the echo spirit was because of sex: first she distracted Hera's attention away from Jupiter's sexual philanderings, and later she pined away due to unrequited lust for Narcissus until her bones turned to stone. Perhaps also the rhythmic answers of echoes to clapping or drumming triggered a dance response, with associated thought patterns of the rhythmic motions characteristic of coitus.

Although the paragraph above contains unprovable speculations, the theory that echoes and related sound phenomena were a motive for



Figure 2. *Ithyphallic anthropomorph design from an echoing rock art site in Mesa Verde that could symbolize the echo spirit described in Great Basin myths as being obsessed with penises.*

rock art placement and subject matter is scientifically testable by acoustic techniques, and has been substantiated by formal methods of data collection. It is furthermore supported by informed methods since ethnographically documented echo myths reveal the cultural significance of sound reflection. Implications of these research results include the need for conserving the natural soundscapes of rock art sites.

REFERENCES CITED

- Allan, Stephen, and Steven J. Waller
2010 Echolocation of Rock Art: Using sound to search for sacred sites. In *American Indian Rock Art*, Volume 36, edited by Ken Hedges. pp. 103–107. American Rock Art Research Association, Glendale, Arizona.
- Mullett, George Crawford Merrick
1979 *Spider Woman Stories*. University of Arizona Press, Tucson.
- Laird, Carobeth
1976 *The Chemehuevis*. Malki Museum Press. Banning, California.
- New York Catholic Protectory
1873 *The Manhattan and de la Salle monthly*, Volume 9:136 (accessed December 27, 2009 online at http://books.google.com/books?id=ALcOAAAIAAJ&printsec=frontcover&source=gbs_navlinks_s#v=onepage&q=&f=false)
- Sabine, Wallace Clement
1922 *Collected Papers On Acoustics*. Harvard University Press, Cambridge; Humphrey Milford, Oxford University Press, London (accessed June 27, 2010 online at http://books.google.com/books?id=G25LAAAAMAAJ&printsec=frontcover&dq=%22COLLECTED+PAPERS++ON+ACOUSTICS%22+sabine&hl=en&ei=bxooTO7IBMLflge9xZTYAg&sa=X&oi=book_result&ct=result&resnum=1&ved=0CCwQ6AEwAA#v=onepage&q&f=false)
- Smith, Anne M.
1939 *Shoshone Tales*. University of Utah Press, Salt Lake City.
- Swinburne, Henry
1790 *Travels in the Two Sicilies, in the Years 1777, 1778, 1779, and 1780*. Second edition, T. Cadell & P. Elmsly, London.
- Waller, Steven J.
2005 Archaeoacoustics: A Key Role Of Echoes At Utah Rock Art Sites. In *Utah Rock Art*, Volume 24, edited by Carol B. Patterson, pp. 43–50. Utah Rock Art Research Association, Salt Lake City, Utah.
2006 The Divine Echo Twin Depicted at Echoing Rock Art Sites: Acoustic Testing to Substantiate Interpretations. In *American Indian Rock Art* Volume 32, edited by Angus R. Quinlan and Anne McConnell, pp. 63–74. American Rock Art Research Association, Tucson, Arizona.
- Waller, Steven J., and Daniel Arsenault
2008 Echo Spirits Who Paint Rocks: Memegwashio Dwell Within Echoing Rock Art Site EiGf-2. In *American Indian Rock Art*, Volume 34, edited by James D. Keyser, David A. Kaiser, George Poetschat, and Michael W. Taylor, pp. 191–201. American Rock Art Research Association, Tucson, Arizona.

