Living Universe or GeoFacts: stone arches in Utah National Parks - epistemological divides in heritage environmental communication

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ABSTRACT

In this essay we contrast the GeoFacts about large stone arches that derive from the science of geology, with the GeoFacts about large stone arches that derive from the cultural beliefs of Native Americans. Geologists interpret arches as inert stones that have been eroded away by natural forces, while Native Americans see arches as having been formed by the Creator as stone portals designed to provide travel to other dimensions and are key features of their heritage. Holders of each perspective draw on conflicting epistemological premises which support the truth (the *veritas*) of their stipulated GeoFacts. The 'epistemological divide' that these premises create is a significant barrier to heritage environmental communication in general, and specifically to discussions about the appropriate meanings, management, and uses of stone arches. This analysis is based on 484 ethnographic interviews (168 at Arches National Park and 316 at Canyonlands National Park) with representatives of six tribes and pueblos.

Keywords

heritage environmental communication, living universe, stone arches as GeoFacts, Native Americans – Paiute, Ute, Hopi, Zuni, Navajo, National Parks – Arches, Canyonlands, Utah, sacred sites, space travel, *puha'gant*, knowledge and practices concerning nature and the universe (ICH Domain)

Introduction

This is an analysis of difficult-to-resolve problems in heritage environmental communication that derive from fundamental differences in epistemology. Such differences are difficult to resolve because the heritage value of the environment is not inherently embedded in the resources themselves. Finding heritage meaning(s) in the environment thus requires conversation with the cultural groups who understand and value it/them. Perceptions of the environment are called 'social constructions', however, holders of these perceptions believe them to be true, an ethnic artifact of their relationship with the environment. These different views of nature and its human connections have been found in past studies conducted by the authors to be so basic that the term 'epistemological divide' is suggested to better frame the difficulty of talking across cultures.

The authors acknowledge that heritage environmental communication problems emerge in discussions about natural resource preservation, use, interpretation, and management [Yearly: 2006]. Others have documented the heritage value of natural resources such as flying fish [Cumberbatch: 2013], sacred trees, mountains and water sources in Nigeria [Borokini: 2016], water resources in Bahrain [Rudolff and al Zekri: 2014], falcons in Mongolia [Soma: 2012] and Paektu, a volcanic mountain on the China-North Korea border which is the spiritual home for Korean people [Winstanley-Chesters and Ten: 2016].

There are three factors that make communication difficult. First, some problems occur because actors differ in terms of their knowledge of the issue. Resolution in these cases can occur through education, usually the scientists educating the lay persons. Second, other problems occur when people accurately perceive and agree what is out there and value similar natural components, but rank some values above others and thus the outcome goals are different based on which priorities should be achieved first. Here the Nature Services debate is instructive [Aisher and Damodaran: 2016; Holzman: 2012; Peterson: 2012]. All agree that the components of nature have various positive benefits for other natural components as well as for humans. One perspective is that components of nature that have Human Services should be prioritised for protection over those with primarily Nature Services. Third, still another type of problem occurs because the actors have different culturally-based beliefs regarding what resources are involved; that is, what even exists in nature, and how this contributes to human heritage [Goldman: 1999; Jackson: 1981]. When these cross-cultural views of reality are fundamentally different, we can have an epistemologically-derived problem such as is presented in the current analysis.



Plate A
Delicate arch with sacred La Sal Mountain in background.
Photo: authors, 2015-2016.



Plate B
Delicate arch setting with nearby ceremonial arch.
Photo: authors, 2015-2016.

This analysis focuses on large stone arches occurring in two United States (USA) national parks located in south-eastern Utah to illustrate how epistemological differences can be a foundation for separate thinking about the appropriate meanings, management, interpretation, and uses of these spectacular heritage features (Plates A and B). We frame the discussion around various concepts including GeoFacts, which means that holders of different perspectives draw on conflicting epistemological premises that support the truth (the *veritas*) of their stipulated GeoFacts.

Christopher Tilley [2004] argues that both large menhir stones themselves and the landscapes in which they are found in Europe [Tilley: 1994] can be viewed and understood without physical evidence such as associated artifacts, through the phenomenology of landscapes and the materiality of stone. Placements on the land and in viewscapes are critical variables in the human response to, and social construction of, naturally occurring topographic and geological features [Tilley: 2010].

The question of improved heritage environmental communication is essential to both Arches National Park and Canyonlands National Park, because between them more than a million tourists annually visit these arches to be both awed and educated. In addition, the National Park Service (NPS) managers of each unit are legally responsible for knowing about their resources and managing them in a sustainable manner.

Native American views of the arches provide the essential other epistemology for comparison with that of geological scientists. The latter has almost exclusively informed the management and interpretation of these parks, while the former are only now available for consideration by the NPS managers. The question posed by this analysis is how to overcome an epistemological divide that would otherwise cause one or the other perspective to dominate park management.

This analysis is based on 484 ethnographic interviews, 168 of which occurred at Arches National Park [Stoffle et al.: 2016] and 316 of which occurred at Canyonlands National Park [Stoffle et al.: 2017], with official representatives of six tribes and pueblos. The NPS funded the two studies, which involved tribes and pueblos which are traditionally associated with these parklands and resources and thus have intimate knowledge of both. Participating in these studies were (1) the Hopi Tribe, (2) the Zuni Pueblo, (3) the Northern Ute Tribe, (4) the Southern Ute Tribe, (5) the Paiute Indian Tribe of Utah and (6) the Navajo Nation. A mutually desired outcome of the studies was to provide a Native American voice that could potentially be incorporated into the heritage interpretation and management of these charismatic parks.

Background

Effective heritage environmental communication, which should lead to sustainable land use decisions, is often hampered when the participants act on different and oppositional epistemologies [Stoffle, Arnold and Bulletts: 2016]. Risk communication, which we believe is a variety of heritage environmental communication, is also commonly hampered by differences in epistemology [Stoffle and Minnis: 2008]. Generally, debates about what is 'really there in the environment' and 'what is happening to it because of proposed projects, management changes, or environmental changes' tend to be decided in favour of the dominant society, while the opinions of cultural minority groups are perceived as simply wrong-headed. Members of US dominant society (called in this essay Euro-Americans) largely dismiss the vernacular knowledge of Native Americans, who therefore are perceived as being in need of being educated to wiser environmental perspectives [Stoffle et al.: 2004]. When heritage environmental debates draw upon widely different epistemologies, even the temporal and spatial scopes of data, analysis and management assessments, what Adams [1998] calls 'timescapes', tend to be disputed. Native American timescapes exist in multiple dimensions. To find common ground or resolution of these requires an agreement as to what is out there in terms of variables; that is, what is real in space and time.

The notion of an 'epistemological divide' is used here to explain why oppositional heritage environmental communication is simultaneously both essential to the ability of participants to understand and believe each other, and virtually unchangeable. The case both illustrates fundamental problems that can derive from failures in communication about environmental issues and raises the question as to whether or not more talking between cultural groups results in clearer understandings that are sufficient to re/solve such problems.

There are numerous Euro-American and Native American epistemological beliefs that are part of the epistemological divide and thus can serve to limit cross-cultural communication. Here we analyse how the notion that the *Earth is alive* becomes a fundamental barrier to communication. In earlier research, Stoffle and Zedeño [2002, p.174] suggested that the best way to understand how Native American people perceive the world is through the concept of a *living universe*. This is an epistemological foundation of Indian culture, or what Rappaport [1999, pp.263-71 and 446] calls an *ultimate sacred postulate*. Simply put, the concept of a living universe is so basic in Native American culture that one cannot understand most other aspects of their culture and how they are interrelated without this concept. A living universe is alive in the same way that humans are alive and fully sentient. The universe has physically discrete components that we call *elements*, and an energy source that brings them alive that is called *Puha* in the Numic language, or something we can translate as 'creation energy' or 'power'. These elements of the universe have most of the same characteristics as humans, including the ability to communicate, to help other elements, the power to accomplish their own goals or agency, and even the capacity to lie. The arches in these two parks are understood by Native American people through this epistemological perspective.

Euro-Americans can love or hate, use or preserve stone arches, but on their side of the epistemological divide the arch can neither talk nor understand. On the Native American side of the divide an arch can love people or not, use its agency for the benefit of humans or harm them, provide them access to alternative dimensions (worlds) or not. Arches are significant life-partners for Native American peoples and have human-like rights. So, stand in awe of them or not, in Euro-American epistemology arches are just eroded stone and to Indian people arches are people who were intended at Creation to be life partners.

Native American portals

The notion of portals is a fundamental component of Native American epistemological beliefs in multiple and simultaneously existing dimensions of space and time [Lim: 2016 and 2017]. Without the latter, portals would not be logical and there would be no traditional cultural uses for them. Portals, however, are not a natural phenomenon recognised by western science and culture, so when portals become a component in heritage environmental communications between western scientists and Native Americans, discussion about them creates communication barriers and distrust rather than facilitating understanding.

In these cases, the purpose of the environmental portals is evident from their physical appearance and position on the landscape. Native Americans read the land guided by thousands of years of intimate experience. These living portals are considered 'self-voiced' [Stoffle, Arnold and Bulletts: 2016] which means they actually talk to Indian people, are read or understood by a theory called 'quali-signs' [Stoffle et al.: 2015] and are simply marked by paintings (pictographs) or pecking (petroglyphs) to indicate how they should be used [Stoffle et al.: 2000].

Travellers to other dimensions tend to be persons on a personal vision quest, such as a shaman charged with restoring or maintaining community or world balance, a medicine person who seeks a better cure, and/or a ceremonial leader renewing their songs and strengthening themselves. All seek spirit helpers, guidance, and songs. Because there were many kinds of spiritual practitioners, the Paiute term *Puha'gant* [Carroll and Stoffle: 2005], which means 'where Puha sits' or 'to have Puha in them', is used in this essay to refer to all multi-dimensional travellers.

Black Mountain – acquiring spirit helpers

Finger portals exist in a small hard-stone canyon on a pilgrimage trail from a hot spring in Oasis Valley, Nevada, to the top of a high volcano called Black Mountain [Stoffle et al.: 2015]. Located in the caldera of Black Mountain is this small shallow canyon, which is eroded out of a unique deposit of high-grade grey basalt. The canyon is covered on both sides and along the top with peckings of beings who typically serve *Puha'gants* as spirit helpers. Especially common are images of mountain sheep, water babies, and the *Puha'gant*'s knotted strings (*tapitcapi*). Near most images are naturally occurring shallow holes which are used to open the portals. Movement between the dimensions can occur when a person puts her or his finger, covered with *Ompi* (hematite) paint and grease, in the hole and then prays for access. Today, all the portal holes are

filled with *Ompi* and grease from rendered animal fat. Prayers and songs can open the portal and then the person enters, engages a desired spirit helper, and re-emerges with a new relationship.

Kanab Creek- space travel

In a small rock shelter with soft sandy floors and a low ceiling, there is a Space Travel portal in Kanab Creek Canyon, Arizona [Stoffle et al.: 1995]. *Puha* is perceived as being especially concentrated in the upper portion of Kanab Creek. The cave can be used when a traveller lays on his or her back on the soft sandy floor and stares at a low ceiling that is covered with strange and largely unique images of beings who have been contacted by earlier travellers. Travel to other dimensions and places in the solar system is facilitated by drinking the boiled juice of Sacred Datura. Space travel is especially dangerous, so only a special kind of *Puha'gant* can travel in the solar system. The last known traveller who used this cave was a recent member of the Kaibab Band of Paiute Indians.

Gypsum Cave – a song cave

Located near the Colorado River and traditionally filled with large, clear, gypsum crystals, is a deep cave, which is called in Paiute the 'Song Cave' [Stoffle et al.: 2000; Stoffle et al.: 2004]. There, given the successful preparations of the seeker, are all the important songs which the cave holds to be learned by properly-prepared people. These are key spiritual songs that the Southern Paiute people have used since time immemorial. The cave has multiple physical levels, each of which is connected to other dimensions. Special among these is a small room that was completely filled with large, pure, gypsum crystals. Little people, a kind of powerful being, lived throughout these rooms and would assist the pilgrim with his or her movement into other dimensions.

Bartlett Alcove – an imaged panel in a sandstone alcove

Massive sandstone alcoves occur throughout Canyonlands National Park, Utah. In many of these are unusual images, located high above the ground [Stoffle et al.: 2017]. The style of imaging is so unique that they have been termed 'Barrier Canyon Style rock paintings'. Navajo Nation representatives at Bartlett Alcove shared an interpretation that the painted images were made by spiritual beings. When these Creator Beings were finished with their work in this dimension they passed into another dimension through the centre of the alcove. As a result of their passage, they left their images high up in the centre of the alcove as a sign that they had completed their work and as an indication of where they had gone. Today, Indian people come to these living alcoves and sing to the Creator Beings. They know that their songs have been positively received when the songs re-emerge from the wall and go out into the valley. Some call these echoes, but the Indian people call them voices from another dimension.

Fajada Butte – a prayer transmitter

In the special area called Chaco Culture National Park, New Mexico, is a prominent sandstone butte with a dark black coal seam around its middle called by the Spanish term 'Fajada Butte' [Stoffle et al.: 1994]. The entire butte has been the focus of elaborate ceremonial activities, much of it focused on solar observations by trained Native American astronomers. Here there are elaborate systems for teaching new astronomers and accurately telling time. On the top of Fajada Butte is a low semi-circular wall of stacked stones, which is open on one side to the east. The stone wall is a receiver and conveyer of prayers that come from elsewhere, and which it then sends along to other dimensions and places. Representatives of multiple Pueblo groups say that they send prayers to Fajada Butte from *kivas* in their home communities. They intend these prayers to be forwarded to other dimensions and to have subsequent responses returned to their home communities.

Artesian Springs– transporters of prayers and home of spirits

All springs are transporters of prayers and conveyers of songs, but many are also the homes of a powerful kind of spiritual being called a 'Water Baby'. These spiritual beings not only live in springs, but can hold and keep the spirits of humans who were massacred but were not sung to the afterlife as is always necessary. A Water Baby can also serve as a spirit helper in which role it comes, temporarily, when requested, into the body of a strong medicine man or shaman, and assists them with making rain and performing curing tasks.

One such spring, Crystal Spring, occurs along the White River in Pahranagat Valley, Nevada, near the town of Hiko [Stoffle and Arnold: 2003; Stoffle, Toupal, and Zedeño: 2002]. This artesian spring is special inasmuch as it is supplied by snow and rain which have fallen in the surrounding mountains. After being absorbed by the mountains, the water travels underground down the mountain slopes and continues for some distance from the base of the mountains until it emerges in the centre of the associated valley as a free-standing, bottom-fed spring. Generally, an artesian spring does not have a surplus run-off stream, thus it is highly localised in an extremely arid environment - a true oasis. The reverse path of the spring's water is understood to be an underground trail that connects the desert surface with the tops of the mountains. This trail is extremely powerful and is thus travelled by powerful spiritual beings such as Water Babies. These spiritual beings can leave their dimension at will, enter the chest of a spiritual person, and help perform ceremonies. Water Babies can also pull people into their dimension and keep them there.

These are just a few examples from among many that are available from past ethnographic studies. Our confidence in the accuracy of these examples is high because they derive from systematic ethnographic interviews, study reports that were reviewed and approved by participating tribes and pueblos, and were subsequently peer-reviewed for publication. These cases serve to illustrate the variety of portals that exist as GeoFacts in Native American epistemology and are a foundation for understanding the meaning of arches.

Arches as portals

The science of geology has defined the more than 2,000 arches in Arches NP and Canyonlands NP as remnants of former ocean deposits that have been eroded by wind, rain, snow and ice since the stone was uplifted thousands of feet above sea level. There is no inherent purpose to these naturally eroding forces, they have simply occurred and made inert stone arches. This interpretation is based on the fundamental epistemological stipulations of many fields of science, and thus is the *veritas* and virtually impossible to challenge successfully. Yet the representatives of participating tribes and pueblos have consistently challenged this truth. These two positions are more than opinions open to debate; they constitute an epistemological divide over GeoFacts that, apparently, is without resolution.

The Native American environmental interpretations of Arches NP and Canyonlands NP involve the need to understand culturally defined spatial and temporal dimensions that do not generally correspond with western philosophical stipulations (epistemology) regarding what exists and what can be done with that reality. In the simplest terms, the thousands of massive arches that occur in these parks and exist today are at the nexus of worlds (Plates C and D). These worlds exist simultaneously; they were and are connected by access portals formed by the arches. These are worlds that can be accessed by culturally-prepared and appropriately-chosen individuals from each of the participating tribal and pueblo peoples. Without this understanding and



Plate C
Joined arches in windows section.
Photo: authors, 2015-2016.



Plate D
Massive turret arch with small window.
Photo: authors, 2015-2016.

acceptance of these epistemological possibilities, the western science communicator will be confronted by a series of statements that at face value appear impossible.

For a Pueblo religious group, movement between worlds occurs when their *kiva* songs pass into the ground and arrive at Arches or Canyonlands NPs. Some pueblo people sing to and with the elements of the parks. Ute and Paiute people can also pray to and with the parks and expect those prayers to arrive, be heard, and be responded to by the parks themselves. Thus American Indian people can engage with the parks from afar. In addition, elements of the parks can be, today and in the future, active partners in American Indian ceremonies that are conducted at sites within the parks.

A Zuni person (2016) explained that the arches often face (that is open to or from) different directions and this was a plan of Creation. By facing in different directions, arches can have multiple portal functions:

> *We have this place that is called the Lookout in the Grand Canyon. It is a four-wall structure that has four windows that face north, west, south and east, and it has the same use as* [the stone arches] *in areas like this. They use that first window in the structure to look into the past, another to look into the future. They look to the directions where they can go and wish to know. That structure was built by our ancestors and when they came here, they had these arches. They have the same power, the same meaning, they use these as windows into the future, to look into the direction they had to go. All the arches here have the same power, the same significance, even if it is a very small arch, that still has that ability for people to look in. We were talking as we came up here, how our ancestors did it, it is 'tu-na-pi-quai', and it means looking through. If you look into it, it is like looking into a glass, so it has that power, that ability, to give our people the sense of where to go.*

A Zuni person (2016) explained that the arches were viewed as recorded in the oral history and continual ceremonial activities in contemporary pueblo life:

> *In our own Zuni history, we have arches like that. Remember we told you about the Salt Mother who made her way through to this world, and made a hole like that, which she resides in to this day. I think when the earth was raw there were spirits roaming around leaving their marks where our ancestors would go, because there was a place where they would make that connection. I think that about the hoodoos as well, we have altars in Zuni, or ka'tsinas that do their ceremonies, so it all ties into our culture and histories.*

A Zuni person (2016) explained that the arches were viewed as being able to hold the voices of past ceremonies and be a place for connecting with the ancient peoples:

> *It is not just a pretty rock. It hosts something very significant for us. Because I mention that, if you look into the past and walk into areas like this, and realising our great, great, great grandfathers and grandmothers also walked in areas within this place here, it holds a really strong bond with us because of that connection. Even though the sand shifted the footprints, for us they are still here. We consider our ancestors as being a part of this; they never left. The people who passed on, who are making their final journey into the afterworld, were left here. And so with that understanding, we still have a very strong bond to places like this because our ancestors are still here, their remains are still here, so we never want to break the bonds with our ancestors because the more we travel, the more we get that connection everywhere, back together again.*

A Ute person (2016) explained how the land was formed by the Creator:

> *It was our Creator who formed these valleys, mountains, rivers, streams, and gorges, like the Grand Canyon. It was because our Creator at one time saw that this earth was just plain, round, simple and flat. So he asked the hawk to put a little target way over there, because he was going to do some target practising, but for some reason that arrow bounced off of the target the hawk had, and that is when the arrow took off and created all the gorges, the mountains, and the rivers. It made it the way it is. So that is the way we think about this area, not just for our people who travelled here, but that is probably the reason why it was created the way it was. Because of him. All of our stories are connected to him, our Creator we grew up knowing.*

A Ute person (2016) noted the kinds of time-keeping uses of the arches:

> *At times when the stars and the moon were in alignment, especially during meteor showers, or when the planets would align, they had certain people who would watch that, watch the stars* (Plate E). *So they had a group of people who were the observers, who watched the stars. Then you had people who did healings and you had people who knew plants. You had people who had the understanding of where you should be. I guess the leader would pick a certain place, a certain time of the year, when everything was in bloom. So they had people like that, different ones, maybe four, five, six people who had responsibilities for taking care of the people, the village, the stars, the environment and all of that. So they would know when to go. If they were raising any kind of food supplies or going after harvesting Indian rice grass, they would know when that time would be. Also the pine nut harvest, and harvesting of edible plants. So they had people who knew that, when to do that. So I guess in other words, I would say this arch would be one of the significant spots.*

A Ute person (2016) noted the use of portals for travel:

> *Humans have psychic powers, powers like going through a portal. It kind of reminds me about that cave over there, see it? And different parts up that way would be homes to the Little People. In different parts in the park, I was just noticing, there are some places that Little People could live. And I think they are around. Maybe at night when it goes real quiet, I think that is when they come out. But as far as going into another dimension, it is possible they were able to do that in a place that has arches. It means you go through a hole or something like this, and you get into another part of the world or another part of the dimensions. And that is how some of the old timers talk about the things that happen. They would ask one another, where did you go? I went to this place, a hole, and I come out somewhere else. That is why we could not find you or see you or anything, yes, that is why I came back. There are many stories that people had about certain things, certain areas that people believed they were able to pass through different portals, pass through different time periods, also knowing they could go and travel. Maybe that is what they were talking about, what we call today astro-travellers, or even time travellers. They could talk about something that is going to happen a way in the future that is how it is going to be for our people, for all the people.*



Plate E
Delicate arch at night with the Milky Way behind it.
Source: Photographed by Jacob W. Frank, National Park Service.

A Paiute person (2016) noted that the area surrounding the arches is a place of power:

> *I do not think that* [arch] *was used by ordinary Indian people, everyday people. You know, back in those days, people did not know the world like we do. And when you look through those windows, and you see the movement, I think that kind of thing could draw a Puha'gant, a religious person, to that kind of place. That is what I think about that place. I think that people, well not all people, but people like that knew about that kind of place, would look at it as something powerful. A powerful place to go, because that thing, standing in the middle of it and looking at it, you can just... to me it felt like... that second arch felt like I was standing right under it was like that and with the clouds moving, I felt like I was being, you know, like that somehow... like I was almost, not like I was spinning but like... like that. And I think if a Puha'gant was up there and he had taken his, whatever he took to make his journey, I think he could make a journey through that real easy. I do not think it is an ordinary place. I think this place might be considered sacred.*

The quotes above represent but a small sample of expressed interpretations regarding the portal functions of arches. So many functions exist that discussing all of them would exceed the purpose of this analysis. Still, the examples should be sufficient, along with examples of other kinds of portals presented earlier, to assure the reader that arches are really alive and culturally central places to Indian people, regardless of their respective tribal or pueblo affiliation.

Discussion

The notion of the living planet causes perceptions of arches to be embedded in a world of alternative understandings, all of which make it difficult to have heritage environmental conversations between western-trained scientists and Native Americans. For example, in many Native American cultures, time bends. This allows for events to be accessed at a later point or even before they occur. Within western epistemology, human actions are believed to only occur at a moment in time, then immediately they are forever gone and thus become past and inaccessible. In Native American epistemologies, human and non-human events and actions may be recorded, preserved and shared again by the natural resource that initially experienced them. For example, an arch can keep a ceremonial song it recorded a thousand years ago, and then share it at any moment with an appropriate American Indian person. Songs sung today near the arches along the Colorado River can pass downstream and be heard by people past and present. Likewise, prayers for rain can be carried down the Colorado River and stimulate evaporation from the ocean thus causing the formation of clouds, which are themselves alive and sentient beings. Clouds then return back upstream to the prayer's point of origin. The clouds then provide rain for the nourishment of the land and the people who gave, and now again, give thanks.

So once an epistemological divide is clearly understood, what are the ways forward available to Federal land managers? Returning to the three types of heritage environmental communication problems presented at the beginning of this analysis, it is clear that types one and two are not relevant to the kind of problems presented by an epistemological divide such as that posed by arches. Epistemological divides, however, have been shown to be resolvable if the scientists, managers, and Native Americans agree to suspend mutual judgments about what is really true, and behave in terms of multi-vocality [Stoffle, Arnold, and Bulletts: 2016].

There was a time in the recent past that the NPS pushed to resolve differences in perceived knowledge. They argued that park visitors needed a single interpretation of the park's topography, ecology, and cultural heritage. That approach created winners and losers and it made for a clear message that has subsequently been shown to be wrong in many ways. As US society became more inclusive of alternative ways of life and perceived knowledge, the NPS too changed so as to be able to tell multiple stories with different perspectives.

At Sunset Crater Volcano National Monument in northern Arizona, an ethnographic overview study documented the cultural interpretations of five Native American groups regarding the meaning and traditional uses of this large volcano that erupted around AD 1066 [Toupal et al.: 2004]. All of these Native peoples were present during the eruption and each provided oral

history interpretations that differed from those of the park geologists, who interpreted the eruption as a fearful event that sent Indian people running away. Native oral history documented in the ethnographic study consistently remembered the eruption as part of the ongoing birth of mother earth, and thus something to be attracted to and interacted with by trained *Puha'gants*. Instead of choosing a single 'right' perspective, the NPS created a phone-based kiosk in the park visitor centre where each phone was marked by its ethnic source, and when listened to it contained the interpretations of the tribe or pueblo as recorded by a tribal member. In this multi-vocal environment, park visitors now hear in person the Indian voices from different tribes and can learn from whomsoever they choose.

Arches NP and Canyonlands NP now have two large ethnographic overview reports containing the voices of participating Native American groups. These groups agreed on many interpretations and recommendations to the parks. All interpreted the arches as living portals to other dimensions. No tribal representatives thought it was a good idea to permit visitors, especially those with young children, to sit in an arch. All wanted some of their cultural perspectives to be represented in prominent interpretative displays. The good news in these situations is that neither park has attempted to interpret Native Americans' involvement with the park extensively, so it is more a matter of adding displays than removing them. The difficult news is that both parks were created by the US Congress to interpret natural resources, and so from the park's opening interpretative movie to the most isolated interpretative trail display, there is little room for an extensive array of new and different voices. This will be especially problematic when the Indian voices tell the opposite of what western scientists have stipulated as the definitive geological history of the park – their own scientific GeoFacts.

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