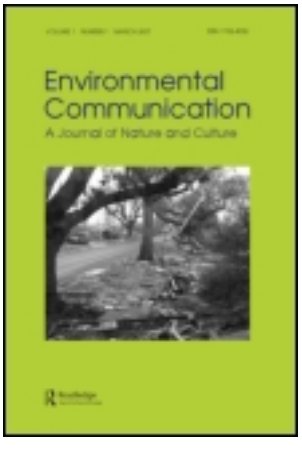

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Sacred Land or National Sacrifice Zone: The Role of Values in the Yucca Mountain Participation Process

Danielle Endres

Local participation in environmental decision making is a fundamental tenet of environmental justice. This essay examines the participation process for nuclear waste siting decisions and suggests that the lack of a viable means for discussion of competing values is a flaw in the currently used model of participation. Through analysis of the Yucca Mountain high-level nuclear waste site in the USA, I show how the lack of discussion of values occludes participation by marginalized American Indians. In particular, I examine the incommensurability between American Indian nations that value Yucca Mountain as sacred land and the federal government that values Yucca Mountain as a national sacrifice zone. I argue that Yucca Mountain acts as a polysemous value term in the controversy. My findings suggest that an environmentally just model of participation in environmental decision making must include a way to account for incommensurable values and cultural differences. Further, I highlight the lessons we can learn from the Yucca Mountain project as we deliberate about what to do with nuclear waste.

Keywords: Polysemy; Values; Participation in Environmental Decision Making; Nuclear Waste; American Indians; Environmental Justice

Nuclear waste siting decisions are highly controversial. Interdisciplinary scholarship highlights local opposition as one of the biggest sources of controversy in domestic and international nuclear waste siting (e.g., Dawson & Darst, 2006; Lidskog & Sundqvist, 2004; Short & Rosa, 2004; Shrader-Frechette, 1993; Slovic, Flynn, & Layman, 1991; Vandenbosch & Vandenbosch, 2007; Walker, 2009).[1] While many view local opposition as primarily an instance of a Not-In-My-Back-Yard (NIMBY)

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attitude, Boholm (2004) argues that characterizing local opposition as NIMBY is an overly simplistic and inaccurate descriptor that is perpetuated largely by technical experts, industries, and governments who assume that the attitudes behind local opposition are "irrational and narrow-minded" (p. 100). Beyond NIMBY, local opposition to proposed sites often stems from environmental injustice in the processes for site selection and local participation in decision making.

Like other toxic wastes, nuclear waste sites tend to be sited in areas with already marginalized populations that often struggle for a voice in decision making (e.g., Hofrichter, 2002; Szasz, 1994). This is true for indigenous people, particularly in Canada, Taiwan, and the USA, raising concerns about environmental racism and nuclear colonialism (Endres, 2009a, 2009c; Fan, 2006a, 2006b; Ishiyama, 2003; Johnson, 2008; Leonard, 1997). In the USA, the two high-level nuclear waste sites under serious consideration are on American Indian land. Shoshone and Paiute peoples who opposed the now stopped Yucca Mountain high-level nuclear waste site cited environmental injustice and nuclear colonialism as reasons for their opposition (Endres, 2009c). Similarly, Ishiyama (2003) highlights the complex nature of environmental injustice in the private interim high-level nuclear waste storage facility proposed by Private Fuel Storage (PSF) to be located on land leased from the Skull Valley Goshute Nation (for more about the PSF/Skull Valley siting controversy, see Clarke, 2010; Peeples, Krannich, & Weiss, 2008). Nuclear waste siting, therefore, is a crucial issue from which we may better understand the intersection between environmental (in)justice and participation in environmental decision making. Building from this scholarship, I specifically turn our attention to the role of value incommensurability in participation processes. As I will demonstrate, values form a fundamental stasis point in high-level nuclear waste siting decisions, but the currently used model of participation in the USA lacks a mechanism for considering values, resulting in the marginalization of local populations.

I focus on the recently stopped Yucca Mountain high-level nuclear waste site. It has been over 60 years since the Atomic Energy Commission first began investigating high-level nuclear waste storage options, and the USA has yet to open a permanent storage facility. The closest the USA came to finding a permanent storage facility is the Yucca Mountain project. In 1987, Congress amended the Nuclear Waste Policy Act (NWPA) to designate Yucca Mountain as the only site at which the Department of Energy (DOE) would conduct site characterization studies. In 2002, the federal government officially authorized the Yucca Mountain site as the nation's permanent storage facility, pending Nuclear Regulatory Commission (NRC) licensing.[2] The DOE submitted a license application to the NRC in 2006, expecting a ruling from the NRC within 4 years. However, upon election, President Barack Obama began working to discontinue the Yucca Mountain project.[3] Through a series of budget requests and a decision by the NRC, the Yucca Mountain project is no longer funded and the NRC has tabled its review of the license application.[4] Despite discontinuing the Yucca Mountain project, Obama is "fully committed to ensuring that long-term storage obligations for nuclear waste are met" (DOE, n.d., p. 1). He established a Blue Ribbon Commission (BRC) on America's Nuclear Future tasked with evaluating

options and providing recommendations for managing high-level nuclear waste (DOE, 2010a). In January 2012, The BRC (2012) released its recommendation report to the Secretary of Energy. While the BRC does not make a specific recommendation about the Yucca Mountain site (because evaluating and recommending a particular site is out of the scope of its mandate), it recommends a significant overhaul of high-level nuclear waste decision making in the USA that includes adopting a consent-based approach to siting and a more inclusive and transparent process for participation in decision making. In order to implement the BRC's recommendations, there is significant work to be done in developing an appropriate model of participation for selecting one or more high-level nuclear waste disposal sites in the USA.

The long and better debate over the Yucca Mountain high-level nuclear waste site provides lessons not just for nuclear waste siting decisions in general but also for local participation by marginalized populations in environmental decision making. Using the controversy over the Yucca Mountain site, I expand on existing scholarship on the intersections between participation, nuclear waste, and American Indians to argue that one of the many problems in the flawed Yucca Mountain participation process is the lack of a viable means for consideration of cross-cultural values, resulting in an unjust process that marginalizes the values of American Indian opponents of the site. Although "values enter, at some stage or other, into every argument" (Perelman & Olbrechts-Tyteca, 1969, p. 75), the NWPA-mandated participation process for the Yucca Mountain site provided no room for value-based discussion because the participation process was constrained by an explicit preference for scientific and technical arguments over social and cultural arguments (Endres, 2009b).

In this essay, I focus on the incommensurability between American Indian nations that value Yucca Mountain as a sacred place and the federal government that values Yucca Mountain as a national sacrifice zone. Although conflict between cultural preservation and national interest is not unique to the Yucca Mountain controversy, my analysis goes beyond describing the conflict in these terms to explaining how this incommensurability can be explained, in part, by demonstrating the polysemous nature of Yucca Mountain as a value. While both sides claim to value Yucca Mountain, the meaning of Yucca Mountain is fundamentally different to American Indians and the federal government. Perelman and Olbrechts-Tyteca's (1969) concept of the loci of the preferable—general premises about what is most preferable—helps to explain the conflicting implicit preferences that undergird the different meanings of Yucca Mountain. Blending polysemy and the loci of the preferable together offers a useful heuristic through which to better understand the role of values in participation in environmental decision making.

I begin the essay by arguing that local participation in environmental decision making is an essential tenet of environmental justice. Then, drawing from literature on participation in environmental decision making and nuclear communication, I discuss the importance of values for just processes of participation in environmental decision making. Then, I combine polysemy with the loci of the preferable as a framework for understanding multiple meanings of a value term. Using this framework, I analyze

arguments in the Yucca Mountain controversy to reveal how the loci of quality and quantity undergird the conflicting meanings of Yucca Mountain. I conclude by returning to the significance of values for creating just participation processes.

Environmental Justice, Participation, and Values

Local participation in environmental decisions is an issue of environmental justice. Toxic (including nuclear) waste siting decisions have far-reaching effects on the local populations, who environmental justice advocates argue should have an equal say in environmental decisions that affect them. The Principles of Environmental Justice, adopted in 1991 at the First National People of Color Environmental Leadership Summit, state "**Environmental Justice** demands the right to participate as equal partners at every level of decision making, including needs assessment, planning, implementation, enforcement and evaluation" (Principles of Environmental Justice, 1991, bolded text in original). The environmental movement and environmental justice movement have done valuable work in increasing the amount of local participation by marginalized groups in environmental decision making such as the National Environmental Policy Act mandate for local participation in Environmental Impact Statements (EIS) and Executive Order 12898 that requires federal agencies to address environmental justice in their actions. Before moving on, it is important to note that I am specifically avoiding the more common term 'public participation in environmental decision making' because the term public participation has been used to assimilate American Indians into the public and deny their sovereign right to engage in nation-to-nation negotiations over the Yucca Mountain site (Endres, 2009c).

Despite this progress, flaws remain in many currently used processes of participation (Depoe & Delicath, 2004). Although decision makers have adopted more dialogic participatory models of participation in some settings (e.g., Dietz & Stern, 2008), the NWPA participation process followed for Yucca Mountain remains an essentially technocratic Decide-Announce-Defend (DAD) model in which decisions are made by scientific and policy experts and then presented to the public for approval. Most DAD participation processes value scientific and technical arguments over social-, cultural-, and value-based arguments (e.g., Depoe & Delicath, 2004; Farrell & Goodnight, 1981; Fiorino, 1990; Katz & Miller, 1996; Toker, 2002; Waddell, 1990, 1996). Expanding upon these critiques of DAD models, I specifically examine the role for values in these models. Although scientific, cultural, and social dimensions of decision making are all influenced by values, technocratic decision makers often assume that scientific and technical arguments are value free, thus relegating values to the realm of the social and cultural dimensions that are already marginalized. Therefore, technocratic decision making automatically assumes one set of implicit values while excluding other competing values under the false assumption that science is value free.

These flaws in DAD participation processes also apply in the more specific realm of decision making over nuclear technologies. The public sphere surrounding nuclear technologies is "constricted and degraded by technocratic domination" (Taylor,

Kinsella, Depoe, & Metzler, 2007, p. 381). Stakeholder participation in nuclear issues is particularly problematic because of secrecy, discursive containment, and the perception that the highly technical nature of nuclear technologies is best handled by experts (e.g., Kinsella, 2001, 2005; Taylor, 1998; Taylor et al., 2007). Scientific and technical knowledge dictate the process with little attention paid to other relevant forms of expertise. In the case of Yucca Mountain, participation in the Yucca Mountain siting decision occurred in the form of comment periods held during both the EIS process (1996–2004) and site authorization decision (2001–2002). While the EIS comment period valued scientific and technical arguments over social and cultural arguments (Ratliff, 1997), the site authorization comment period explicitly called for only scientific and technical arguments (Endres, 2009a). The DOE explicitly framed the site authorization comment period as: (1) an opportunity for the DOE to educate 'the public' and (2) for 'the public' to comment on the scientific and technical arguments produced by Yucca Mountain Project scientists (DOE, 2002b, 2002c). The participation process created neither a role for non-technical arguments nor a role for the values underlying both technical and non-technical arguments. Yet, opponents and proponents still made value-based claims, which formed a significant stasis point in the controversy.

Polysemy and the Loci of the Preferable

I argue that Yucca Mountain is a polysemous value term.[5] Polysemy is generally used to describe instances when a rhetorical text has multiple meanings (e.g., Ceccarelli, 1998; Condit, 1986; Rosteck & Frentz, 2009). A polysemous value term has multiple meanings based on differing (often cultural) premises. Instead of focusing on polysemy as a tool of invention for creating multiple meanings in one text, polysemy can act as a critical tool to understand how a concrete value term, such as Yucca Mountain, can be understood very differently in the multiple rhetorical texts that make up a controversy. In this case, participants make claims based on *their understanding* of Yucca Mountain as a valued place. Although Condit (1989) uses the term polyvalence to describe instances when "members share an understanding of the denotations of a text, but disagree about the valuation of those denotations to such a degree that they produce noticeably different interpretations" (p. 106), polysemous value term describes an instance when the value term itself is understood differently. While one might assume that Yucca Mountain is a relatively stable term to represent a geographic structure, my analysis reveals that the meaning of Yucca Mountain varies radically between American Indians and the federal government. In other words, the assumption that a shared understanding of Yucca Mountain serves as a starting point for participation is problematic.

To uncover the different meanings of a polysemous value term, I turn to Perelman and Olbrechts-Tyteca's (1969) concept of the loci of the preferable. They define loci as "the most general premises, actually often merely implied, that play a part in the justification of most of the choices that we make" (p. 84). People often regard the loci to which they adhere as factual assumptions; however, loci are subject to justification

and contestation. Examining the loci of the preferable that undergird competing arguments can reveal that the arguments are rooted in differing assumptions about the meaning of the world and things in it, such as mountains. Though they do not list all of the possible loci of the preferable, Perelman and Olbrechts-Tyteca identify six general loci that are key to the "actual practice of argumentation": quantity, quality, order, existent, essence, and the person (p. 85). In this case, the competing understanding of the value of Yucca Mountain as sacred land or national sacrifice zone can be further explained through highlighting the loci of quality and quantity as underlying ontological premises that influence the divergent meanings.

Sacred Land or National Sacrifice Zone

Shoshone and Paiute arguments about Yucca Mountain depend on the locus of quality, for which there is a preference for "what appears unique that becomes precious to us" (Perelman & Olbrechts-Tyteca, 1969, p. 89). Yucca Mountain is part of the original land base of the current day Western Shoshone, Southern Paiute, and Owens Valley Paiute and Shoshone peoples who, before Caucasian contact, lived nomadically in the Great Basin region of the US desert southwest since what indigenous people refer to as 'time immemorial' (Crum, 1994; Harney, 1995). Multiple contemporary American Indian nations (e.g., Timbisha Shoshone Tribe, Chemehuevi Paiute Tribe) within the Western Shoshone, Southern Paiute, and Owens Valley Paiute and Shoshone (hereafter Shoshone and Paiute) claim spiritual-, cultural-, and treaty-based connections to Yucca Mountain and the surrounding land.[6] These nations argue that Yucca Mountain and the surrounding land is a unique sacred place steeped in culture, history, spirituality, sense of place, and struggles for sovereignty. For example, Edward Smith, chair of the Chemehuevi Southern Paiute nation, states:

> We have been telling the government about the importance of Yucca Mountain area to our people since 1987. During every study, at every meeting, we tell the government the same thing. Today I tell you the same thing yet again. Yucca Mountain is sacred to our people. (DOE, October 5, 2001, pp. 24–25)

Shoshone and Paiute peoples value Yucca Mountain because, to them, Yucca Mountain means a unique sacred homeland. And, they have consistently communicated this to the federal government in meetings about the Yucca Mountain proposal.

The federal government, on the other hand, relies on the locus of quantity. The locus of quantity is a utilitarian premise, in which "a greater number of good things is more desirable than a smaller number, a good thing useful for a comparatively larger number of ends is more desirable than that which is less so" (Perelman & Olbrechts-Tyteca, 1969, pp. 83–84). The federal government understands Yucca Mountain as a geological structure in a resource-barren desert that is suitable to store nuclear waste and benefit the national interest. Kuletz (1998) argues that Yucca Mountain is the part of a general area in the Southwest that the federal government considers a national sacrifice zone due to the disproportionately high concentration of military bases, gunnery ranges, federal research labs, and chemical contamination. Considering nuclear technologies

specifically, this region bears the brunt of nuclear testing, uranium mining, nuclear waste and other effects of nuclear development in order to sustain the claimed benefits of nuclear technologies for the nation as a whole. The federal government's arguments for the Yucca Mountain site assume that it is a geologic resource to be used for its utilitarian function, in this case a sacrifice made by a small group to benefit the entire nation. Former Secretary of Energy Abraham (2002) concludes that the cultural significance of the land for Shoshone and Paiute does not outweigh the "national interest" of going forward with the project (see also DOE, 2002a).[7]

In order to further explore how these competing meanings of Yucca Mountain emerge in arguments about the Yucca Mountain site, I examine (1) arguments made by Shoshone and Paiute people who submitted comments in opposition to the site during the site authorization comment period and (2) arguments by the DOE in favor of authorizing the Yucca Mountain site. The site authorization decision was a crucial point at which the federal government officially invited local participation and debate intensified. While Shoshone and Paiute comments were ultimately excluded from consideration in Abraham's assessment of the major themes from the comment period (Endres, 2009c), Shoshone and Paiute peoples not only came out in force to comment but also the comments mirrored the arguments found in other venues throughout the controversy (e.g., Kuletz, 1998).

Yucca Mountain as Sacred Land

Viewing Yucca Mountain through its quality as a unique cultural and spiritual place to Shoshone and Paiute peoples is central to their objections to the Yucca Mountain site, as seen in the comments submitted during the site authorization comment period. They talk about Yucca Mountain as a sacred homeland that is fundamentally linked to their cultures and spiritualities. Recognizing that each American Indian nation is distinct, the arguments are not identical across Shoshone and Paiute comments. Yet, representatives of all the American Indian nations that participated in the participation process invoked the value of Yucca Mountain for its unique spiritual qualities in some way.

Members of the Moapa Paiute, the Lone Pine Paiute Shoshone, the Big Pine Paiute, the Western Shoshone National Council, Western Shoshone, and the Paiute Tribes of Utah all made arguments that Yucca Mountain is a part of their homeland. For example, Calvin Meyers, Chair of Las Vegas Paiute states, "I would like to welcome you to my homelands", and Western Shoshone Lois Whitney claims, "Yucca Mountain sits in the middle of my home land [sic]" (DOE, December 12, 2001, p. 102; DOE, September 5, 2001, p. 9). Because Yucca Mountain is part of their homelands, these statements indicate that Shoshone and Paiute nations have unique standing in decision making regarding Yucca Mountain. They use this standing to argue that putting nuclear waste in Yucca Mountain would hinder their ability to protect their homelands. This understanding of Yucca Mountain as a homeland is rooted in a long history with the land. Another statement, by Chair of Chemehuevi Tribe Edward Smith, highlights the responsibility he feels to his homeland:

> Our people, along with other Southern Paiute tribes and Western Shoshone and Owens Valley Paiute peoples have lived, traveled, worked, raised children, worshiped, harvested plants, animal, water and mineral resources and died in these lands for thousands of years. Our Creator gave us the sacred responsibility to live on, use and care for the land and all of its resources so that future generations would benefit from the many gifts that they provide to sustain life. These lands are part of our people and we are part of these lands. The two connected as one and that connection is everlasting. . .. This land is and will always be Indian land. (DOE, October 5, 2001, p. 23)

Viewing Yucca Mountain as a homeland given by the creator implies that Shoshone and Paiute peoples are an inherent part of the place and that the people and the land are eternally connected.[8] Yucca Mountain is not just a geological structure, it is not just any mountain; Yucca Mountain is a place in which a people's historical relationship to the land is materialized.

Subsumed within the locus of quality, the understanding of Yucca Mountain as a homeland also invokes the locus of order, which describes preferences based on temporality. Perelman and Olbrechts-Tyteca (1969) suggest that the locus of order can be interpreted in multiples ways: "the superiority of that which is earlier over that which is later, sometimes the superiority of the cause, of the principle, sometimes that of the end, of the goal" (p. 93). In this case, part of the unique quality of Yucca Mountain is that is has been the homeland of Shoshone and Paiute peoples since time immemorial. The preference for anterior order suggests a preference for maintaining what was given by the creators as opposed to a focus on the future use of Yucca Mountain.

Beyond its value as creator-given homelands, Yucca Mountain itself—including the plants and animals living with it—is sacred. Bacoch (2001), Tribal Chairperson of the Big Pine Paiute Tribe of the Owens Valley, emphasizes the spiritual connection indigenous people have to Yucca Mountain:

> The Big Pine Paiute Tribe of the Owens Valley still maintains close historic and cultural ties with the Yucca Mountain Range. The Paiute people regard the total ecosystem as a living entity and the spirits and beings that dwell there to this day are still meaningful to us. Many tribal people indigenous to the Yucca Mountain region have informed DOE officials that this area has special meaning and expressed opposition to the proposed Yucca Mountain project. (p. 1)

The opposition is based on the assumption that storing nuclear waste at Yucca Mountain will disrupt the sacred qualities of the land. More specifically, Smith states, "We believe that Yucca Mountain will become unhappy and angry if you put radioactive waste into it. The spirits living in the area will move away and eventually the land will be unable to sustain plants, animals, water, air, people, and life" (DOE, October 5, 2001, p. 25). This statement demonstrates that part of the spiritual value is in the spirits of the area that will move when Yucca Mountain begins accepting waste. Yucca Mountain is unique and precious because it is a diverse ecosystem that includes humans, plants, animals, and spirits.

Importantly, Shoshone and Paiute arguments about the sacredness and spirituality of Yucca Mountain highlight a significant ontological objection to the Yucca

Mountain site. They are not simply arguing that the technological design of the Yucca Mountain repository will allow for radioactive release and harms to local populations. Rather, they argue that the presence of radioactive waste at a sacred site, whether or not it leaks, would alter the meaning of that site. Indeed, Meyers contends that while the DOE many be able to use technology to reduce the risk of radioactive contamination, it cannot take measures to mitigate the negative impacts that the Yucca Mountain project would have on the sacredness of the region. He states, "Some of these [impacts from the Yucca Mountain project] do not have—they are not mitigatable [sic] such as spirituality and even the essence of being the Paiute, there's no mitigation to those two issues." (DOE, October 5, 2001, p. 8).

In these statements, Yucca Mountain is more than just a geological structure and location that might be suitable for storing nuclear waste. Most American Indian cultures[9] (especially traditionalists) have a spiritual and physical connection to land with strong ties to environmental protection of the land that can be linked to realist animism (Sheridan & Longboat, 2006) and spiritual ecology—"an intimate relationship between themselves and their environment" (Cajete, 1999, p. 4). This relationship is mediated through particular places and lands. Unlike many non-native religions in America, Wilkinson (1991) writes, "the fact that humans cannot survive without the natural environment is recognized by most Indian religions, and tribes usually are responsible for protecting the ancestral territories provided to them by their creator" (p. 50). To further refine their discussion of the locus of quality, Perelman and Olbrechts-Tyteca (1969) introduce the locus of the irreparable, which places value on that which is irreparable if destroyed (see also Cox, 1982). As seen in the comments above, the Yucca Mountain project may irreparably destroy Yucca Mountain through loss of its sacred qualities, spirits, and important spiritual paths. Through the locus of the irreparable, Shoshone and Paiute arguments present a vision of the nuclear waste site fundamentally changing Yucca Mountain. In sum, Shoshone and Paiute arguments against Yucca Mountain are an attempt at cultural preservation. These arguments are grounded by a preference for quality and anterior order.

Yucca Mountain as National Sacrifice Zone

In contrast, the DOE and more broadly the federal government do not consider Yucca Mountain as a spiritual homeland since time immemorial. Rather, the federal government's arguments assume the locus of quantity. The federal government values the site as a resource for an instrumental purpose—storing high-level nuclear waste to protect the national interest. Within this logic, Yucca Mountain is a tool to provide a number of desirable ends for the majority of US citizens. In the *Site Authorization Recommendation Report*, Abraham (2002) makes the following statements: "The Yucca Mountain facility is important to achieving a number of our national goals" (p. 1), "A permanent repository for spent nuclear fuel is essential to our continuing to count on nuclear energy" (p. 28), and "Failure to establish a permanent disposition pathway is not only irresponsible, but could also create serious future uncertainties potentially

affecting the continued capacity of our Naval operations" (p.28). From this perspective, the use of Yucca Mountain for a nuclear waste repository supports the national interest by solving the "problem" of nuclear waste to the benefit of the whole nation. Further, these statements value Yucca Mountain in terms of its instrumental telos towards preserving national interest (and national security). Instead of a preference for anterior order, the federal government understands Yucca Mountain in terms of its posterior order, or that which comes after. The federal government's preference for the locus of quantity works with the locus of posterior order to place value on Yucca Mountain not necessarily because of its unique qualities, but because of its utility in achieving future national goals and benefiting the entire nation (as opposed to the quantitatively smaller number of Shoshone and Paiute nations that would be harmed by the site).

It is possible to argue that the federal government also values Yucca Mountain for its unique qualities (locus of quality). In addition to the argument that Yucca Mountain has unique geologic characteristics that make it technologically suitable for geologic nuclear waste storage (Abraham, 2002; DOE, September 5, 2001), the federal government also suggests that Yucca Mountain is unique because of its location in a remote desert "wasteland" that is far from population centers. In describing Yucca Mountain, the DOE Yucca Mountain website states, "No one lives at Yucca Mountain," and "There are no known natural resources of commercial value at Yucca Mountain (such as precious metals, minerals, oil, etc.)" (DOE, 2004a, 2004b). The federal government considers Yucca Mountain to be an isolated and barren desert, far from population centers and with no commercially valuable resources. While this could be interpreted as an argument for the uniqueness of Yucca Mountain because of its geology, sparseness, and lack of resources, these unique qualities are subsumed under its ability to gain value by serving the national interest (locus of quantity). According to this logic, if we store nuclear waste at Yucca Mountain, it serves the national interest; if we do not store nuclear waste at Yucca Mountain, it remains useless. Indeed, naming of the area as a national sacrifice zone perfectly describes the value of Yucca Mountain based on the premise of quantity over quality (Kuletz, 1998).

Concerning Shoshone and Paiute arguments that Yucca Mountain is a sacred homeland, the DOE (2002a) recognizes that the area holds cultural and spiritual significance for American Indians and argues that the organization has worked with and considered American Indian perspectives. The DOE states:

> people from many Native American tribes have used the area proposed for the repository as well as nearby lands; that the lands around the site contain cultural, animal, and plant resources important to those tribes; and that the implementation of a Yucca Mountain repository would continue restrictions on free access to the area around the repository site. Furthermore, the presence of a repository would represent an intrusion into what Native Americans consider an important cultural and spiritual area. Restrictions on public access to the area, however, have also been generally beneficial and protective of cultural resources, sacred sites, and traditional cultural properties. (p. 311)

What is striking about this response is that, first, the DOE admits that there will be an intrusion into a cultural and spiritual center for American Indians, and second, it

argues that it actually protects the area through restricted access. In analyzing this response, it is important to consider the context of the decision calculus Abraham used to make his site authorization recommendation. The former Secretary of Energy made his decision based, in part, on whether there were counter-arguments that significantly outweighed the national interest of going forward with the project (Abraham, 2002). The DOE did not consider the intrusion into American Indian spirituality a cost that would outweigh the benefits to the nation of going forward with the project. This type of cost benefit analysis reflects an underlying assumption of the locus of quantity; even if there are impacts on the small number of people who believe Yucca Mountain is a cultural resource site, they do not outweigh benefits to the entire nation of storing high-level nuclear waste.

The federal government's instrumental understanding of Yucca Mountain as means to future national interest is antithetical to the Shoshone and Paiute understanding of Yucca Mountain as a cultural and spiritual homeland in time immemorial that cannot be replicated in another spot. Furthermore, assuming that a nuclear waste repository would irreparably damage Yucca Mountain for Shoshone and Paiute people, the federal government's call for sacrifice is significant. Meyers states, "And there's one thing that you guys need to remember. That you may go ahead and move out of Las Vegas, you can move clear across the country, where it may be safer, but I can't. My heart and soul comes from this earth, from right here, not very far away from where you guys want to destroy my land" (DOE, October 12, 2001, p. 74). Carbaugh (1999) reveals that for the Blackfeet particular places hold special meaning because of their resources, historical events, or spirits that inhabit these places. Basso (1996) argues, "*sensing* of place—is a form of cultural activity" (italics in original, p. 143). Sensing a place, I argue, assumes the locus of quality. Sensing a place depends on recognizing what makes a particular place unique and the cultural meaning in that place. Yucca Mountain is valuable because it is a spiritual center. The creators gave Yucca Mountain to the Shoshone and Paiute in time immemorial. They have a responsibility to care for and sustain the land for future generations; its resources are key to life and sustenance. Because of these reasons, Shoshone and Paiute people cannot merely leave to find another place.

Conclusion

The concept of a polysemous value term is a useful heuristic for understanding how two sides can both purportedly value Yucca Mountain and yet come to opposite conclusions. Although the loci of the preferable are often seen as inventional resources, my analysis demonstrates their usefulness as analytic tools (see also Cox, 1982; Walker & Sillars, 1990; Warnick, 2004) to explain the polysemous value term by discerning the underlying premises that influence different meanings of Yucca Mountain across a variety of texts in a controversy. In this case, Yucca Mountain is not just the location of a proposed nuclear waste site, its meaning is a source of controversy. As I have shown, the incommensurable meanings of Yucca Mountain as a thing of value form a significant stasis point in the controversy. Yet, there was no

means to examine this stasis point within the constraints of the DAD-style participation process used by the DOE.

Due to the significant role of competing values in this controversy, one implication of my analysis is that there must be a place for explicit examination of polysemous value terms that arise in decision-making processes. My purpose in this essay is not to develop a new model of participation. Indeed, much scholarly attention is already paid to theorizing, developing, and advocating alternative models of participation, many of which account for values (e.g., Beierle & Cayford, 2002; Depoe et al., 2004; Fiorino, 1990; Hamilton & Wills-Toker, 2006; Kinsella, 2004; Walker & Daniels, 2001, 2004). Rather, my purpose is to highlight a flaw in the NWPA mandated form of participation and argue for the necessity of adopting a new model for future decision making about high-level nuclear waste. The NWPA's model assumes an implicit incommensurabity between technocratic decision makers and local participants not based on a polysemous value term like the one I described but instead based on the faulty assumption that value-based arguments only come from local participants. This provides no opening for comparing the values of decision makers and participants as a part of the process of decision making. The BRC (2012), with the release of their report to the Secretary of Energy on high-level nuclear waste management, has created an opening to reconsider the participation model for high-level nuclear waste siting in the USA. With this opening, my findings suggest that it is crucial that whatever new model is chosen has a mechanism to address the underlying values of all stakeholders in the process and openly acknowledges values as crucial components of environmentally just participation. Making explicit the role of values in decision making and providing a means to explore them is crucial because, recalling Perelman and Olbrechts-Tyteca (1969), values are inherent in any argument, even the arguments of supposedly objective, value-free technocrats. Doing so is one piece of the puzzle of creating and adopting a participation process that allows key stakeholders to be genuinely involved in decision making through what Senecah (2004) calls the Trinity of Voice—access, standing, and influence.

My analysis also calls for a model of participation that attends to the intersection between polysemous value terms and cross-cultural differences. In the case of Yucca Mountain, there is a distinct difference between the Shoshone and Paiute understanding of Yucca Mountain and that of the federal government. This difference relates to differing cultural perspectives on land. We should be very careful about generalizing across all American Indians because each nation has its own distinct culture. However, in the case of the Yucca Mountain controversy, there are similar values and orientations about the value of land across a variety of different Shoshone and Paiute comments (even though the land holds different specific spiritual value for the Shoshone and Paiutes). Perelman and Olbrechts-Tyteca (1969) argue for the possibility of characterizing "societies not only by the particular values they prize most but by the intensity with which they adhere to one or the other of a pair of antithetical loci" (p. 85). I argue that the importance of land to Shoshone and Paiute nations implies a cultural preference for the loci of quality over the loci of quantity.

This is consistent with research on American Indian cultures in general. According to Deloria (1992):

> American Indians hold their lands—places—as having the highest possible meaning and all their statements are made with this reference point in mind. Immigrants view the movement of their ancestors across the continent as a steady progression of basically good events and experiences, thereby placing history—time—in the best possible light. When one group is concerned with the philosophical problem of space and the other with the philosophical problem of time, then the statements of either group do not make much sense when transferred from one context to the other without proper consideration of what is taking place. (pp. 61–62)

This statement describes the difference between the loci of quality and the loci of quantity as a cultural difference, suggesting that many American Indian nations may culturally prefer the loci of quality. My findings call for attention to how cultural preferences for loci of the preferable influence the interpretation of a polysemous value term. Given the strong relationship between American Indian people and nuclear technologies in the US (Endres, 2009a, 2009c; Kuletz, 1998) future nuclear waste siting participation processes that involve American Indians should have a mechanism for attending to this potential difference in cultural orientation.

If the over 20 years controversy over the Yucca Mountain site is at all representative, then any future decision about high-level nuclear waste storage in the USA is likely to be highly contentious, particularly with regard to local participation and environmental justice. As we enter into a new controversy over what to do about nuclear waste in the USA, we should use the lessons from Yucca Mountain to inform our decisions.

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Notes

[1] Lidskog and Sundqvist (2004) note that the siting process in Sweden has largely been an exception to this. They argue that the Swedish Nuclear Waste Management Company (SKB) has successfully gained the consent of local populations, in part because of the local population's trust of the government and nuclear technologies.

[2] Congress authorized the site after recommendations by the Secretary of Energy and the President.

[3] There have been challenges to Obama's policies by members of Congress and nuclear industry people, but none of these challenges have yet materialized restarting the Yucca Mountain project.

[4] The DOE filed a motion on March 3, 2010, to withdraw the Yucca Mountain license application from consideration by the NRC (DOE, 2010b). Obama's budget requests between 2010 and 2012 have consistently called for reductions to or elimination of funding for the Yucca Mountain project (Murray, 2010; Tetreault, 2011; Wald, 2009). In September 2011, the NRC commissioners ordered the agency to stop assessing the Yucca Mountain license application. This effectively stopped the Yucca Mountain project under the Obama Administration, meaning that a different president could choose to revive the Yucca Mountain project by calling for the NRC to un-table the application (World Nuclear News, 2011).

[5] I contend that Yucca Mountain is a concrete value, not an abstract value. Abstract values are general, whereas concrete values are personified or objectified. In this case, Yucca Mountain serves as a concrete value term for the abstract value of land. Those who adhere to them may consider both abstract and concrete values universal. See Perelman and Olbrechts-Tyteca (1969).

[6] The Western Shoshone, Southern Paiute, and Owens Valley Paiute can be further subdivided into 17 tribes or equivalent organizations (i.e., the Las Vegas Indian Center) in Nevada, California, Utah, and Arizona: Benton Paiute Tribe, Bishop Paiute Tribe, Big Pine Paiute Tribe of the Owens Valley, Fort Independence Paiute Tribe, Lone Pine Paiute/Shoshone Tribe, Timbisha Shoshone Tribe, Yomba Shoshone Tribe, Duckwater Shoshone Tribe, Ely Shoshone Tribe, Pahrump Paiute Tribe, Las Vegas Paiute Indian Colony, Las Vegas Indian Center, Moapa Paiute Tribe, Chemehuevi Paiute Tribe, Colorado River Indian Tribes, Kaibab Paiute Tribe, the Paiute Indian Tribe of Utah, Shivwits Paiute Tribe, Cedar City Paiute Tribe, Indian Peaks Paiute Tribe, Kanosh Paiute Tribe, and Koosharem Paiute Tribe (Stoffle, Halmo, Olmsted, & Evans, 1988).

[7] Endres (2009c) argues that this logic is flawed because it subsumes Shoshone and Paiutes within the national interest instead of recognizing that Shoshone and Paiute nations have their own national interest to protect.

[8] Though there is little pre-1859 archaeological data on the various tribal groups, there are data to suggest that there have been dwellers in the Great Basin for over 12,000 years (Pritzker, 2000).

[9] This generalization is warranted because there are similarities in spiritual beliefs that span across American Indian cultures. Yet, even when generalizing, it is crucial to recognize that there are over 500 distinct American Indian nations in the USA, each with their own cultural and spiritual practice.

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