The Guise of Deliberation: A Rhetorical Criticism of Arguments in the Yucca Mountain Site Authorization Controversy

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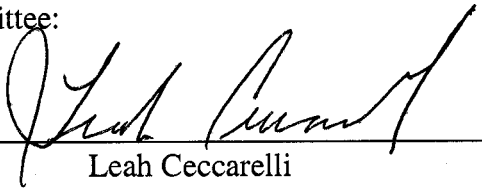

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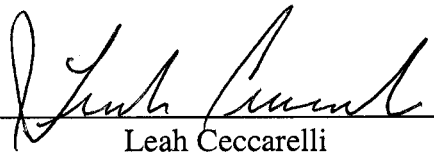

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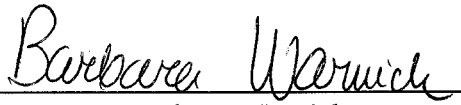

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Abstract

The Guise of Deliberation: A Rhetorical Criticism of Arguments in the Yucca Mountain Site Authorization Controversy

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A contemporary controversy in the United States over nuclear waste concerns the 2001 decision to site a national high-level nuclear waste repository in Yucca Mountain in Nevada. This dissertation is a rhetorical criticism, specifically and argument evaluation, of the arguments of three important stakeholders: American Indian tribes, Nevadans, and the federal government. Through a close reading of DOE public hearing comments and the federal government's official site authorization documents, this dissertation finds that the process of the Yucca Mountain site authorization is a guise of deliberation in which American Indian arguments are ignored, Nevadan scientific arguments are disregarded, and the federal government employs rhetorical strategies which create a guise of reasonableness and deliberation to cover a primarily justificatory process. In particular, this case study finds that (1)American Indian arguers appeal to differing loci of values, use different forms of argument, and evaluate arguments using different standards than the federal government; (2) scientific argumentation from the public is constrained by conceptions of the relationship between science and the public, which demonstrates the need for a theory of public science that comes from below; and (3) the federal government rhetorically constructs an opposition to the site with American Indians as a third persona which is negated in the text. In addition to evaluating the arguments made by each of the stakeholders, this dissertation also informs our understanding of the process of public participation in the decision-making and the rhetorical

manifestations and perpetuation of the phenomenon of radioactive colonization, offers implications for theories of American Indian argument forms and evaluation, offers a theory of public science, and provides suggestions for those involved in the controversy.

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CHAPTER I: INTRODUCTION

Since the Manhattan Project, we have seen the janus-faced development of nuclear technologies capable of both devastating the populations of Hiroshima and Nagasaki and providing power to light cities and send humans to space. Whether the resulting technologies of nuclear production are ultimately beneficial or harmful for society remains controversial. However, it is not just the end results of nuclear technology that are contentious. Every stage in the process, from uranium mining and milling to nuclear power reactors, produces waste that, unless safely contained, will continue to emit dangerous levels of radiation for generations to come.[1] In particular, high-level nuclear waste remains extremely radioactive for over 10,000 years. High-level nuclear waste (HLW) is a byproduct of nuclear fuel production and can come in two forms: waste from reprocessed nuclear fuel (including surplus plutonium) and spent nuclear fuel (SNF).[2] Even though spent nuclear fuel is a form of high-level waste, waste is often described as either spent nuclear fuel or high-level waste (referring to various forms of waste from reprocessing). There are two main sources of high-level nuclear waste in the United States; the commercial nuclear power industry produces spent nuclear fuel and the federal government (including the Department of Energy and the Department of Defense) produces both reprocessed waste and spent nuclear fuel.

The United States faces a high-level nuclear waste crisis (and a low-level waste crisis). According to a 2002 report by former Secretary of Energy Spencer

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[1] The federal government classifies radioactive waste into seven categories: high-level waste (HLW), spent nuclear fuel (SNF), transuranic waste, low-level waste (LLW), uranium mill tailings, mixed waste, and naturally occurring and accelerator produce radioactive material (NARM). League of Women Voters Education Fund, *The Nuclear Waste Primer: A Handbook for Citizens,* revised edition (Washington D.C., U.S. GPO, 1993), 21-26.

[2]Reprocessing separates uranium and plutonium from used nuclear fuel. The byproducts from reprocessing can be used in the development of nuclear weapons. The reprocessed HLW that will be stored in a national repository was reprocessed from reactors for the purpose of nuclear weapons development. HLW is highly radioactive and must be solidified before permanent storage. SNF is removed from commercial, naval, or research reactors because it is no longer energy efficient. Commercial SNF is not reprocessed because federal law prohibits commercial reprocessing. SNF is highly radioactive and must be cooled in on-site dry cask storage pools before permanent storage. Most SNF in the country is being stored in on-site pools and some is in dry cask storage. League of Women Voters Education Fund, *The Nuclear Waste Primer*, 21-22.

Abraham, "We have a staggering amount of radioactive waste in this country—nearly 100,000,000 gallons of high-level nuclear waste [reprocessed waste] and more than 40,000 metric tons of spent nuclear fuel [primarily from commercial reactors] with more created every day."[3] The Department of Energy (DOE) estimates that in 2003, there were 49,000 metric tons of spent fuel and 22,000 canisters of defense related high-level nuclear waste from reprocessing and by 2035, the United States will have approximately 105,000 metric tons of high-level nuclear waste (reprocessed waste and SNF).[4] With the continuing increase in nuclear power plants and development of nuclear technologies from the 1950's to the 1980's, the government anticipated the current waste crisis which led Congress to pass the 1982 Nuclear Waste Policy Act (NWPA, amended in 1987), which vested responsibility with the federal government for permanently storing high-level nuclear waste from commercial and governmental sources.[5] In 2002, after a twenty-year process of researching a federal high-level nuclear waste repository site, the Secretary of Energy, the President, and both houses of Congress authorized the siting of the Yucca Mountain High-Level Nuclear Waste Repository in Nevada as the future home to 70,000 metric tons (77,000 standard U.S. tons) of high-level nuclear waste. Of this 70,000 metric tons, section 114(d) of the NWPA mandates that the repository hold 63,000 metric tons of commercial spent fuel

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[3] Spencer Abraham, *Recommendation by the Secretary of Energy Regarding the Suitability of the Yucca Mountain Site for a Repository Under the Nuclear Waste Policy Act of 1982* (Washington D.C., February 2002, YMP-0603), http://ocrwm.doe.gov/ymp/sr/sar.pdf (accessed April 25, 2003).

[4] U.S. Department of Energy Office of Civilian Radioactive Waste Management, "Nuclear Waste Explained: How Much Nuclear Waste is in the United States?" [Web page], http://www.ocrwm.doe.gov/ymp/about/howmuch.shtml (accessed March 27, 2005).

[5] In an effort to promote nuclear power, the government agreed to store high-level nuclear waste from commercial nuclear reactors permanently. The NWPA established the Nuclear Waste Fund (NWF) into which members of the nuclear industry who produce SNF deposit a mil (a tenth of a cent) per kilo-watt hour of nuclear energy produced. See U.S. Senate, *Approval of Yucca Mountain Site*, Report submitted by Senator Bingaman from the Committee on Energy and Natural Resources, 107th Cong., 2nd sess., 2002, S. Rept. 107-159, 2; U.S. Department of Energy Office of Civilian Radioactive Waste Management, "Budget and Financing," [Web page], http://www.ocrwm.doe.gov/pm/budget/money.shtml (accessed April 9, 2005).

and 7,000 metric tons of defense-related high-level waste.[6] As the previously mentioned DOE estimates indicate, in twenty years from now the US will be faced with 35,000 metric tons of waste in excess of the capacity of the Yucca Mountain site.

The study of nuclear waste storage is important because waste is the inevitable byproduct of all nuclear technology. Storage of such waste is essential to the continued viability of nuclear power and technology and because the siting of nuclear waste is an issue of environmental justice that is extremely controversial in the public sphere. Though many assume that the Yucca Mountain repository only affects those in Nevada, the repository, if opened, will actually affect the entire nation. Waste is currently stored in on-site storage pools at 131 sites in 39 states; during the process of moving this waste to the repository, waste will be transported via road and rail throughout the nation.

Decisions about where to store nuclear waste or any form of toxic waste are difficult and rife with controversy. For obvious reasons, most people do not want a nuclear waste storage facility sited near their homes. This has been called the "Not In My Back Yard" (NIMBY) response in which individuals often do not care about where toxic waste or toxic pollution are located as long as it is not near them. The controversy becomes more complicated with ideological and value-based arguments about toxic waste and pollution. Some advocates fundamentally oppose the use of nuclear power or other technologies that produce toxic waste, and advocate for a radical change in environmental consciousness; some decry the capitalist system in which industry is allowed to pollute with few checks on growth and environmental destruction; and some argue that poor and marginalized communities are targeted for sites of waste and pollution. Others are less critical of industrial waste and pollution, believing that the technologies that produce toxic pollution are necessary to the national interest or that government regulation sufficiently checks industrial pollution and waste.

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[6] U.S. Department of Energy Office of Civilian Radioactive Waste Management, *Yucca Mountain Science and Engineering Report, Rev 1* (Washington D.C., February 2002, DOE/RW-0539-1), http://www.ocrwm.doe.gov/documents/ser_b/index.htm (accessed March 27, 2005), section 3.

Placement of low and high-level nuclear waste facilities in the United States has been an issue of contention since the 1950's, with anti-nuclear advocates deriding the existence of nuclear technology, citizen groups arguing NIMBY, American Indian activists accusing the government of radioactive colonization, and industry specialists and government officials proclaiming the scientific and technical safety of waste storage technologies. In the controversy over the siting of the nation's first permanent nuclear waste storage site at Yucca Mountain, there is a wide range of arguments for and against the site; these arguments come from the federal government, the nuclear industry, citizens of the state of Nevada, American Indian tribes, and the general American public. This dissertation focuses on the controversy over the Yucca Mountain Nuclear Waste Repository in an attempt both to understand public argumentation over the Yucca Mountain site, in particular, and to wrestle with the more general issue of nuclear waste siting decisions in America. Specifically, a focus on the 2002 site authorization decision and the arguments for and against the site made by three key stakeholder groups (American Indian tribes, Nevada citizens, and the federal government) provides a point of entry for a rhetorical criticism of the arguments made in the controversy over the Yucca Mountain siting decision.

The controversy over Yucca Mountain is a substantial topic of inquiry and, in undertaking this project, I have had to make many choices about questions to pursue, texts to examine, the critical approach to employ, and theoretical and scholarly literatures from which to draw. This chapter introduces and clarifies the dissertation. It begins by explicating two grounding assumptions that guide my exploration of the Yucca Mountain controversy. Then, it provides more background on the Yucca Mountain repository, explains the texts and the scope of the dissertation, situates the dissertation within relevant scholarly conversations, and outlines the critical rhetorical approach. Lastly, it previews the remaining chapters.

Guiding Assumptions

Two assumptions guide this criticism of the Yucca Mountain controversy and help to explain one of the goals of this dissertation. These assumptions were not the starting point in my choice to examine the Yucca Mountain siting controversy but

became important as I researched the context of high-level nuclear waste storage and relevant communication scholarship. The first assumption is that Yucca Mountain is part of an unjust system of radioactive colonization. The second assumption is that increased genuine and dialogic public participation in environmental decision-making is necessary and desirable. Both assumptions are grounded in concerns about justice. Radioactive colonization raises concerns about environmental justice because American Indian tribes and reservations have shouldered much of the burden of the nuclear production process in the United States. Yucca Mountain is a part of this phenomenon. The promotion of public participation in environmental decision-making assumes that justice is best served when multiple stakeholders have a genuine voice. Public and tribal participation in environmental decision-making, particularly with regard to nuclear waste, is desirable, but it is limited in its current form. Thus, one of the goals of this dissertation is to use rhetoric not only to explain the current process of decision-making about environmental issues but also to suggest alternatives to current modes of rhetoric and processes of public participation in environmental decision-making.

Radioactive Colonization

Radioactive colonization refers to the alleged targeted use of American Indian lands to sustain the nuclear production process, such as uranium mining on reservations in the Black Hills and Four Corners, nuclear testing on land claimed by the Western Shoshone Indians, and high and low-level waste storage sites proposed on American Indian lands. The relationship between American Indian lands and these aspects of the nuclear production process perpetuates the process of internal colonialism in which American Indian nations are treated as colonies of the United States federal government.[7] The concept of radioactive colonization is especially

[7] Several works discuss radioactive colonization including: Ward Churchill, "Radioactive Colonization: Hidden Holocaust in Native North America," in *Struggle for the Land: Indigenous Resistances to Genocide, Ecocide and Expropriation in Contemporary North America* (Monroe, ME: Common Courage Press, 1993); Ward Churchill and Winona LaDuke, "Native North America: The Political Economy or Radioactive Colonization," in *The State of Native America: Genocide, Colonization and Resistance,* ed. M. Annette Jaimes (Boston: South End Press, 1992); Donald A. Grindle and Bruce E. Johansen, *Ecocide of Native America: Environmental Destruction of Indian Lands and Peoples* (Santa

relevant to the interaction of arguments between the federal government and American Indian tribes and helps to explain some of the findings in chapter 4.

The study of the rhetoric of radioactive colonization is a division of what I term the rhetoric of toxic colonization, which extends upon the concept of radioactive colonization and studies the discursive dimensions of the connection between toxics and communities that are marginalized in many ways including geographic location, socio-economic status, and race. Toxic colonization is the system or policy by which toxics, that is, anything that has the potential to harm the land, water, air, animal, human and plant life, are disproportionately associated with marginalized communities and their lands. Scholars of environmental justice argue that toxic waste and pollution are disproportionately linked to marginalized communities.[8] Social critic Richard Hofrichter states that "the uneven distribution of resources and development that characterizes U.S. society finds a strong parallel in the distribution of ecological hazards, particularly among underrepresented and disenfranchised populations—African Americans, Latino Americans, Native Americans, Asian Americans, the poor, and women."[9] Yucca Mountain is located on land claimed as the traditional homeland of the Western Shoshone, Southern Paiute, and Owens Valley Paiute and Shoshone;

Fe, NM: Clear Light Publishers, 1995); Gregory L. Hooks and Chad L. Smith, "The Treadmill of Destruction: National Sacrifice Areas and Native Americans," *American Sociological Review* 69 (2004): 558-576; Valerie Kuletz, *The Tainted Desert: Environmental and Social Ruin in the American West* (New York: Routledge, 1998); Winona LaDuke, *All Our Relations: Native Struggles for Land and Life*, (Boston: South End Press, 1999); Grace Thorpe, "Our Homes Are Not Dump Zones" paper presented at the North American Native Workshop on Environmental Justice, ILIFF School of Theology, Denver, Col., March 17, 1995, http://oraibi.alphacdc.com/necona/homes.html (accessed April 23, 2004).

[8] Robert D. Bullard and Benjamin Chavis, Jr., eds. *Confronting Environmental Racism: Voices from the Grassroots*, (Boston: South End Press, 1993); Daniel Faber, ed., *The Struggle for Ecological Democracy: Environmental Justice Movements in the United States* (New York: Guiford Press, 1998); Richard Hofrichter, ed., *Toxic Struggles: The Theory and Practice of Environmental Justice*. (Salt Lake City: University of Utah Press, 2002); Kristin Shrader-Frechette, *Environmental Justice: Creating Equality, Reclaiming Democracy* (Oxford: Oxford University Press, 2002); Gerald R. Visgilio and Diana M. Whitelaw, eds., *Our Backyard: A Quest for Environmental Justice*, (Lanham, MD: Rowman and Littlefield Publishers, 2003); Jace Weaver, ed., *Mother Earth: Native American Perspectives on Environmental Justice*, (Maryknoll, NY: Orbis books, 1996).

[9] Richard Hofrichter, "Introduction," in *Toxic Struggles: The Theory and Practice of Environmental Justice,* ed., Richard Hofrichter (Philadelphia: New Society Publishers, 1993), 2.

the choice of this land to store so much nuclear waste raises issues of environmental justice and toxic colonization.

The term toxic colonization evokes the concept of internal colonialism that refers to an unequal division of resources between a core population and the periphery population.[10] In her book about the development of nuclear technology in the southwest, sociologist Valerie Kuletz refers to internal colonialism as "political and economic inequalities between regions within a given society. Like colonialism, where 'core' countries in the 'first world' exploit 'peripheral' countries for their national resources, internal colonialism is characterized by one region—usually a metropolis that is closely associated with state power—exploiting a colony-like peripheral region."[11] American Indian scholars and activists Ward Churchill and Winona LaDuke assert that "Internal colonialism—the colonization of indigenous peoples—is a prominent, if little discussed, fact of life within both the United States and Canada."[12] Toxic colonization, then, refers to locating toxic waste and toxic pollution in peripheral regions of the country that are separated from those regions with decision-making power such as American Indian lands and the Great Basin region.

Radioactive colonization is a type of toxic colonization that is particularly relevant to the controversy over the siting of a nuclear waste repository. According to Kuletz, radioactive colonization (or what she calls nuclear colonialism) is a common form of internal colonialism.

> In the case of nuclear colonialism, what is seen as usable, sparsely populated, arid geographic space is used as a dumping ground or a testing field to allow more powerful regions to continue their present form of energy production or to continue to exert military power globally. The relationship between core and periphery is typically one

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[10] Antonio Gramsci, "The Southern Question," in *The Modern Prince and Other Writings* (New York, 1959).

[11] Kuletz, 7-8.

[12] Churchill and LaDuke, 242-243.

> of exploitation, where the human populations in the periphery usually consist of people with a different cultural, racial, or class background.[13]

The Yucca Mountain site is located in the Great Basin in the southwest United States, which can be described as a peripheral and sparsely populated region of the country. Though the site is 100 miles outside of Las Vegas, the area surrounding Yucca Mountain and much of the rest of Nevada is federally claimed land that is not densely populated. Additionally, the region is home to a large amount of American Indians and lands (disproportionately large compared to the core region on the east coast).

Though Kuletz speaks of radioactive colonization as a general phenomenon, the term is widely used in relation to American Indian tribes. Several works detail the history of nuclear production and its connections to American Indian lands, reservations, peoples, and spirituality. Each stage in the nuclear production process in the United States is connected to American Indian tribes.[14] Much of the development of nuclear technology, including uranium mining and milling, nuclear reactors, and nuclear testing, has occurred within the borders of treaty-guaranteed or sacred lands. In addition to its use in academic circles, the concept of radioactive colonization has gained popularity among citizens and activist groups. For example, in the following Declaration of the Indigenous Anti-Nuclear Summit, we see the concept of radioactive colonization invoked rhetorically. "For more than fifty years, the legacy of the nuclear chain, from exploration to waste, has proven through documentation to be genocidal and ethnocidal and a most deadly enemy of Indigenous peoples."[15] Resistance against toxic and radioactive colonization is part of the environmental justice movement.

Scholars doing work in radioactive colonization come from various fields such as American Studies, Geography, American Indian Studies, and Sociology. These scholars have produced historical analysis and maps of where radioactive colonization

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[13] Kuletz, 8.

[14] Churchill; Churchill and LaDuke; Hooks and Smith; Kuletz.

[15] As cited in Honor the Earth, "Background Information: Nuclear Waste and Native Lands," [Web page], http://www.honorearth.org/ejik/energy/background.html (accessed February 22, 2004).

takes place, but they have not explored the rhetorical and argumentative aspects of such colonization. These studies have missed an important aspect of this phenomenon, which is *how* radioactive colonization is perpetuated through policies that are justified through argumentation and rhetoric. From previous studies, we have sufficient evidence that radioactive colonization is an historically and empirically supported phenomenon. The first assumption guiding this dissertation is that this phenomenon is unjust. In order to prevent this and future instances of radioactive colonization and develop counterarguments to policies of radioactive colonization, we must understand the discursive elements of the process better, namely *how* the phenomenon is perpetuated and justified. Therefore, within this larger framework of toxic or radioactive colonization this dissertation examines the rhetorical manifestations of radioactive colonization in the public argumentation about the Yucca Mountain Nuclear Waste siting controversy. The project focuses on the Yucca Mountain site as an arena of contemporary political controversy that can help to illuminate the rhetorical and argumentative devices in the politics of nuclear waste siting, particularly with regard to the public's participation in environmental decision-making.

Public Participation in Environmental Decision-Making

The second assumption is that public participation in environmental decision-making is desirable and in need of improvement. The field of environmental communication provides ample support for this claim. Consider, for example, a new edited volume titled *Communication and Public Participation in Environmental Decision Making*.[16] The editors of this volume identify "a number of shortcomings in traditional participation mechanisms" that have been identified by communication scholars including: technocratic one-way models of communication, inclusion of public participants after decisions have been made, an overly adversarial relationship between decision makers and participants, lack of discussion between stakeholders, and lack of mechanisms to ensure that public participation actually impacts

[16] Steven Depoe, John W. Delicath and Maire-France Aepli Elsenbeer, eds., *Public Participation in Environmental Decision Making* (Albany, NY: SUNY Press, 2004).

decisions.[17] Sociologists Robert Howell, Marvin Olsen, Darryll Olsen, and Georgia Yuan, in an essay published in 1983, just one year after the passage of the Nuclear Waste Policy Act, outline past failings of the federal government in fostering public participation and stress the imperative of participation in nuclear waste repository siting decisions, arguing that sucessful siting is not possible without the support of the public.[18] Although the NWPA vests responsibility with the federal government, specifically the DOE, to select and manage the nation's geologic high-level nuclear waste repository, the NWPA also mandates public participation in the site selection process, environmental and social impact assessments, and other means of taking into consideration the range of reactions to the site. One of the aims of this dissertation is to evaluate the role of public participation in the Yucca Mountain siting decision. In particular, chapters 2 and 3 identify barriers to public participation in environmental decision-making in the case of the Yucca Mountain siting decision.

Radioactive colonization and public participation in environmental decision-making are linked in that both concern environmental justice. Richard Hofrichter notes the democratic nature of the environmental justice movement that seeks not only to minimize the effects of toxic pollution on nearby populations, but also to foster greater public participation in environmental decision-making, whether it is through official means or through activism.[19] The critique of toxic colonization is a form of environmental justice advocacy that acknowledges the relationship between the environmental issue of toxic waste or pollution, processes of colonization, and the potential to increase public participation in environmental decisions. The findings in chapters 2-4 are related to radioactive colonization and public participation in

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[17] Ibid., 2-3.

[18] Robert E. Howell, Marvin E. Olsen, Darryll Olsen, and Georgia Yuan, "Citizen Participation in Nuclear Waste Repository Siting," in *Nuclear Waste: Socioeconomic Dimensions of Long-Term Storage,* eds., Steven H. Murdock, F. Larry Leistritz, and Rita R. Hamm (Boulder, Col.: Westview Press, 1983): 267-289.

[19]Hofrichter, "Introduction," 4-5. See also John O'Connor, "The Promise of Environmental Democracy," in *Toxic Struggles: The Theory and Practice of Environmental Justice,* ed., Richard Hofrichter (Philadelphia: New Society Publishers, 1993): 47-57.

environmental decision-making, and the conclusion further explores these concepts in relation to the findings.

The injustice of radioactive colonization and the desirability of public participation in environmental decision-making are two assumptions that infuse this analysis and my evaluation of the findings. These assumptions frame the particular project, which is a rhetorical criticism of arguments in the 2002 site authorization decision-making process The 2002 decision-making process, however, is but one moment in a long process concerning Yucca Mountain. In order to frame the criticism in this dissertation further, it is important to look at a brief historical sketch of the Yucca Mountain site.

The Yucca Mountain Project

Under the Nuclear Waste Policy Act of 1982 (NWPA), the Secretary of Energy is responsible for researching and choosing a site for permanent geologic storage of high-level nuclear waste. The NWPA outlines a detailed process for site selection including an evaluation of multiple sites prior to selection and authorization, production of an Environmental Impact Statement, a public comment period, and site characterization research. This culminates in the official site authorization decision, which occurred in 2002. As stated above, this is not the last stage in the process, but moves the process a step closer to completion. In 1987, Congress amended the NWPA such that only Yucca Mountain would undergo site characterization research. Originally, the NWPA stated that two sites would be chosen, researched, and compared. Many argue that this is the point at which the Yucca Mountain site became inevitable because the 1987 amendment eliminated the requirement to do a comparative study of sites. The 1987 amendment is a crucial moment in the history of the Yucca Mountain project because it marked the start of the federal government's serious scientific and technical consideration and testing of the Yucca Mountain site. Prior to the 2002 decision to authorize the Yucca Mountain site the site was not officially chosen as the site; however, with the selection of Yucca Mountain as the only site to be investigated by the federal government, the federal government started

to shift the burden of proof to opponents to show why it would not be prudent to go forward with the Yucca Mountain site.

Between 1987 and 2001, the federal government, mainly under the auspices of the Department of Energy and in compliance with guidelines established in the NWPA, researched the site, produced scientific and technical reports in support of the site, produced an Environmental Impact Statement (including EIS-required public hearings), and conducted site authorization hearings. The NWPA mandates that the Secretary of Energy construct a site authorization recommendation that is based on the scientific and technical reports about the site, the EIS, and the public comments. All of the documents that the Secretary uses to make the site decision are required to be released to the public for review.

In preparation for making a site authorization decision, the DOE released drafts of the *Yucca Mountain Science and Engineering Report* and the *Preliminary Site Suitability Evaluation* for public review in May and August 2001 (they also re-released other scientific and technical reports and the draft EIS which were to be used by the Secretary in his site authorization report).[20] Concurrent with the release of the draft *Yucca Mountain Science and Engineering Report,* the DOE announced a period in which they would accept public comments about the site characterization documents (which all concluded in favor of authorizing the site). The DOE site characterization documents make the federal government's initial case for the Yucca Mountain site and provide the inventional resources for future documents by other parts of the federal government. The public comment period is the opportunity for the public to offer counterarguments to the DOE's case. In addition to public hearings and letters submitted by the public, the state of Nevada and counties within Nevada ("affected units of government") are also given the opportunity to submit reports on

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[20] The draft versions are only available at the Yucca Mountain Information Center Reading Room, 4101B Meadows Lane, Las Vegas, NV 89107, 702-295-1312. For final versions of the reports: U.S. Department of Energy Office of Civilian Radioactive Waste Management, *Yucca Mountain Site Suitability Evaluation* (Washington , D.C., February 2002, DOE/RW-0549), http://www.ocrwm.doe.gov/documents/sse_a/index.htm (accessed April 19, 2005); U.S. Department of Energy Office of Civilian Radioactive Waste Management, *Yucca Mountain Science and Engineering Report.*

the effects of the proposed project on their communities during the public comment period. The public comment period lasted from May 2001 to December 2001. Following the public comment period, the DOE is required to produce a document that summarizes and responds to public comments and state and local government reports.[21]

At the close of the public comment period, the Secretary is then able to make a decision whether to recommend site authorization. To make this decision, the Secretary evaluates the scientific and technical documents that address the site characterization guidelines in the NWPA (primarily the *Yucca Mountain Science and Engineering Report* and the *Preliminary Site Suitability Evaluation),* the draft EIS, state and local government impact reports, an NRC report, and public comments. In February 2002, with a letter to the President and an official site recommendation report, former Secretary of Energy Spencer Abraham officially recommended that the federal government authorize the Yucca Mountain site.[22] Along with the release of Abraham's report, the DOE released final versions of the EIS, the *Yucca Mountain Science and Engineering Report* and the *Preliminary Site Suitability Evaluation*, and the *Site Recommendation Comment Summary Document,* which categorizes and responds to the arguments in the public comment period.

According to the NWPA, the Secretary's recommendation ushers in the site authorization decision-making process. Once the Secretary recommends a site for authorization, the President chooses whether to authorize the site. President George W. Bush authorized the Yucca Mountain site on February 15, 2002. After the authorization, the governor of the state in which the waste will be stored is given the opportunity to veto the authorization. Nevada Governor Kenny Guinn vetoed the site authorization on April 8, 2002. In the case of a governor's veto, the US Congress makes a final decision on site authorization. In the summer of 2002, after holding

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[21] U.S. Department of Energy Office of Civilian Radioactive Waste Management, *Site Recommendation Comment Summary Document* (Washington , D.C., February 2002, DOE/RW-0548), http://www.ocrwm.doe.gov/documents/csd_a/index.htm (accessed April 19, 2005).

[22] Abraham, *Recommendation;* Spencer Abraham, *Secretary of Energy Letter to the President*, February 14, 2002, http://ocrwm.doe.gov/ymp/sr/salp.pdf (accessed April 25, 2003).

House and Senate hearings on site authorization, both houses of Congress passed resolutions approving the site at Yucca Mountain. On July 23, 2002, Bush signed House Joint Resolution 87, officially authorizing the site.

The Yucca Mountain repository would be a geologic disposal site. This means that the nuclear waste will be stored subterraneously within the mountain. Though the actual repository has not yet been built, for the purposes of research, Yucca Mountain project scientists and engineers have already bored a series of tunnels under the mountain surface. A main tunnel spans the length of the mountain and smaller tunnels will be bored off the main tunnel for waste canister storage. The repository will have a pre-closure period in which waste can be transported to and placed in the storage tunnels. The NWPA outlined a schedule for the project in which the site would be authorized in the early 1990s and begin accepting waste no later than 1998. The DOE did not meet this timeline and revised the acceptance date to be 2010. If and when the repository begins accepting waste, it will take at least twenty years to transport all of the current waste in the country to the site. After the repository is full, the pre-closure period, lasting anywhere from 50-300 years, will continue to allow for monitoring. Then, the repository will be sealed and will enter the post-closure period for permanent irretrievable storage. The DOE conducts tours of the facilities at Yucca Mountain that allow visitors to go into the tunnels and tour the area surrounding the proposed repository. I attended a tour of the mountain in September of 2004.[23]

Though the site was authorized in 2002, the Yucca Mountain decision remains controversial. There are opponents to the site coming from Nevada state government officials and citizens, environmental activists and organizations, people living on transportation routes, anti-nuclear activists, and American Indian activists. All of these groups argue that their fight against the site has not stopped with the 2002 siting decision. The site still has to go through the Nuclear Regulatory Commission (NRC) licensing process, and transportation routes to the site need to be determined and

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[23] More information, photos, and illustrations of the Yucca Mountain site are available from the main web page. U.S. Department of Energy Office of Civilian Radioactive Waste Management, *Yucca Mountain Project* [Web site], http://www.ocrwm.doe.gov/ymp/index.shtml (accessed March 16, 2005).

approved, leaving time and legal venues to fight the decision. There are currently several pending lawsuits that have implications for the future of the site. On July 9, 2004 the District of Columbia Court of Appeals ruled on a lawsuit initiated by the state of Nevada and environmental groups that the 10,000-year radiation safety standard is too short and must be revised since waste remains radioactive for over 100,000 years. Nevada Senator John Ensign and other Yucca Mountain opponents claim that this ruling is "a crucial legal tool to defeat the Yucca Mountain project once and for all."[24] More recently, in March 2005, the Western Shoshone National Council filed a lawsuit against the federal government, the Secretary of Energy, and the Secretary of the Interior calling for a halt to the Yucca Mountain project on the ground that it violates the 1863 Ruby Valley Treaty of Peace and Friendship between the Western Shoshone and the federal government.[25] Around the same time, reports of falsified US Geological Survey documents called into question the government's scientific and technical basis for the site.[26]

Scope and Objects of Study

Though the Yucca Mountain project has a long history and there have been many critical moments in this history, this dissertation focuses specifically on the site authorization decision. Though this controversy has numerous entry points for scholarly inquiry, a focus on the 2002 site authorization decision is important. First, this was the first "official" action to go forward with the site, taken in accordance with

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[24] John Ensign, "Ensign Celebrates Yucca Decision," [Press Release], http://ensign.senate.gov/ (accessed July 28, 2004). Though opponents claim that the recent decision could be a setback for the project, proponents claim that Yucca Mountain can still go forward in spite of the decision. This decision is a good example of the continued controversy, legal challenges, and public deliberation over the Yucca Mountain repository. For more information about the court decision, *Nuclear Energy Institute, Inc. v. Environmental Protection Agency*, see the court's opinion available at http://pacer.cadc.uscourts.gov/docs/common/opinions/200407/01-1258a.pdf (accessed July 30, 2004).

[25] Western Shoshone National Council, "Western Shoshone Nation Uses 1863 Treaty to Stop Yucca Mtn Nuclear Waste," [Press Release], March 4, 2005, personal communication via e-mail. See also Keith Rogers, "Western Shoshones File Yucca Lawsuit," *Las Vegas Review Journal,* March 5, 2005, online ed., http://www.reviewjournal.com/lvrj_home/2005/Mar-05-Sat-2005/news/25999957.html (accessed March 5, 2005).

[26] Global Security Newswire, "USGS Employee May Have Falsified Yucca Mountain Documents," *GOVEXEC.COM,* March 17, 2005, http://www.govexec.com/dailyfed/0305/031705gsn1.htm (accessed March 21, 2005).

the NWPA, since the 1987 decision to examine the Yucca site exclusively. Though there was much controversy and research of the site between 1987 and 2002, this decision officially declared the site suitable for a repository and ushered in a new phase in the project to prepare NRC licensing applications. Second, per the NWPA, the site authorization process includes a public comment period in which the Department of Energy is required to educate the public about the site and evaluate the public's comments before making the final decision about whether to recommend that the site be authorized. The public comment period, including public hearings held in every county of Nevada, is important because it provides a mandate to the DOE (and the federal government more broadly) to consider public arguments for and against the site.

The NWPA mandates that the DOE, in developing the site recommendation report, consult with the state of Nevada and American Indian tribes, and hold a public comment period. Though members of the larger national and international community and representatives of the nuclear industry did contribute arguments to the public comment period, its arguments were not as prolific as Nevadan and American Indian arguments. The decision to focus on the arguments of these three stakeholder groups is thus not only related to the NWPA, but is also related to the set of texts that are relevant to the site authorization decision.

This dissertation explores public argumentation in the controversy over the authorization of the Yucca Mountain High Level Nuclear Waste Repository site. This includes the arguments of Nevadans and American Indians, the responses to those arguments by the federal government, and the federal government's justification for authorizing the site. As public discourse can involve an almost boundless set of symbolic actors including citizens, members of the media, and international agents, my analysis is necessarily limited to three groups that have a direct stake in the authorization of the Yucca Mountain Nuclear Waste repository site: American Indians, Nevadans, and the federal government. This dissertation focuses on the site authorization public comment period (May-December 2001) in which American Indians, Nevadans, and other members of the American public offered general

comments on the Yucca Mountain site and specific comments on the documents released by the DOE in support of the site. It also focuses on the DOE and federal government's response (February –July 2002) to these comments and their official justification for their site authorization decision. The site was officially authorized in July 2002 based on this process.

Specifically, this dissertation uses argument evaluation to understand the arguments for and against the site by American Indian tribes (including both tribal members and tribal government officials) and Nevadans (including both government officials and the citizens who elect them) and to understand the ways that the federal government chooses to respond to these arguments and to justify the Yucca Mountain site. Evaluation of arguments and argument strategies of these stakeholder groups yields interesting findings about the ways that argumentation differs across groups and cultures. Moreover, through argument evaluation, we can gain a better understanding of how environmental policies such as this one are justified through argumentation. The remainder of this section further explores the choices of stakeholders and texts, and discusses the main argument themes that will be discussed in chapters 2-4.

The Stakeholders

This dissertation focuses on the arguments of three stakeholders American Indian tribes, Nevadans, and the federal government, each of which were chosen because of the role in the decision-making process and the relationship to nuclear waste and/or Yucca Mountain. American Indian tribes claim traditional and spiritual ties as well as treaty rights to the mountain and the surrounding land, the Nevada government and citizens are part of the state in which Yucca Mountain lies, and the federal government is responsible for storing high-level nuclear waste from reactors. These groups are also a part of the decision-making process as stipulated in the NWPA, which states that the DOE must consider the comments of the state in which the site is located and/or the tribe whose traditional lands overlap with the site.

Two stakeholder groups that are noticeably absent from this list are the nuclear industry and those in the American public who live on transportation routes. Though these groups are important to understanding the controversy over nuclear waste

storage at Yucca mountain, this dissertation focuses on the federal government, Nevadans and American Indians because these three groups are specified in the NWPA as stakeholders who must be included in the decision-making process and their statements form the basis of the testimony I will study. The federal government is the group vested with the responsibility for storing waste. This federal responsibility relieves the nuclear industry of this responsibility and, in a sense, means that the federal government is acting on behalf of the nuclear industry.[27] I do not mean to discount the importance of the nuclear industry's arguments, but it is important to note that the arguments of nuclear industry advocates are aligned with the federal government's justification for the site. The American public arguments overlap with the arguments of Nevadans and American Indians in some ways, but differ in that they tend to be more focused on the risks of transportation to the site.

The Texts

This dissertation focuses on two sets of texts, public hearing comments and statements and the federal government's site authorization documents, to assess the arguments of the three stakeholders in the formal process of site authorization including the public comment period and the federal government's site authorization decision.[28] First, analysis of public hearing statements and public comments submitted during the public comment period allow for an understanding of the arguments of

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[27] Although the nuclear industry is supportive of the project and unanimously supports the site recommendation, they do criticize the government for delaying the schedule for accepting waste because it costs them money to continue to store waste on site and many current on site storage pools are at capacity and pose radiation risks to employees and communities near the reactors.

[28] I began my text selection process with the case. In conducting research, I discovered many American Indian tribes and organizations, and members of the Nevada public that opposed the Yucca Mountain site authorization. I also learned that the DOE, the President, and Congress produced official site authorization documents that outlined their justifications for going forward with the project. I chose to focus on these texts because they offer the federal government's official justification for site authorization Because I noticed that many of the arguments raised by opponents did not seem to appear in these official documents, I decided to also focus on a second set of texts that would allow me to compare the arguments of opponents with the federal government's justifications. Because I learned that the DOE held public hearings prior to the site authorization decision, and I found in my research that public participation in environmental decision-making is limited, I chose to examine the public hearing statements and public comments. I chose these two sets of texts because they afforded me the opportunity to not only examine the arguments made by proponents and opponents in the case but also to examine the process of public participation in environmental decision-making in this case.

Nevadans and American Indian tribes about the site authorization decision.[29] The NWPA mandates a public comment period and that these comments be considered by the Secretary of Energy in his site recommendation decision and subsequent recommendation report. Public comments can take the form of a statement at one of the 66 public hearings conducted by the DOE in all counties of Nevada as well as Inyo County in California, a statement to a court reporter at the Yucca Mountain Information Center, an e-mail message, or a written comment sent via post. In all, there were 5,250 public comments.[30]

Although the public comment period is not the only venue in which Nevadans and American Indian tribes advanced arguments about the Yucca Mountain site, this is an important set of texts to study because it records an official scene for public participation in environmental decision-making. Moreover, these are the only arguments that the government directly considers in making a decision as to whether to authorize the Yucca Mountain site. Even though public comments are the primary texts for understanding Nevadan and American Indian arguments, these are augmented by a look at other materials including activist texts and web pages, newspaper articles, and personal communication.[31] As manifest in their public comments, American Indian tribes are almost unanimously opposed to the site while Nevadans are split between opponents and proponents (with the opponents outnumbering the proponents).

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[29] See the Federal Notice that announced the opening of the public comment period. U.S. Department of Energy Office of Civilian Radioactive Waste Management, "Yucca Mountain Science and Engineering Report; Site Recommendation Consideration and Request for Comment," *Federal Register* 66 (88) (Monday, May 7, 2001), http://www.ocrwm.doe.gov/newsroom/documents/ser_noa.pdf (accessed February 4, 2005): 23013.

[30] DOE has made public comments available in a few forms. First, full text versions of all of the statements and comments are available in the Yucca Mountain Information Center (YMIC) Reading Room at 4101B Meadows Lane, Las Vegas, NV 89107, 702-295-1312. This is where I accessed these materials. Second, some of the full text versions are also posted online by the DOE at http://www.ocrwm.doe.gov/documents/sr_comm/index.htm (accessed January 10, 2005). Finally, the DOE also produced two comment summary documents for the initial and supplemental comment periods that are available on a CD-ROM "Yucca Mountain Site Recommendation," from the Yucca Mountain Information Center.

[31] The arguments that are advanced in the public comment period are representative of the arguments that are occurring in other venues.

Second, this dissertation analyzes the federal government's site authorization documents, with specific attention paid to the Department of Energy's documents in support of site authorization. Federal governmental support for the Yucca Mountain Repository has been relatively consistent. This support includes the Secretary of Energy, the President and a majority of Congress. The importance of analyzing the federal government's rhetoric in support of the Yucca site lies in understanding the justifications and motivations behind nuclear waste policy. For example, in a February 15, 2002 letter to Congress recommending the Yucca Mountain site, President George W. Bush argued that

> proceeding with the repository program is necessary to protect public safety, health, and the Nation's security because successful completion of this project would isolate in a geologic repository at a remote location highly radioactive materials now scattered throughout the nation. In addition, the geologic repository would support our national security through disposal of nuclear waste from our defense facilities. A deep geologic repository, such as Yucca Mountain, is important for our national security and our energy future.[32]

An assumption in these justifications is that the Yucca mountain site is a solution to the waste crisis and will allow continued development of nuclear technology. These justifications, as well as others, appear in the documents of the Department of Energy, the President, and Congress.

Former Secretary of Energy Abraham's site recommendation report and letter to the President, the President's site authorization letter to Congress, the House of Representatives' report on the approval of the Yucca Mountain site, and the Senate report on the approval of the Yucca Mountain site present the federal government's

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[32] George W. Bush, *Presidential Letter to Congress,* February 15, 2002, http://www.whitehouse.gov/news/releases/2002/02/print/20020215-10.html (accessed April 13, 2002).

arguments for the Yucca Mountain site.[33] The arguments laid out in the Secretary of Energy's report are not only more extensive and detailed but also replicated in the President's and Congressional texts, explaining the particular attention paid to Abraham's documents in this dissertation. Together, these texts provide significant insight into the federal government's justifications for nuclear waste storage at Yucca Mountain as well as responses to some arguments against approving the site. Although Abraham's documents are the main source of arguments, this reading is also augmented with the documents that influenced Abraham's decision such as the *Yucca Mountain Science and Engineering Report*, the *Yucca Mountain Site Suitability Evaluation*, and the *Site Recommendation Comment Summary Document.*

Stakeholder Argument Themes

Although chapters 2-4 will closely examine the arguments of each of the three stakeholder groups, brief explanation of the main argument themes provides orientation to the analysis.[34] American Indians, namely the Western Shoshone, the Southern Paiute, and the Owens Valley Paiute and Shoshone, who submitted public comments in opposition to the Yucca Mountain site, offered five types of arguments about the importance of the land to tribal spirituality and livelihood, the state of federal government-tribal relations, the site authorization process, the radioactive risks of the site, and the DOE's scientific justification for the site. American Indian arguments against the site are highly culturally infused arguments that reflect the differing value orientations of American Indian tribes and non-Indians. This is most apparent in different treatments of the value of the land. Analysis of the land-based arguments of American Indians reveals a unique sense of place that values the mountain for its spiritual resources, plants, animals, and its origin as a gift from the

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[33] Abraham, *Recommendation*; Abraham, *Secretary of Energy Letter*; Bush, *Presidential Letter to Congress*; U.S. House, *Approval of Yucca Mountain Site*, Report submitted by Representative Tauzin from the Committee on Energy and Commerce, 107th Cong., 2nd sess., 2002, H. Rept. 107-425; U.S. Senate, *Approval of Yucca Mountain Site.*

[34] Argument themes were determined by reading through the texts to determine all of the arguments made and then categorizing these arguments into themes.

creators.[35] There is also a difference in the evaluation of scientific evidence in which American Indians may value the stories of elders or traditional wisdom over the DOE's scientific proof that the site will be safe.

Nevadans who submitted public comments were split between opponents and proponents of the site, with opponents outnumbering proponents. Arguments against the Yucca Mountain site generally fell into the following categories: opposition to the nuclear industry, distrust of the DOE, challenges to the repository site design, claims that the site is based on faulty science, hostility to the site authorization process, arguments that nuclear waste storage results in public health and safety risks, arguments about the fairness of siting in Nevada, and concerns about environmental justice (mainly focused on Native Americans in the area). Yucca Mountain site proponents argued the site is a solution to the nuclear waste crisis and is therefore key to national interest, Nevadans have a national responsibility to have the site in their state to benefit the rest of the nation, Nevada is the best place because it is already a nuclear wasteland from past nuclear testing, the site will provide needed economic benefits to the state, the site is inevitable, and the site is safe based on scientific and technical consensus. Because of the importance of science to the Secretary of Energy's decision to authorize the site (the number one determinant), chapter 3 specifically focuses on the scientific arguments of opponents and proponents.

The federal government's case for the suitability of the Yucca Mountain site is based in scientific and technical evidence (based on reports released prior to the public comment period), that the project is in the national interest, and a cost benefit analysis that compares what Abraham identifies as the main counterarguments against the first two arguments in the case. This evidence was released prior to the public hearings in a series of reports and documents described above. After evaluating the public comments, Abraham's recommendation of the site was based in three justifications: the site is scientifically suitable, the site is in the national interest, and there are no

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[35] For more discussion of the sense of place among American Indian tribes, see: Keith H. Basso, *Wisdom Sits in Places* (Albuquerque, University of New Mexico Press, 1996); Donal Carbaugh, "'Just listen': 'Listening' and Landscape among the Blackfeet," *Western Journal of Communication* 63 (1999): 250-270.

significant counterarguments that outweigh the case for going forward. The counterarguments that were evaluated came from the public comment period.

It is important to note that because the Yucca Mountain site is a change in the status quo, the burden of proof falls on the federal government to show that this is a scientifically suitable and good policy. The federal government makes its case in two stages: the release of the scientific reports in favor of the project prior to the public comment period (which are not the primary objects of this study) and the Secretary's, the President's, and Congress' site authorization reports (the primary objects of this study) which occurred after opponents had a chance to respond to the site (in the public comment period). The burden of proof, a common concept of policy argumentation theory, assumes maintaining the status quo is presumed unless those advocating change fulfill their burden of proof in arguing for policy change. The controversy is framed such that going forward with the plan was assumed once the DOE released its scientific and technical documents (or perhaps in 1987 when the NWPA was amended to only research the Yucca Mountain site) and, as a result, the opposition (defending the status quo) has the burden to prove that we should abandon the project.

The Scholarly Conversation

In examining the case of stakeholder argumentation in the Yucca Mountain site authorization decision, I drew from much scholarly work both from within and outside of the field of communication. In addition to the two assumptions discussed above, several lines of research inform and are in conversation with my analysis and findings. Kenneth Burke observed that symbolic action is always situated in an ongoing conversation that is invariably shaped by what has been said before.

> Imagine you enter a parlor. You come late. When you arrive, others have long preceded you, and they are engaged in a heated discussion, a discussion too heated for them to pause and tell you exactly what it is about. In fact, the discussion had already begun long before any of them got there, so that no one present is qualified to retrace for you all the steps that had gone before. You listen for a while, until you decide

> that you have caught the tenor of the argument; then you put in your oar.[36]

Before engaging in the scholarly conversation, it is important to catch the tenor of the argument by examining the preceding discussion. To that end, this section examines several ongoing conversations relevant to public discourse about nuclear waste siting and, in particular, the High-Level Nuclear Waste Repository site at Yucca Mountain. This issue is informed by several scholarly conversations such as nuclear communication studies, risk communication, environmental communication (including public participation in environmental decision-making and environmental justice movements) and interdisciplinary nuclear waste studies. In this section, I will review relevant literature in each area and conclude with an argument for the scholarly contribution afforded by taking a rhetorical perspective in studying public discourse about nuclear waste siting.

Nuclear Communication

The first relevant line of research is nuclear communication. Though scholars in the field of communication have addressed issues of nuclear technology since the advent of nuclear power and weapons technology, studies in the past 20-30 years have primarily focused on issues related to the development and political implications of nuclear weapons technology.[37] In his review of "nuclear communication scholarship,"

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[36] Kenneth Burke, *The Philosophy of Literary Form: Studies in Symbolic Action,* 3rd ed. (Berkeley, CA: University of California Press, 1973), 110.

[37] Studies include: Rebecca S. Bjork, "Public Policy Argumentation and Colonialist Ideology in the Post-Cold War Era," in *Warranting Assent: Case Studies in Argument Evaluation,* ed., Edward Shiappa (Albany, State University of New York Press, 1995), 211-236; Bryan Hubbard, "Reassessing Truman, the Bomb, and Revisionism: The Burlesque Frame and Entelechy in the Decision to Use Atomic Weapons Against Japan," *Western Journal of Communication* 62 (1998): 348-385; Andrew King & Kenneth Petress, "Universal Public Argument and the Failure of Nuclear Freeze," *The Southern Communication Journal* 55 (1990): 162-174; Gordon R. Mitchell, *Strategic Deception: Rhetoric, Science and Politics in Missile Defense Advocacy* (East Lansing: Michigan State University Press, 1995); Robert P. Newman, *Truman and the Hiroshima Cult* (East Lansing: Michigan State University Press, 2000); Theodore O. Prosise, "The Collective Memory of the Atomic Bombings Misrecognized as Objective History: The Case of the Public Opposition to the National Air and Space Museum's Atom Bomb Exhibit," *Western Journal of Communication* 63(1998): 316-347; Bryan C. Taylor, "Home Zero: Images of Home and Field in Nuclear-Cultural Studies," *Western Journal of Communication* 62 (1997): 209-234; Bryan C. Taylor, "The Politics of the Nuclear Text: Reading Robert Oppenheimer's *Letters and Reflections*," *Quarterly Journal of Speech* 78 (1992): 429-449.

rhetorical critic Bryan Taylor argues that nuclear communication scholars come primarily from the rhetorical criticism, media criticism and organizational communication arms of the discipline.[38] The title of Taylor's 1998 article, "*Nuclear Weapons* and Communication Studies: A Review Essay" (italics added), is indicative of the field's fascination with nuclear weapons and the relative neglect of issues regarding nuclear materials development processes, power technology, and nuclear waste.

The communication discipline's scholarly conversation about nuclear technology is limited in the discussion of non-weapon related aspects of nuclear technology. Taylor specifically notes that nuclear waste disposal is "understudied" in the field.[39] This dissertation follows Taylor's call to focus more on the rhetorical elements nuclear waste disposal. Beyond responding to this paucity of sources, however, a study of the stakeholder arguments in the Yucca Mountain siting decision has the potential to add to this conversation in important ways. As nuclear weapons production creates high-level waste that will be stored at the Yucca Mountain facility, a study of the discourse of nuclear waste siting may have important implications for the justifications and arguments used for nuclear power and nuclear weapons. Nuclear waste is the thorn in the side of the nuclear production process. Understanding the ways that the federal government justifies the Yucca Mountain site may overlap with arguments about nuclear power and weapons. Indeed, the DOE argues that the Yucca Mountain site is essential to the continued viability of our nuclear submarines, which protect the national interest and provide security.[40] Nuclear waste is an integral part of the nuclear production process and the ways we talk and argue about nuclear waste inform discussions of nuclear weapons and power, eventually providing a more complex picture of the discourse of the nuclear production process in the United States. In addition, such studies will also benefit from a familiarity with literature in

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[38] Brian C. Taylor, "Nuclear Weapons and Communication Studies," *Western Journal of Communication* 62 (1998): 300-315.

[39] Taylor, "Nuclear Weapons,"

[40] Abraham, *Recommendation.*

risk communication, environmental communication, and the interdisciplinary field of nuclear waste studies.

Risk Communication

> According to the National Research Council, risk communication is:
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> > an interactive process of exchange of information and opinion among individuals, groups and institutions. It involves multiple messages about the nature of risk, and other messages, not strictly about risk, that express concerns, opinions, or reactions to risk messages or to legal and institutional arrangements for risk management.[41]

Risk communication includes "any communication about uncertain physical hazards."[42] As risk communication often implies a one-way transfer of information from scientists or decision-makers to the public, scholars are pushing for more democratic, two-way, models of risk communication.[43]

Risk communication deals with the "hazards of modern life."[44] Accordingly, many studies in risk communication address health and environmental risk. For example, Leslie Snyder and Deborah Blood studied the effect of Surgeon General's

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[41] National Research Council, *Improving Risk Communication* (Washington, DC., National Academy Press, 1989), 21.

[42] Mary Ann Renz, "Communicating about Environmental Risk: An Examination of a Minnesota Country's Communication on Incineration," *Journal of Applied Communication Research* 20 (1992): 1-18. See also Katherine E. Rowan, "Goals, Obstacles, and Strategies in Risk Communication: A Problem Solving Approach to Improving Communication About Risks," *Journal of Applied Communication Research* 19 (1991): 300-329.

[43] Laura A. Belsten, "Environmental Risk Communication and Community Collaboration," in *Earthtalk: Communication Empowerment for Environmental Action,* ed. S. A. Muir and T. L. Veenendall (Westport, CN: Praeger, 1996): 41; Steven B. Katz and Carolyn R. Miller. "The Low-Level Radioactive Waste Siting Controversy in North Carolina: Toward a Rhetorical Model of Risk Communication," in C. G. Herndl and S. C. Brown *Green Culture: Environmental Rhetoric in Contemporary America* (Madison: University of Wisconsin Press, 1996): 111-140; National Research Council, "Improving Risk;" Jeanne Nelson Ratliff, "The Politics of Nuclear Waste: An Analysis of a Public Hearing on the Proposed Yucca Mountain Nuclear Waste Repository;" *Communication Studies* 48 (1997): 359-380; Renz, "Communicating About;" Rowan, "Goals, Obstacles and Strategies;" Craig Waddell, "Saving the Great Lakes: Public Participation in Environmental Policy," in C. G. Herndl & S. C. Brown *Green Culture: Environmental Rhetoric in Contemporary America* (Madison: U of Wisconsin Press, 1996): 141-165.

[44] National Research Council, "Improving Risk," 1.

alcohol warnings and advertisements on college students, and Craig Waddell explored the debate over recombinant DNA research.[45] Issues of environmental risk include hazardous waste incineration plants,[46] water quality,[47] and radioactive waste.[48] Of course, as is the case in several of the examples listed, one site or event may have both health and environmental risks. Hazardous waste disposal facilities, including nuclear waste facilities, tend to include both environmental and health risks.

From the decision-maker's perspective, models of risk communication often assume a one-way transfer of information from decision-makers in government, science, or industry to the public. The assumption is that once the public has been informed about an issue, they will accept the conclusions of the source.[49] Katz and Miller suggest that risk communication models assume a distinction between informing, the basic function of communication, and influencing, which is considered synonymous with deception.[50] Public and governmental discourse about the Yucca Mountain site includes elements of risk assessment with arguments about radioactivity levels, the risk of leakage, and probabilities of seismic and volcanic activity disrupting the site. Moreover, as we will see, the federal government's communication with the public about the Yucca Mountain site mainly follows a one-way model of informing the public about the site, even though the NWPA mandates public participation in the siting decision.

Environmental Communication

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[45] Leslie B. Snyder & Deborah J. Blood, "Caution: Alcohol Advertising and the Surgeon General's Alcohol Warnings May Have Adverse Effects on Young Adults," *Journal of Applied Communication Research* 20 (1992): 37-53; Craig Waddell, "The Role of *Pathos* in the Decision-Making Process: A Study in the Rhetoric of Science Policy," *Quarterly Journal of Speech 76*, no. 4, 1990, 381-400.

[46] Laura A. Belsten, "Environmental Risk Communication."

[47] Craig Waddell, "Saving the Great Lakes."

[48] Katz & Miller. "The Low-Level;" Ratliff, "The Politics;"

[49] National Research Council, "Improving Risk Communication."

[50] Katz & Miller, "The Low-Level." Other studies that use a rhetorical perspective to draw a similar conclusion include: Thomas B. Farrell and Thomas Goodnight, "Accidental Rhetoric: The Root Metaphors of Three Mile Pilot" *Communication Monographs* 48 (1981): 271-300; Waddell, "The Role of Pathos;" and Waddell, "Saving the Great Lakes."

Another area of scholarship that deals with public participation in decision-making about hazardous substances is environmental communication. Environmental communication is a broad area of study concerning human understanding of the environment; it "demands unique communication arenas and structures that are simultaneously political, community-based, corporate, advocacy, and technical-scientific."[51] Scholars working in this area study a range of issues including rhetoric of environmental movements and environmental controversy, the role of the media in disseminating environmental information, models of communication between the government and citizens in environmental policy, public participation in environmental decision-making, and scientific expertise in environmental controversy.[52] Three themes in environmental communication scholarship are particularly important to this dissertation: public participation in environmental decision-making, environmental justice, and the role of science in environmental communication.

Public Participation in Environmental Decision Making

Laura Belsten argues, "Environmental risk communication has failed miserably. Governmental agencies and private firms dealing with environmental siting and remediation decisions have traditionally excluded the public from the decision-making process, opting instead to solicit public comment after decisions have been made."[53] This statement suggests the influence of the sender-receiver model in

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[51] Susan Senecah, Stephen Depoe, Mark Neuzil, and Gregg Walker, "Introduction," in *The Environmental Communication Yearbook,* volume 1, ed., Susan Senecah (Mahwah, New Jersey: Lawrence Erlbaum Associates, 2004): x.

[52] James Cantrill and Christine Oravec, eds., *The Symbolic Earth: Discourse and Our Creation of the Environment* (Lexington: The University Press of Kentucky, 1996); Steven Depoe, John Delicath and Marie-France Aelpi Elsenbeer, eds., *Public Participation in Environmental Decision Making* (Albany, NY: SUNY Press, 2004); M. Jimmie Killingsworth and Jacqueline S. Palmer, *Ecospeak: Rhetoric and Environmental Politics in America* (Carbondale: Southern Illinois University Press, 1992); Tarla Rai Peterson, *Sharing the Earth: The Rhetoric of Sustainable Development* (Columbia: University of Southern Carolina Press, 1997); Susan Senecah, ed. *The Environmental Communication Yearbook,* volume 1, (Mahwah, New Jersey: Lawrence Erlbaum Associates, 2004); Star A Muir & Thomas D. Venderhall, eds., *Earthtalk: Communication Empowerment for Environmental Action,* (Westport, CT: Praeger, 1996).Craig Waddell, ed. *Landmark Essays in Environmental Rhetoric* (Mahwah, New Jersey: Hermagoras Press, 1998).

[53] Belsten, "Environmental Risk," 31.

environmental decision-making. In their analysis of public participation in the low-level nuclear waste siting decision in North Carolina, Katz and Miller offer four themes typical of environmental communication to the public: control of the process, faith in the power of information and education, understanding of communication as a sender-receiver process in which the government's role is to impart information and clarify public misconceptions, and "the seeming contempt for the public that results from all of the above."[54] These assumptions significantly hinder the public's ability to be involved in environmental decision-making. The Yucca Mountain project has made great efforts to educate the public with tours of the Yucca Mountain site, a public science center with displays and information about the site, outreach to local schools, and a website with a plethora of user-friendly information about the site.[55] However, these efforts are part of a one-way process of communication to the public about the project. Through exploring public comments submitted during the site authorization public comment period, this dissertation attempts to understand the role of public participation in the decision-making process. My assumption is that increased genuine and dialogic public participation in environmental decision-making is desirable, and the conclusion will explore this assumption in light of the findings and offer areas for improvement of the current process.

Though industry and governmental decision-makers have made moves to include the public in decision-making, as is the case with the public comment period mandated by the NWPA, these moves often fail to incorporate public responses and values and are too late in the process when decisions have already been made.[56] Much scholarship is devoted to understanding models and creating new models of

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[54] Katz and Miller, 123.

[55] The Yucca Mountain Information Center is located at Yucca Mountain Information Center (YMIC) Reading Room at 4101B Meadows Lane, Las Vegas, NV 89107, 702-295-1312. Information on Yucca Mountain public outreach can be found at the web site: U.S. Department of Energy Office of Civilian Radioactive Waste Management, *Yucca Mountain Project* [Web site], http://ocrwm.doe.gov/ymp/index.shtml (accessed March 21, 2005).

[56] Steven Depoe and John W. Delicath, "Introduction," in *Communication and Public Participation in Environmental Decision-Making,* eds., Steven P. Depoe, John W. Delicath, and Marie-France Aepli Elsenbeer (Albany: SUNY Press, 2004), 1-3.

communication in environmental decision-making.[57] For example, in his article about public participation in the International Joint Commission's Great Lakes Water Quality Hearings, Craig Waddell identified four models of public participation: (1) the technocratic model in which experts make decisions and there is no defined role for the public, (2) the one-way Jeffersonian model which allows for controlled public participation through one-way transfer of expert knowledge, (3) the interactive Jeffersonian model in which experts share technical information and the public offers values and emotions, resulting in compromise, and (4) the Social Constructivist model which acknowledges that both the public and experts have values and beliefs that underlie their decisions.[58] In this final model, technical information and values flow in both directions resulting in a blurred distinction between expert and public. Waddell argues that the interactive Jeffersonian model is the progressive paradigm of public participation, with few moves in the direction of the social constructivist model. However, "if the social constructivist model takes root, it should have significant implications for the expansion of democratic governance and the decentralization of political power."[59] The social constructivist model guides the assumption that public participation in environmental decision-making should be genuine and dialogic.

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[57] Steven P. Depoe, "Public Involvement, Civic Discovery, and the Formation of Environmental Policy: A Comparative Analysis of the Fernald Citizens Task Force and the Fernald Health Effects Subcommittee," in *Communication and Public Participation in Environmental Decision-Making,* eds., Steven P. Depoe, John W. Delicath, and Marie-France Aepli Elsenbeer (Albany: SUNY Press, 2004): 157-174; Judith Hendry, "Decide, Announce, Defend: Turning the NEPA Process into and Advocacy Tool Rather Than a Decision-Making Tool," in *Communication and Public Participation in Environmental Decision-Making,* eds., Steven P. Depoe, John W. Delicath, and Marie-France Aepli Elsenbeer (Albany: SUNY Press, 2004): 99-112; Steve Schwarze, "Public Participation and (Failed) Legitimation: The Case of Forest Service Rhetorics in the Boundary Waters Canoe Area," in *Communication and Public Participation in Environmental Decision-Making,* eds., Steven P. Depoe, John W. Delicath, and Marie-France Aepli Elsenbeer (Albany: SUNY Press, 2004): 137-156; Waddell, "Saving the Great;" Greg B. Walker, "The Roadless Areas Initiative as National Policy: Is Public Participation an Oxymoron?" in *Communication and Public Participation in Environmental Decision-Making,* eds., Steven P. Depoe, John W. Delicath, and Marie-France Aepli Elsenbeer (Albany: SUNY Press, 2004): 113-136; Gregg B. Walker and Steve E. Daniels, "Dialogue and Deliberation in Environmental Conflict: Enacting Civic Science," in *The Environmental Communication Yearbook, volume 1,* ed., Susan L. Senecah (Mahwah, NJ: Lawrence Erlbaum, 2004), 135-154.

[58] Waddell, "Saving the Great," 157-8.

[59] Ibid, 158.

In a study particularly relevant to my own, Jeanne Ratliff offers an analysis of public hearings held in Salt Lake City regarding the preparation of an Environmental Impact Statement for the proposed Nuclear Waste Repository at Yucca Mountain.[60] Ratliff concluded, "Rather than being an open dialogue to determine whether the Yucca Mountain site was the best location for the nation's nuclear repository, the EIS hearing was a means to a previously decided political end. Both political preference and bureaucratic power were thus shapers of not only the outcome, but also the entire structure of discussion."[61] Her study of an earlier moment in the Yucca Mountain Repository siting process reveals that the decision-making process, though purported to include public feedback, was not open to issues and concerns expressed by the non-expert public in the public hearings.

Public participation in environmental decision-making is an important subject of study. In the case of nuclear waste, even if we could prevent future waste production by stopping nuclear technology production,[62] we still have to find a solution to the waste that currently exists. Any solution will likely affect a community, and effective policymaking requires consideration of affected populations. Belston argues that communication techniques that involve stakeholders and collaborate with the community "can help overcome the deadlock which has paralyzed environmental decision making in many parts of the country."[63] Analysis of public participation in environmental decision-making can help us to understand the public's role in creating equitable, responsible and safe solutions to enduring problems, such as nuclear waste. This dissertation seeks to assess the role of the public in deliberation about nuclear

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[60] Ratliff, "The Politics of Nuclear Waste," 359-380.

[61] Ratliff, "The Politics of Nuclear Waste," 378.

[62] This is an unlikely prospect considering Bush's energy agenda includes continued development of nuclear technology and an April 10, 2003 Nuclear Energy Institute report states that a new Senate energy bill proposes "incentives for increased use of nuclear power" with construction of new power plants, reauthorization of the Price-Anderson Act that provides liability insurance for reactors, and development of new reactor technology. See Nuclear Energy Institute, *Senate Energy Panel OKs Legislation Containing Incentives for Nuclear Power Plant Construction* [Web page], 2003, http://www.nei.org/index.asp?catnum=4&catid=488 (accessed May 12, 2003).

[63] Belsten, "Environmental Risk," 41.

waste in the hope of adding to the discussion about how to ensure equitable and open public participation.

Environmental Justice

The environmental justice movement emerged as a response to perceived inequity in environmental policy, especially concerning hazardous waste siting. The environmental justice movement is a "broad movement for environmental and social justice" that is helping to shape "environmental policy while creating increased opportunities for marginalized communities to speak out about their own disenfranchisement and the social and economic policies that subject them to daily environmental hazards."[64] Although issues of environmental racism are varied and broad, legal scholars Luke Cole and Sheila Foster argue that toxic waste facilities are the focal point of the environmental justice movement. As mentioned above, this dissertation explores the Yucca Mountain controversy in the context of toxic colonization and environmental justice and poses the question of whether environmental justice is at play in the controversy over the Yucca Mountain site.

In tracing the roots of the environmental justice movement, Cole and Foster suggest, "Activism by Native Americans in the late 1960s and early 1970s was the precursor to today's organizing around environmental issues by Indians on and off the reservations."[65] The American Indian environmental justice movement is exemplified by the Indigenous Environmental Network (IEN), formed in 1990. The IEN actively opposes the Yucca Mountain Site.[66] In addition to opposing the permanent storage facility in Yucca Mountain, American Indian activists also oppose interim waste solutions such as the now defunct voluntary Monitored Retrievable Storage program.

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[64] Luke W. Cole & Sheila R. Foster, *From the Ground up: Environmental Racism and the Rise of the Environmental Justice Movement* (New York: New York University Press, 2001): 10. See also Bullard and Chavis, Jr., eds.; Faber, ed.; Hofrichter, ed.; Shrader-Frechette; Andrew Szasz, *Ecopopulism: Toxic Waste and the Movement for Environmental Justice* (Minneapolis, University of Minnesota Press, 1994); Visgilio and Whitelaw, eds.; Weaver, ed.

[65] Cole & Foster, *From the Ground Up*, 26.

[66] Indigenous Environmental Network, "Yucca Mountain Nuclear Waste Storage Infringes on Native Rights: Risks for Tribes Could Endanger Future Generations" [Press release], posted on *CorpWatch Bulletin Board* (May 9, 2002) http://www.corpwatch.org/bulletins/PBD.jsb?articleid=2533 (accessed February 20, 2003).

M. V. Rajeev and Doug Easterling contend that the voluntary siting process was not equitable because American Indian tribes were targeted for interim nuclear waste storage sites.[67] As discussed above, accusations of radioactive colonization are common in discussions of locations of nuclear production and waste storage.

Phaedra Pezzullo argues that communication scholars should further explore issues of environmental justice.[68] Though my dissertation does not focus specifically on the rhetoric of environmental justice movements in relation to the Yucca Mountain site, environmental justice plays two important roles. First, as Richard Hofrichter notes, one of the goals of environmental justice is to create better venues for democratic participation of the members of the communities affected by environmental decisions, particularly policies that result in pollution or waste siting decisions.[69] In reading the interaction between arguments of the federal government and Nevadans and American Indians in the public comment period, I explore the linkages between the environmental justice movement and those striving for better systems of public participation in environmental decision-making. Second, the siting of Yucca Mountain is often considered an issue of environmental racism because of American Indian claims to the land and resistance to the site. This dissertation recognizes this and explores how the site authorization decision raises issues of environmental justice for Nevadans.

Science in Environmental Communication

Because much of our society's knowledge about the environment depends on scientific information, the role of science is important in environmental communication. Philip Wander distinguished scientific rhetoric in public deliberation as a particular form of discourse that merits study because the technical and esoteric nature of scientific knowledge can overwhelm, intimidate, or silence the common

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[67] M. V. Rajeev Gowda & Doug Easterling, "Voluntary Siting and Equity: The MRS Facility Experience," *Risk Analysis* 20 (2002): 917-929.

[68] Phaedra Pezzullo, "Performing Critical Interruptions: Rhetorical Invention and Narratives of the Environmental Justice Movement," *Western Journal of Communication 64* (2001): 1-25.

[69] Hofrichter, "Introduction."

citizen's voice in policy deliberation.[70] Science is often used in public policy debates as a way to silence or inspire awe in audiences. M. Jimmie Killingsworth and Jacqueline S. Palmer argue that in response to the use of scientific expertise by policy makers environmental activist groups see value in engaging in scientific discourse and use science to challenge policy makers, often resulting in debates over scientific evidence.[71] A clear example of a debate over scientific evidence is in the debate over global warming in which science supports both the conclusion that global warming is imminent and threatening and the conclusion that global warming is insignificant and part of a natural climate cycle unaffected by human technology.[72] Environmental activists, policy makers, and scientists involved in the controversy over global warming policy draw from and compare these scientific conclusions. In the case of the Yucca Mountain Nuclear Waste siting controversy, opponents challenge the scientific evidence used to proclaim the safety of the site and offer countering scientific evidence.[73] While scientific discourse might still overwhelm some citizens, as Wander suggests, the integration of science into environmentalist discourse suggests that scientific rhetoric in public deliberation is commonly used by both policy makers and

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[70] Philip C. Wander, "The Rhetoric of Science," *Journal of the Western Speech Communication Association* 40 (1976): 226-235.

[71] Killingworth and Palmer, *Ecospeak,* 103.

[72] Over twenty years of scientific research tends to suggest that global warming is happening. However, debate occurs over the link to anthropogenic causes and potential detriment to the environment. The Intergovernmental Panel on Climate Change (IPCC) compiles scientific research on climate change and consistently report that the preponderance of scientists agree that the global is warming due to anthropogenic causes and will have significant repercussions on the global environment such as sea-level rise and intense heat waves. The IPCC publishes many reports including the IPCC's *Climate Change 2001: Synthesis Report: Summary for Policy Makers,* 2001, http://www.ipcc.ch/pub/un/syreng/spm.pdf on (accessed March 24, 2004). A key source used to question the human causes of climate change is S. Fred Singer who holds a Ph.D. in Physics from Princeton and is president of the Science & Environmental Policy Project that is devoted to making environmental policy decisions based on sound science. Singer claims that scientific evidence is inconclusive about human-cause climate change and its affects. S. Fred Singer, *Global Climate Change* (St. Paul, MN, Paragon House, 1989) and *The Science and Environmental Policy Project Homepage* http://www.sepp.org/ (accessed March 24, 2004). Of course, there are many other sources in this debate and the issue is more complicated than presented in this footnote. However, this remains an excellent example of scientific research being widely used in the global warming policy making controversy.

[73] For example, see Shundahai Network, "Yucca Mountain Information" [Web page], http://www.shundahai.org/yucca_mt.html (accessed March 24, 2004).

members of the public. However, if participants in public deliberation draw heavily from scientific evidence, there remains a risk that scientific and technical reasoning might be elevated over other forms of proof such as ethos and pathos.[74] Though I maintain the importance of public use of science in environmental decision-making, this is not the only way for the public to participate, and other value systems and types of arguments should be involved.

Scientific research, including seismic analysis of the fault lines in Yucca Mountain and projections of the level of radioactive emissions from the storage facility, is an important element of the Yucca Mountain Nuclear Waste Repository controversy. The DOE and others use this research to construct arguments about the potential safety of the facility and to justify policy actions. Debate about the site would not be possible without the invocation of scientific and technical evidence. The literature on science in environmental communication suggests that this dissertation should explore the role of scientific and technical proofs in relation to other forms of proof and the ways in which scientific and technical research is strategically employed by participants in a political controversy that has social and ethical implications.

This dissertation is primarily grounded in the field of environmental communication. The previous conversation tells us of limitations in public participation in environmental decision-making, the importance of the environmental justice movement in challenging toxic waste siting decisions, and the vital role that science plays in environmental policy. In my analysis of the federal government's justification of the Yucca Mountain site and the arguments of Nevadans and American Indians in the public comment period, I focus on the linkages among these three findings. I argue that Yucca Mountain is a site that raises issues of environmental justice for both Nevadans and American Indians. Through a better understanding of the role of public participation and the role of science in the Yucca Mountain siting decision, this dissertation argues for ways to improve public participation and the

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[74] Craig Waddell, "The Role of Pathos."

public's use of science in environmental decision-making to further the end of environmental justice.

Nuclear Waste Siting

There is a significant interdisciplinary scholarly conversation about nuclear waste siting. This includes scholarship in political science, policy studies, scientific and technical disciplines and risk analysis. Although important studies produce empirical evidence in support of or opposition to geologic waste storage at Yucca Mountain, they do not provide insight into the rhetorical ways in which the major stakeholders talk about storage of nuclear waste. My own rhetorical analysis of texts from the federal government, state government, American Indian activists, and citizens will address the ways that the public discourse is rhetorically constructed.

A first set of studies of nuclear waste siting that comes from political science and public policy addresses the overall process of high-level nuclear waste siting and makes arguments for alternatives to the Yucca Mountain site. In one sense, these are scholarly reports about the siting process. In another sense, these are a part of the public discourse about nuclear waste. Douglas Easterling and Howard Kunreuther lay out the siting authorization process and identify a fundamental problem in waste siting, public opposition.[75] They identify causes of public opposition and propose voluntary Negotiated Monitored Retrievable Storage[76] as a safer, more equitable solution to the waste crisis . In her book, *Burying Uncertainty: Risk and the Case against Geologic Disposal of Nuclear Waste*, Kristen Shrader-Frechette argues that the Yucca Mountain site is not scientifically and technically feasible and that the process for siting is not equitable.[77] She concludes, as do Easterling and Kunreuther, that Negotiated Monitored Retrievable Storage is a more equitable solution. These studies,

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[75] Douglas Easterling & Howard Kunreuther, *The Dilemma of Siting a High-Level Nuclear Waste Repository* (Boston: Kluwer Academic Publishers, 1995).

[76] A Negotiated Monitored Retrievable Storage program is an alternative to the permanent waste facility. Under this program, the government would negotiate with representatives of multiple localities to open temporary storage facilities. Unlike the permanent Yucca site, these storage facilities allow for retrieval if the site becomes unsafe.

[77] Kristen Shrader-Frechette, *Burying Uncertainty: Risk and the Case against Geologic Disposal of Nuclear Waste* (Berkeley: University of California Press, 1994).

then, are not only part of the scholarly conversation, but are also part of the larger public discussion of the Yucca Mountain site. In the works that propose alternatives to the site, there are challenges to the project. Indeed, these resources are likely to be important sources of information for those in the public who are opposed to the site.

A second area of interdisciplinary research into nuclear waste siting looks at the relationship between nuclear waste siting and stigma.[78] Paul Slovic et al., assess the perceived risk and potential for stigma among Nevadans about the Yucca Mountain site.[79] Hank Jenkins-Smith's study finds that siting a nuclear waste repository in Nevada will contribute to a public perception of Nevada as a nuclear state.[80] Doug Easterling confronts the question of the role of stigma in policy decisions about nuclear waste siting.[81] These primarily quantitative studies direct my attention to the role of stigma in nuclear waste siting decisions.

The third area of interdisciplinary research into nuclear waste siting includes scientific and technical reports that assess whether or not the Yucca Mountain site is based on sound science and technology.[82] These studies range from assessments of the effects of the repository on groundwater to analysis of the risk of seismic activity near

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[78] Doug Easterling, "Fear and Loathing in Las Vegas: Will a Nuclear Waste Repository Contaminate the Imagery of Nearby Places," in *Risk, Media and Stigma: Understanding Public Challenges to Modern Science and Technology,* ed. J. Flynn, P. Slovic, and H. Kunreuther, (Sterling, VA: Earthscan, 2001), 133-156; Hank C. Jenkins-Smith, "Modeling Stigma: An Empirical Analysis of Nuclear Waste Images of Nevada Modeling Stigma," in *Risk, Media and Stigma: Understanding Public Challenges to Modern Science and Technology,* ed. J. Flynn, P. Slovic, and H. Kunreuther, (Sterling, VA: Earthscan, 2001), 107-132; Paul Slovic, M. Layman, N. Kraus, James Flynn, J. Chalmers, and G. Gesell, "Perceived Risk, Stigma, and Potential Economic Impacts of a High Level Nuclear Waste Repository in Nevada," in *Risk, Media and Stigma: Understanding Public Challenges to Modern Science and Technology,* ed. J. Flynn, P. Slovic, and H. Kunreuther, (Sterling, VA: Earthscan, 2001), 87-106;

[79] Slovic et al., "Perceived Risk Stigma."

[80] Jenkins-Smith, "Modeling Stigma."

[81] Easterling, "Fear and Loathing."

[82] Thomas M. Brocher, W. Clay Hunter, & Victoria E. Langenheim, "Implications of Seismic Reflection and Potential Field Geophysical Data on the Structural Framework of the Yucca Mountain-Crater Flat Region, Nevada," *The Geological Society of America Bulletin 110* (1998): 947-972; D. Wes Efurd, Wolfgang Runde, Joe C. Banar, David R. Janecky, John P. Kaszuba, Philip D. Palmer, and Fred R. Roensch, "Neptunium and Plutonium Solubilities in a Yucca Mountain Groundwater," *Environmental Science & Technology* (December 15, 1998): 3893-3901; S. Painter, V. Cvetkovic, & D. R. Turner, "Effect of Heterogeneity on Radio Nuclide Retardation in the Alluvial Aquifer Near Yucca Mountain Nevada," *Ground Water* 39 (2001): 326-339.

the site. Though these scientific reports can be viewed as rhetorical documents in their own right, this dissertation draws from these documents in understanding the scientific and technical justifications for the site. Instead of engaging in conversation with these studies by contesting or expanding the conclusions, this dissertation affects this conversation through a discussion of the role of scientific research in environmental decision-making.

A rhetorical perspective adds to this interdisciplinary conversation by providing a focus on the ways language is used to influence particular audiences in a particular setting. While Easterling and Kunreuther offer a description of the site authorization process, a rhetorical perspective asks the question of how this process was rhetorically constructed to influence certain audiences. Studies in the relationship between risk and stigma report valuable empirical data indicating perceived risk and likelihood of stigmatization. A rhetorical perspective complements this conversation by exploring ways that language is used to stigmatize and increase perceived risk. Scientific and technical reports about the feasibility of the Yucca Mountain site offer valuable information for decision-makers, scientists, and members of the public. A rhetorical perspective can add to our understanding of that information by showing how these reports are used as evidence by rhetors in public discourse about nuclear waste. Finally, while Easterling and Kunreuther and Shrader-Frechette offer alternative solutions to the waste crisis, a rhetorical perspective can offer alternative rhetorical and argumentative strategies for the stakeholders in this debate.

Critical Approach

If I followed the social scientific model of research, it would be at this point in the chapter that I would outline the specific method employed in order to study the Yucca Mountain controversy. However, as rhetorical critic James Jasinski notes, the field of rhetorical criticism, firmly planted in the humanities, has a complex relationship with method. The relationship between rhetorical criticism and method has of late taken a rather rocky turn. In his 2001 review of theory and method in rhetorical criticism, Jasinski argues that in the latter half of the twentieth century

"method-based analytic criticism would become the norm for the field."[83] This is due, in part, to the rising status of scientific and social scientific research and a desire by rhetorical critics to justify and legitimize their work as scientific.[84] For many rhetorical critics in the latter half of the twentieth century, the term method implied a refined and systematic approach to analyzing and understanding how a text works, often divorced from the judicial function of criticism. During this time, myriad methods emerged for engaging in rhetorical criticism, most of them adapted from rhetorical or social theories, such as metaphoric criticism or Burkean pentad criticism.

This view of method, then, implies a particular relationship with theory. Because of the deductive relationship between theory and method in social science, the preponderance of method-based rhetorical criticism used method to advance or test theory. This form of method-based research assumes that one begins by selecting a theory that she would like to explore, then develops a method with specific steps to follow that allow for such exploration, then turns to the critical object of study. However, although method "ruled" in the latter half of the twentieth century, Jasinski argues, "there is growing evidence that the hegemony of method-based criticism is coming to an end."[85] Thus, much rhetorical criticism today is no longer associated with the deductive process of a general theory being applied to a specific text in a methodological way. The counterpart to a method-based approach is not a theory-based approach, though this might seem the logical counterpart. Theory and method are interrelated and the method-based approach actually assumes that method is only seen in light of the theory it tests or serves.

Instead, we might describe rhetorical critical approaches as etic-oriented criticism and emic-oriented criticism. Etic-oriented criticism is more closely related to what Jasinski describes as method-based criticism and assumes that a general theory

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[83] James Jasinksi, "The Status of Theory and Method in Rhetorical Criticism." *Western Journal of Speech Communication* 65 (2001): 251.

[84] Jasinski details this phenomenon through seminal metacritical essays from the late twentieth century. See Jasinski, 250-252.

[85] Jasinksi, 254.

or idea is applied to a particular case for the purpose of applying, testing, or expanding theory. On other end of the continuum is emic-oriented criticism, introduced by Black and expanded upon by Michael Leff, which begins with a case or text and a general critical orientation that allows the critic to draw upon theory that is useful in understanding the particular case. While emic-oriented criticism eschews method-based criticism, [86] it does not eschew theory. Indeed, all rhetorical criticism necessarily involves drawing from theory and may result in alterations and expansions of theory. The distinction lies in the starting point of the critic and the role that theory plays in the approach. Viewing rhetorical criticism along a continuum of emic-oriented to etic-oriented criticism allows for a nuanced discussion of the relationship between criticism and theory. This suggests that criticism is not either etic or emic, but that a critic may be more etic-oriented or more emic-oriented in their starting point and critical approach.

As defined by Black, the emic critic, "holding that rhetorical transactions themselves constitute the chief source of knowledge in the field of rhetoric and the sole defensible ground for its theoretical formulations, proceeds to the task of criticism with a willing suspension of will itself, seeking to coax from the critical object its own essential form of disclosure."[87] Jasinski argues that the field's recent move away from method-based criticism has produced a more emic approach toward criticism.[88] On method, Leff states that emic criticism

> is a way into the subject, and depending on the nature of the subject and the inclinations of its students methods vary considerably in their specificity. The etic approach tends toward a formal logic of inquiry, a set of specific and systematic ways of studying the critical object. The emic approach describes a

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[86] Edwin Black, "A Note on Theory and Practice in Rhetorical Criticism," *Western Journal of Speech Communication* 44 (1980): 331-336; Michael Leff, "Interpretation and the Art of the Rhetorical Critic," *Western Journal of Speech Communication* 44 (1980): 337-349.

[87] Black, "A Note on Theory and Practice," 332.

[88] Jasinski, 252.

> general outlook and orientation, a way of looking at the subject, but it does not prescribe the specific steps to be followed in the conduct of inquiry—that is a matter for the trained intuition of the critic.[89]

This means that although an emic critic may not be starting with a particular method systematically developed from a specific theoretical orientation or concept, she will, as she is in the process of closely reading a text, draw from theoretical concepts within her repertoire that help her to make sense of the case. For example, a critic may find upon examining a text that the rhetorical construction of ethos is important in the text; so to understand the rhetorical construction of the text, she will draw from theories of ethos and other research that uses ethos to critique texts. While the emic approach to criticism still clearly involves theory, the distinction is that methodological choices emerge out of a reading of the text. The emic-oriented approach does not eschew method completely but argues against applying a rigidly imposed theory-derived method onto a text (which is at the far end of the etic side of the continuum). This emic critic does not decide before analyzing the text that she will formulate a methodology for looking for ethos in the text.

In addition to breaking from an a priori method-based critical approach, emic criticism also breaks from an exclusively theory-driven approach. Although theory is still related to the critical process, emic criticism assumes that theory is drawn out of the particular case as opposed to making it the starting point for analysis. In describing the emic approach, Leff draws from anthropologist Clifford Geertz's discussion of interpretive theory that is inextricably linked to the particulars of a case. Geertz argues, "The essential task of theory building here is not to codify abstract regularities but to make thick description possible, not to generalize across cases but to generalize within cases."[90] Emic criticism is diagnostic as opposed to predictive, meaning the goal is to better interpret, analyze, and judge the particular case. In taking an emic

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[89] Leff, "Interpretation and the Art," 349.

[90] Clifford Geertz, *The Interpretation of Cultures* (New York: Basic Books, 1973): 26.

approach to criticism, one moves back and forth between theory, critical tools, and artifacts in order to understand the case. From this case, the critic can then move to study similar cases. For example, a next step from this study may be to look at other cases of nuclear waste siting, and then to other cases of toxic waste siting. When one engages in emic-oriented criticism, the use of theory is analogic, an inductive move from cases to case, rather than the deductive application of theory to object to test or further develop that theory.

Rather than viewing a critic's approach as either purely etic or purely emic, it is better to recognize that all criticism has elements of both the etic and emic. Thus, Black and Leff do not call for a solely emic approach; rather, the emic-oriented approach assumes that the critic begins her study with the text, free to draw upon the tools necessary to understand the text. There will be elements of the etic in her approach because the two cannot be completely separated. Often a critic will approach the evaluation of her texts with some assumptions that she constructed from her understanding of the context in which the texts appeared and her reading of the scholarly literature on the subject of her study. However, the starting point of the critic is different in the two cases. An etic-oriented critic begins with her theory that she wants to test or expand and develops a methodology to do that by looking at a particular case. An emic-oriented critic begins with a case or text and draws from training and theory (etic elements) to create a "logic of inquiry" that is constructed as a part of the critical process.

In this dissertation, I took an emic-oriented approach beginning with my case, the controversy over the Yucca Mountain Nuclear Waste Repository siting decision. In the process of researching context, possible texts, and the scholarly literature surrounding this and similar cases, I found the concepts of radioactive colonization and public participation in environmental decision-making compelling and relevant to my goal of better understanding the rhetorical dimensions of the Yucca Mountain controversy. My grounding assumptions represent an etic element that informed my critical process because these assumptions are informed by theory. Yet, rather than beginning with these assumptions and finding a case in which I could explore these

concepts (an etic-oriented approach), I constructed these assumptions after selecting the case because of their usefulness in understanding the case. These assumptions developed out of my research and "trained intuition" and helped to guide the way I understood the case and selected the texts. Once I determined the texts that I would examine as rhetorical artifacts to understand the controversy better, I conducted a close reading of them, approaching them with a careful attention to the rhetorical dimensions of the texts themselves and as few preconceptions about their construction as possible. As I closely read these texts, my research and "trained intuition" suggested particular theories and tools that would be useful in understanding the case and the texts, such as argument evaluation and the loci of values.

Being a close reader of texts does not mean that I apply the specific "method" associated with what Michael Leff called close textual analysis.[91] Though I share the emic-orientation of Leff's approach, I am not adopting his critical sensibilities or critical purposes. A close textual analysis, as Leff describes it, "centers on the effort to interpret the intentional dynamics of a text."[92] Barbara Warnick characterizes Leff's method as a study in the art of oratory in which a critic focuses on stable "model texts" and intends to "develop readers' taste and appreciation for 'what rhetorical discourse ought to do' and 'what it is capable of doing.'"[93] In my dissertation, I do not focus on one model text and attend to the art of rhetoric as developed in that text to help my readers better appreciate the genius of the text's author. Instead, I read my set of texts closely in order to understand the arguments in the controversy. Chapters 2 and 3 are close readings of sets of texts in the public comments and public hearing statements about Yucca Mountain; they are not close textual analysis of each document. As such, my reading does not reveal the rhetorical nature of each public hearing statement or comment; rather, I closely read the comments and statements for argument themes and

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[91] Michael Leff, "Things Made By Words: Reflections on Textual Criticism," *Quarterly Journal of Speech* 78 (1992): 223-231.

[92] Leff, "Things Made By Words," 223.

[93] Barbara Warnick, "Leff in Context" What Is the Critic's Role?" *Quarterly Journal of Speech* 78 (1992): 232-233.

structures that develop the themes that help me develop a better understanding of the arguments of a stakeholder group from their perspective. Chapter 4 devotes a lot of attention to the Secretary of Energy's site recommendation report and is thus more tightly focused on the rhetorical construction of an individual text; but even this reading of a single rhetorical artifact is not a "close textual analysis" because it is not examining this as an exemplary text to be better understood for the purpose of modeling its rhetorical genius. In my close reading of the texts, I found myself drawing on rhetorical theories and rhetorical training (which I will describe shortly) that help to make visible the rhetorical and argumentative devices in the texts.

As mentioned above, I chose a set of texts that represent the arguments and interests of the stakeholders in the 2002 decision to authorize Yucca Mountain as the site of the federal high-level nuclear waste repository. This series of documents in the Yucca controversy yields a case study. Bent Flyvbjerg argues for phronetic research and the importance of case studies in social scientific research. Though his argument pertains to social science, I believe it is applicable to a humanities-based rhetorical criticism project as well.[94] Theodore Prosise's work on collective memory in the atomic bombings is an example of a critical approach that explores a series of documents and results in a case study.[95] Case study work is valuable because case studies affirm that knowledge in human affairs is context dependent and "that human behavior cannot be meaningfully understood as simply rule-governed facts."[96] Through this case study of the Yucca Mountain nuclear waste controversy, I intend to discover the rhetorical elements at play in public discourse about this issue.

In the process of closely reading this controversy, I drew from theories and tools for evaluation that were useful in understanding the rhetorical nature of the controversy. From my current vantage point having completed a reading of the texts, it is possible for me to provide an account of the tools and theories that I used. My

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[94] Bent Flyvbjerg, *Making Social Science Matter: Why Social Inquiry Fails and Why It Can Succeed Again* (Cambridge, UK: Cambridge University Press, 2001).

[95] Prosise, "The Collective Memory," 1-32.

[96] Flyvbjerg, 72.

criticism in chapters 2-4 draws from various theories in closely reading my texts including argument evaluation, the loci of values, the artistic proofs, and ideological criticism. Though these concepts will be more fully explicated in the forthcoming analysis chapters, here I briefly describe these critical tools and theories.

Argument Evaluation

The overarching critical tool that informs each chapter is argument evaluation. Argument evaluation is an approach to criticism that draws from argumentation theory and, according to rhetorical critic Edward Shiappa, "refers to rendering explicit judgment that an argument is valid or invalid, sound or unsound, good or bad, strong or weak, ethical or unethical"[97] Argument evaluation necessarily makes some sort of judgment on the use of argument in discourse. However, that judgment is likely to be a rhetorical one. Robert Rowland argues, "The goal of argument evaluation is not truth or fully justified knowledge claims, but useful solutions to problems."[98] In other words, as opposed to creating a universal set of standards for argumentation, the argument critic evaluates arguments to comprehend a particular problem, the argument strategies employed by participants in the case, and offer judgment about the use of arguments in this particular case.

These judgments are inevitably based on differing sets of standards and hence argument evaluation can come in many forms. For example, Robert Rowland proposes that critics evaluate arguments based on both field-dependent and field-independent standards. He offers three field independent standards of argument: consistency, plausibility and strength of evidence, and a dialectical test of whether the arguer considered alternatives and whether the reasoning leads to the conclusion. He concludes, "Argument criticism will never be infallible, perhaps, but without it there is no means of distinguishing between strong and weak claims."[99] This informs my

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[97] Edward Shiappa, ed. *Warranting Assent: Case Studies in Argument Evaluation.* (Albany: SUNY Press, 1995): ix.

[98] Robert Rowland. "On Argument Evaluation," *Journal of the American Forensic Association 21* (1985): 126.

[99] Rowland, 131.

entire dissertation. In each chapter, I evaluate the use of arguments and argumentation strategy by the three stakeholder groups I identified. For example, my findings in chapter four reveal that American Indian opponents and their arguments are excluded from the DOE's rhetorical construction of the opposition. This is not only a flawed argumentation strategy to exclude an important opposition argument, but is also a flawed argument. When we consider the DOE's claim that there are no counterarguments that would outweigh the case for going forward with Yucca Mountain, the Department of Energy's construction of the opposition is the support for this claim. If a significant part of the opposition is suppressed or overlooked, the argument suffers. In this case, the construction of the opposition is based in a straw person fallacy. In addition to showing the ideological interest that may underlie this decision, I evaluate this as bad argumentation and make suggestions for improvement.

Loci of Values

Perelman and Olbrechts-Tyteca's theory of the role of values in argumentation, specifically the loci of values, emerged as an important tool in my analysis of American Indian arguments against the Yucca Mountain site in chapter 2. Perelman and Olbrechts-Tyteca aver that public argumentation is inherently value-laden. As opposed to entering argument with a blank slate, we begin with values.[100] The loci of values, they argue, are implicit standards that underlie the values to which people adhere. For example, the loci of quantity imply the importance of the greatest good for the greatest number of people whereas the loci of quality emphasize the importance of that which is rare, irreparable and unique. As chapter 2 demonstrates, American Indian and federal government argumentation can be viewed as adhering to opposing loci of values though both purportedly value the land. The value of the land is viewed by the federal government as important because it benefits the nation as a whole despite side effects. The American Indians value Yucca Mountain for its unique spiritual, cultural, and plant and animal resources that cannot be replaced in another place. Because of these differing standards for the value of the land, the likelihood of misunderstanding

[100] Ch. Perelman and L. Olbrechts-Tyteca, *The New Rhetoric: A Treatise on Argumentation,* trans. John Wilkinson and Purcell Weaver (Notre Dame: University of Notre Dame Press, 1969).

is high and effective participation of American Indians in decision-making may be limited.

Artistic Proofs

I also draw upon classical rhetorical theory in my criticism, specifically Aristotle's forms of artistic proof: ethos, pathos, and logos.[101] Chapter 3 hones in on the role of science in Nevadan arguments for and against the site. By looking particularly at the ethos and logos-based appeals, I evaluate the way that scientific expertise and scientific proof is constructed by the public in this controversy. I judge both the federal government's use of science and the public's use of science in the process of public participation in environmental decision-making, offer suggestions for a more effective public science, and challenge the DOE to make public participation more open.

Ideological Criticism

In my analysis of the Secretary of Energy's site recommendation report in chapter 4, I discovered that it is important to evaluate rhetorical strategies of exclusion and explore what is not said. That is, I ask whether the Secretary of Energy's rhetorical construction of the opposition to the Yucca site includes all of the opposition. My findings suggest that the text does not. In an effort to explain this exclusion, I draw from ideological criticism. First introduced by Philip Wander, ideological criticism exposes underlying ideologies in discourse or argument.[102] Hence, ideological criticism involves making judgments about rhetorical artifacts based in recognizing ideological formations, vested interests and alternatives. Wander suggests that one way to do this is to attend to a "Third Persona" that "focuses on audiences 'negated' through the text—the language, the speaking situation, the established order shaping both."[103] Wander calls for rhetorical criticism that allows for

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[101] Aristotle. *On Rhetoric: A Theory of Civic Discourse*, trans. G. Kennedy (Oxford: Oxford University Press, 1991).

[102] Philip Wander, "The Ideological Turn in Modern Criticism," *Central States Speech Journal* 34 (1983): 1-18; Philip Wander, "The Third Persona: An Ideological Turn in Rhetorical Theory," *Central States Speech Journal* 35 (1984): 197-216.

[103] Wander, "The Third Persona," 216

a discussion of what arguments count, how arguments are included or excluded in texts, and the vested interests in such decisions. This call greatly influenced my reading of the texts in the Secretary's recommendation report in which I reveal American Indians as a third persona that is excluded in the construction of the opposition.

To conclude this section, I comment briefly on the role of the critic's judgment in criticism. Argument evaluation and the third persona, in particular, call for the critic to make an explicit judgment about the text, for example, evaluating whether an argument is ethical or unethical. In rhetorical criticism of an issue such as the siting of a nuclear waste repository, ethical issues and dilemmas related to the siting process arise. Because of this, I have chosen tools that are particularly appropriate for judging the ethical nature of artifacts. The proponents of each of these concepts address the judicial nature of criticism.[104] Jasinski argues that although method-based rhetorical criticism saw a move away from evaluative criticism, with the waning influence of method-based criticism, we may be seeing a return to evaluative criticism.[105] In the case of stakeholder argumentation about the siting of the nation's nuclear repository at Yucca Mountain, I believe evaluative concepts are an important tool in commenting on this rhetoric.

Dissertation Structure

The bulk of this dissertation includes analysis of federal government, American Indian, and Nevadan arguments about the Yucca Mountain site. Chapters 2-4 explore the representative texts of one of the stakeholders and each is a self-contained criticism of the selected texts. Chapter 2 analyzes the major argument themes in self-identified American Indian public hearing statements and public comments. I identify and describe six argument themes, two of which are unique to American Indian concerns with the site such as treaty rights, sacred value placed on the land, and tribal interactions with the federal government. Perelman and Olbrechts-

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[104] Edwin Black, "A Note on Theory and Practice;" Rowland, "On Argument Evaluation;" Shiappa, *Warranting Assent;* Philip Wander, "The Ideological Turn."

[105] Jasinski.

Tyteca's theory of values in argument helps me to uncover the underlying values that inform American Indian arguments and contrast these with the values assumed by the federal government's arguments for the site. My reading of American Indian argument themes in the public hearing statements and comments identifies and explores the loci of difference between values of the federal government and American Indian tribes. These fundamental differences must be addressed for tribal participation in the Yucca Mountain decision-making process, as well as environmental decision-making in general.

Chapter 3 turns to the argument themes of Nevadans (citizens and government officials) in the public comment period. As with chapter two, I began by identifying the main argument themes for both opponents and proponents of the Yucca Mountain site. Arguments that raised issues of science, such as scientific expertise and scientific proof, are common in this set of arguments. In this chapter, I turn to the ways that scientific ethos and logos appeals are constructed in hearing statements and public comments. I argue that though it is crucial for the public to engage in scientific debate and criticism with regard to the project, the public is faced with several constraints that limit their ability to do so. Because of the importance of science to environmental policy, increasing public participation in environmental decision-making, and particularly with Yucca Mountain, requires that attention be paid to the rhetoric of public science.

In chapter four, I look to the federal government's justification for the site and closely read the Secretary of Energy's recommendation. In particular, I attend to the way that he characterizes opposition to the site, revealing that at least one major voice of opposition, American Indian tribal arguments, is excluded from his rhetorical construction of the opposition.

Finally, chapter 5 concludes the dissertation by tying the analysis in chapters 2-4 together. I return to the concepts of radioactive colonization and public participation in environmental decision-making and offer some conclusions about their specific instantiation in this case. In addition to offering contributions to rhetorical theory and our understanding of the Yucca Mountain project, I also take a turn to public

scholarship and offer suggestions for improving the arguments made in this case and improving public participation in environmental decision-making.

CHAPTER II: TRIBAL OPPOSITION AND THE LOCI OF VALUES

"For the Western Shoshone people, our truth is that of a proud ancient people who have existed in the Great Basin for a thousand generations. We are today, as we have always been, a free people with our aspirations for growth and development. We wish to follow our dreams and aspirations and not have our loves and that of our future generations cut short by radioactive contamination. Therefore, we go on record opposing the Yucca Mountain project."

> --Lorinda Sam, environmental director for the Ely Shoshone Tribe, statement at White Pine Public Hearing, October 10, 2001.[106]

Yucca Mountain lies on land that is part of the original land-base of the Shoshone Indians who, before Caucasian contact, occupied the Great Basin region since "time immemorial" according to the Shoshones.[107] The Western Shoshone, the Southern Paiute, and Owens Valley Shoshone and Paiute tribes claim spiritual and traditional connections to Yucca Mountain. Though there is little pre-1859 archaeological data on the various tribal groups such as the Western Shoshone, there is data to suggest that there have been dwellers in the Great Basin for over 12,000 years.[108] The surrounding region and Yucca Mountain are claimed by the Western Shoshone under 1863 Ruby Valley Treaty of Peace and Friendship.[109] Some members of these tribes call Yucca Mountain "serpent swimming west" because of the belief that the mountain is a snake spirit. Corbin Harney, Western Shoshone spiritual leader, states,

> Yucca Mountain (site for the proposed U.S. Nuclear Waste Repository) lies asleep like a snake. When you walk on top of the mountain, it feels

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[106] U.S. Department of Energy, *Hearings for Site Recommendation Consideration of the Yucca Mountain Site for Geologic Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste,* reporter's transcript of proceedings taken on Wednesday, October 10, 2001 at 3:00 p.m. at Ely, NV, reported by Heidi Konsten, RPR #516382, 8. All of the public hearings and public comments that will be cited in this dissertation are available at the Yucca Mountain Information Center, 4101B Meadows Lane, Las Vegas, NV 89107, 702-295-1312.

[107] Corbin Harney, *The Way It Is: One Water, One Air, One Mother Earth,* (Nevada City, Calif.: Blue Dolphin Publishing, 1995): 198.

[108] Barry M. Pritzker, "The Great Basin," in *A Native American Encyclopedia: History, Culture and Peoples* (Oxford: Oxford University Press, 2000): 220, 239.

[109] "Treaty between the United States of America and the Western Bands of Shoshone Indians," October 1 1863, 18 Stat. 689-92. A copy of the treaty is available in Harney, *The Way It Is*, 193-197.

> like you are walking on the dried snakeskin. Someday when we wake that snake up, we will have to sit down and talk to that snake. It will get mad and rip open. When it awakens, we will all go to sleep. With his tail, that snake will move the mountain, rip it open, and the poison will come out on the surface. Long ago, the Indians talked about it.[110]

This is but one example that reflects an underlying difference in understanding and value of Yucca Mountain, and land in general, between American Indians and the federal government. American Indian reactions to the proposed Nuclear Waste repository at Yucca Mountain reveal their orientations to the land, political economy, sovereignty, and scientific knowledge, which often differ from the federal government's orientations. These orientations are expressed in arguments against the site and are inextricably linked to values.

This chapter focuses on arguments made by American Indians in public hearing statements and public comments submitted during the 2001 site authorization public comment period, specifically attending to the values embedded within these arguments. Before reading the texts, this chapter explores the role of values in argumentation, drawing from Chaim Perelman and Lucie Olbrechts-Tyteca's theory of the loci of values. Next, it identifies and evaluates the main argument themes in these statements and comments. Drawing from the loci of values, I will compare the values in American Indian arguments with values in the federal government's responses to these arguments. This chapter concludes with implications for our understanding of the Yucca Mountain controversy, American Indian argumentation and rhetoric, and the role of values and argumentation in controversy.

Argumentation and Values

Perelman and Olbrechts-Tyteca's treatise on argumentation, *The New Rhetoric,* grapples with the role of values in argumentation, with a major assumption being that argumentation is inherently value-laden. Perelman and Olbrechts-Tyteca state, "Values enter, at some stage or other, into every argument...One appeals to values in

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[110] Corbin Harney, "Message to the International Citizens Congress for a Nuclear Test Ban," Alma-Ata, Republic of Kazakhstan, U.S.S.R., May 24-26, 1900, reprinted in: Harney, *The Way It Is,* 154.

order to induce the hearer to make certain choices rather than others and, most of all, to justify those choices so that they may be accepted and approved by others."[111] Indeed, other scholars acknowledge this link between values and argument.[112] Argumentation scholars Greg Walker and Malcolm Sillars argue that values can serve four functions in arguments: helping arguers in claim and issue selection, serving any part of an argument, providing reasons for positions taken and decisions advocated, and providing potential common ground between the arguer and audience.[113] Simply stated, values are means of persuasion, or resources of invention that rhetors use to justify arguments and actions.

There are neither universal values nor universal agreement about which values are more important than others. Perelman and Olbrechts-Tyteca state that although values, especially general values like justice and love, may be treated as fact and subject to agreement of the universal audience, even these may be contested and assume particular audiences.[114] Even if there is agreement of a value in the general sense, such as justice, there may be disagreement in how that value is ranked in relation to other values. There may also be differences in the way that the general value of justice is viewed in a particular situation or society, or enacted in relation to the everyday actions of individuals or society. For example, both opponents of the death penalty likely believe that their stance is based in the value of justice. Even if the two sides agree that justice should be considered above other values, concrete definitions of justice may be different. If both sides agree on the definition of justice,

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[111] Perelman and Olbrechts-Tyteca, 75.

[112] Malcolm O. Sillars, "Values: Providing Standards for Audience-Centered Argumentation," Keynote Address presented at the Ninth SCA/AFA Conference on Argumentation, Alta, Utah, August 3, 1995, in *Argumentation and Values: Proceedings of the Ninth SCA/AFA Conference on Argumentation,* ed. Sally Jackson (Annandale, VA: Speech Communication Association, 1995), 1-6; Malcolm O. Sillars and Patricia Ganer, "Values and Beliefs: A Systematic Basis for Argumentation," in *Advances in Argumentation Theory and Research,* ed. J. R. Cox & C. A. Willard (Carbondale: Southern Illinois Press, 1982), 184-201; Greg Walker and Malcolm Sillars, "Where is Argument? Perelman's Theory of Values," in *Perspectives on Argumentation: Essays in Honor of Wayne Brockriede*, ed. R. Trapp and Janice Schuetz (Prospect Heights, IL: Waveland Press, 1990), 134-150.

[113] Walker and Sillars, 137.

[114] Perelman and Olbrechts-Tyteca, 76.

the implementation of justice through actions can differ drastically, so much so that opposite policies, such as implementing the death penalty and eliminating the death penalty, can both be seen by their advocates as just. Indeed, universal values, universal agreement on a value hierarchy, and universal agreement about how values play out in practice would eliminate controversy and the need for argumentation, leaving the world an agreed-upon, but much less interesting place.

To say that there is not universal agreement about values does not imply that there is no possibility of agreement and persuasion. Indeed, as Perelman and Olbrechts-Tyteca argue, values often serve as starting points of argument, meaning that they are already subject to agreement of the audience. Just as a value can serve as a starting point for an argument, values can also be stasis points in argumentation. The need to justify values often arises in controversy when values, or arguments and actions with corresponding value orientations, are challenged. In order to persuade using value, one must supply good reasons to adhere to a new value. What is important to remember is that values, whether agreed-upon or contested, are still subject to justification through argumentation.

In their exposition on the role of values in argument, Perelman and Olbrechts-Tyteca note three important aspects of values: abstract versus concrete values, hierarchies of values, and the loci of the preferable, which are implicit standards for values. My reading of American Indian arguments against the Yucca Mountain site authorization draws primarily from the loci of the preferable. Perelman and Olbrechts-Tyteca define loci as "premises of a general nature that can serve as the bases for values and hierarchies"[115] Drawing from the classical rhetorical term, *loci communes*, the loci of the preferable are general premises that can be applied to all types of arguments as opposed to specific premises that apply only to scientific arguments. "Such loci form the most general premises, actually often merely implied, that play a part in the justification of most of the choices that we make."[116] Loci are also often

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[115] Perelman and Olbrechts-Tyteca, 84.

[116] Perelman and Olbrechts-Tyteca, 84.

regarded by the speaker or the audience as beyond discussion and are therefore, implicit. However, loci are subject to justification and contestation.

As Perelman and Olbrechts-Tyteca note, the concept of the loci of the preferable is related to their conceptualization of values and value hierarchies, which I will discuss briefly. Perelman and Olbrechts-Tyteca distinguish "abstract values such as justice or truth, and concrete values, such as France or the Church."[117] Abstract values are general, whereas concrete values are personified or objectified, and are often interpretations of abstract values. Both abstract and concrete values are general in nature, and because of their generality, they may be considered universal by those who adhere to them. For example, one might wonder what American would deny the value of justice (abstract) or the value of American democracy (concrete)? These general values often become contested in application to particular cases or interpretation or in comparison to other values. Perelman and Olbrechts-Tyteca argue that value hierarchies are a way in which individuals resolve conflicts between values. When values are challenged and in need of defense, hierarchies of values often become explicit. That is, when faced with competing values of individual and community, for example, an individual might rank the value of community preservation over that of the individual. Perelman and Olbrechts-Tyteca argue that, "Value hierarchies are, no doubt, more important to the structure of an argument than the actual values. Most values are indeed shared by a great number of audiences, and a particular audience is characterized less by which values it accepts than by the way it grades them."[118] Therefore, while most Americans would accept the values of justice and American democracy, particular situations may arise in which the value of justice is viewed as more important than the value of American democracy or vice versa.

In some instances, rather than argumentation based in different rank order of values, individuals may agree on a value, but disagree on how to achieve that value best. For example, even if there is agreement in a particular situation that American

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[117] Perelman and Olbrechts-Tyteca, 77.

[118] Perelman and Olbrechts-Tyteca, 81.

democracy is the primary value, there may be disagreement as to whether American democracy should be promoted in other countries. One could value American democracy and argue for either side of this question depending on the underlying assumptions that help to make the value concrete and applicable to the particular situation. The notion that general values can be interpreted very differently in particular cases means that it is possible that opposing arguments in the Yucca Mountain controversy may actually adhere to the same value, such as the value of land, but disagree on how best to uphold that value. This is where the loci of the preferable become crucial. The loci of the preferable are implied assumptions that guide the way that general values are applied to specific situations. Uncovering the loci of the preferable in these cases allows for better understanding of the value under contestation and for finding starting points for argumentation.

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.[119] Loci are general categories and can be manifest in different ways. For example, there are multiple ways to use loci of quantity to justify values, such as the locus that a greater number of good things is more desirable than a smaller number. Additionally, two loci may be used together in an argument. Loci, as Perelman and Olbrechts-Tyteca envision them, are inventional resources from which speakers draw, explicitly or more often implicitly, in making arguments. Value-based arguments, then, can be reduced to general loci of the preferable.

Though Perelman and Olbrechts-Tyteca focus the loci of the preferable as an essential element of their theory of rhetoric that assumes the integral nature of values to argumentation, they do not explicitly argue for the use of the loci as a critical evaluative tool for argument critics. Argument critics, however, have appropriated Perelman and Olbrechts-Tyteca's notion of the loci of values as a critical tool to

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[119] Rather than describing these in detail at this point, I describe the relevant loci as they arise in my analysis. Perelman and Olbrechts-Tyteca, 85.

understand the choices made by rhetors with regard to value-based arguments.[120] Walker and Sillars, for example, demonstrate, through the spotted owl controversy, that argument critics can draw upon Perelman and Olbrechts-Tyteca's theory of values to understand the interaction of values, hierarchies, and loci in public controversy.[121] They identify the differing values and corresponding hierarchies and loci of three different groups in the controversy.

American Indian Presence in Public Comments

In order to understand the values underlying American Indian arguments in the Yucca Mountain site authorization controversy, I read public hearing statements and comments submitted by self-identified Americans Indians during the initial and supplemental public comment periods between May-December 2001. Recall from Chapter 1 that the Nuclear Waste Policy Act (NWPA) mandates a public comment period prior to site authorization. The hearings and comments received during the initial and supplemental public comments were arranged by the DOE to fulfill this requirement.[122] Recall that comments can take the form of a statement at one of the 66 public hearings that the DOE held in all counties of Nevada as well as Inyo county in California, a statement to a court reporter at the Yucca Mountain Information Center, an e-mail message, or a written comment sent via post. In all, there were 5250 public comments, though many of these were duplicates.[123]

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[120] J. R. Cox, "Loci Communes and Thoreau's Arguments for Wilderness in 'Walking,'" *Southern Speech Communication Journal* 46 (1980): 1-16; Barbara Warnick, "Rehabilitating AI: Argument Loci and the Case for Artificial Intelligence," *Argumentation* 18 (2004), 149-170.

[121] Walker and Sillars, 144-145. Barbara Warnick's essay on JFK's use of value hierarchies in his speech to the Houston Ministerial Association is another example of employing an element of Perelman and Olbrechts-Tyteca's theory of values and arguments as a critical tool. Barbara Warnick, "Argument Schemes and the Construction of Social Reality: John F. Kennedy's Address to the Houston Ministerial Association," *Communication Quarterly* 44 (1996): 183-196.

[122] See the Federal Notice that announced the opening of the public comment period. U.S. Department of Energy Office of Civilian Radioactive Waste Management "Yucca Mountain Science and Engineering Report; Site Recommendation Consideration and Request for Comment," *Federal Register*, 23013.

[123] This number is lessened to a degree because some individuals submitted identical comments more than once or read identical statements at several different hearings, and there are a considerable number of form letters submitted by different people, but identical in content.

From this corpus of public comments, I found 52 comment statements made by 33 self-identified Americans Indians from 26 tribes or bands and two organizations (Western Shoshone National Council and Consolidated Group of Tribes and Organizations).[124] Although this may be a small number of comments compared to the total number, keep in mind that American Indian tribal populations are smaller than the rest of the population of the United States that submitted comments, and that many of the 52 comments and statements were issued from tribal councils or governments that speak for larger numbers of people. Although some statements and comments came from individuals who only identified their tribal membership, thirteen individuals self-identified as tribal representatives, mostly tribal chairs. The Timbisha Shoshone and the Hopi tribes also submitted tribal council resolutions along with their public comments. Therefore, the comments contain official tribal governmental speakers, tribal council resolutions, and personal statements by tribal members.

A Department of Energy fact sheet about cultural resources at Yucca Mountain identifies 17 tribes or equivalent organizations (i.e., the Las Vegas Indian Center) that have ties to the Yucca Mountain region from the Western Shoshone, Southern Paiute, and Owens Valley Paiute and Shoshone ethnicities in Nevada, California, Utah and Arizona.[125] Representatives of 11 of the 17 tribes offered comments or testimony and

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[124] These include the Moapa Band of Paiutes, Western Shoshone, Southern Paiutes, Delaware Indian, Cherokee, Prairie Island Reservation (Mdewakanton Sioux), Lone Pine Paiutes-Shoshone Tribe, Ely Shoshone Tribe, Timbisha Shoshone Tribe, White Knife Band of the Western Shoshone, Walker River Paiutes, Las Vegas Paiutes, Kaibab Paiute Tribe, the 5 Paiute Tribes of Utah (Shivwits Paiute Tribe, Cedar City Paiute Tribe, Indian Peaks Paiute Tribe, Kanosh Paiute Tribe, Koosharem Paiute Tribe), Big Pine Paiute Tribe of the Owens Valley, Colorado River Indian Tribes, Bishop Paiute Tribe, Chemehuevi Paiute Tribe, the Hopi Tribal Council, Cocopah Tribe, Yakama Nation Tribal Council, and Fort Mojave Tribe.

[125] U.S. Department of Energy Office of Civilian Radioactive Waste Management, "Preservation Through Cooperation Fact Sheet," (Washington D.C., June 2000, YMP-0340), http://www.ocrwm.doe.gov/factsheets/pdf/doeymp0340_1.pdf (accessed January 29, 2005). The 17 tribes (listed in footnote 126) are based on studies by anthropologist Richard Stoffle from the Bureau of Applied Research in Anthropology at the University of Arizona. He and his co-authors have done substantial research on the cultural and plant resources at Yucca Mountain, the consultation process over YMP and NTS. See Richard W. Stoffle, *Native Americans and Nuclear Waste Storage at Yucca Mountain, Nevada: Potential Impacts of Site Characterization Activities* (Ann Arbor: Institute for Social Research, prepared for Science Application International Corporation, Las Vegas, Nevada, and the U.S. Department of Energy Nevada Operations Office, 1987); Richard W. Stoffle and Michael J. Evans, "American Indians and Nuclear Waste Storage," *Policy Studies Journal 16* (1988): 751-767;

all oppose the site.[126] In addition, members and tribal representatives of seven other tribes presented testimony or submitted comments.[127] Representatives of the Western Shoshone National Council (WSNC),[128] a centralized political entity for Western Shoshone Indians, and the Consolidated Groups of Tribes and Organizations (CGTO),[129] an organization created by tribes to consult with the Department of Energy

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Richard W. Stoffle, David B. Halmo, John E. Olmsted, and Michael J. Evans, *Native American Cultural Resource Studies at Yucca Mountain, Nevada* (Ann Arbor: Institute for Social Research, prepared for Science Applications International Corporation, Las Vegas, Nevada, 1990).

[126] This is based on my reading of the comments of self-identified tribal members. Some people identified simply as Western Shoshone or Southern Paiute and did identify as a member of one of the specific tribes listed below. The 17 tribes follow, with those who identified a specific tribal membership in the submitted comments in bold type: 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 PaiuteTribe, Colorado River Indian Tribes, Kaibab Paiute Tribe,** and the **Paiute Indian Tribe of Utah (Shivwits Paiute Tribe, Cedar City Paiute Tribe, Indian Peaks Paiute Tribe, Kanosh Paiute Tribe, Koosharem Paiute Tribe)**.

[127] These are a Delaware Indian and Cherokee individual, a Cherokee individual, the Prairie Island Tribal Council, the Hopi Tribal Council, the Cocopah Tribal Chair, the Fort Mojave Tribal Archaeologist, and the Tribal Council of the Yakama Nation.

[128] The WSNC was established in 1984 as a centralized political entity for Western Shoshone Indians. The WSNC, as Steven Crum argues, is mainly focused on land claims and "takes the position that the Western Shoshone Nation still owns most of its aboriginal land base in the Great Basin" (175). The Environmental Protection Committee of the WSNC opposes and fights against expansion of the NTS and the proposed YMP. Members of the WSNC are both representatives from tribal councils and representatives from other groups, organizations, and special interest groups. Membership includes, the IRA tribal councils of Duckwater, Yomba, and the Te-Moak Band, representatives from the Elko, Battle Mountain, South Fork, and Wells bands of the Te-Moak, the Western Shoshone Sacred Land Association (WSSLA), the Timbisha Shoshone of Death Valley, Great Basin Western Shoshone Descendants, The Dann band of Crescent Valley, and the Western Shoshone Traditional Cattlemen's Association of the South Fork Reservation (173). Steven J. Crum, *The Road on Which We Came: A History of the Western Shoshone* (Salt Lake City, University of Utah Press, 1994).

[129] The CGTO emerged out of the first meeting organized by the Nevada Test Site Cultural Resources Program that was developed in the 1970's to conduct "archaeological and historical research, and ethnographic studies and consultation with American Indians" (Beck et al.). Representatives of the 17 tribes with ancestral ties to the region (listed above) were invited to a meeting to discuss the YMP project. The meeting "between the Department of Energy, the Desert Research Institute's archaeologists, the ethnographic team from the University of Arizona, and the Indian groups was memorable in that 34 official tribal representatives, federal agents, archaeologists, and ethnographers set aside differences and uncertainties to plant the seeds of a successful long-term program. At this crucial meeting, representatives of 17 tribes and three pan tribal organizations decided that they could be most effective by working as a group rather than as separate entities. They established the Consolidated Group of Tribes and Organizations." The American Indian Writers Subgroup of the CGTO states that the group was formed to "To reinforce their cultural affiliation rights and to prevent the loss of ancestral ties to land within southern Nevada, including the YMP area...The CGTO has

about tribal resources on the NTS, also spoke at hearings and/or submitted written comments.

All but two of the 51 American Indian public hearing statements and public comments express opposition to the site. Of the two that are not opposed to the site, one is a letter from the chair of the Cocopah Indian Tribe in Arizona and Mexico asking a question about potential effects of radioactive waste disposal on water and air quality and the potential for accidental releases of radiation.[130] The second is a statement from a member of the Mdewakanton Sioux from the Prairie Island reservation in Minnesota that is in favor of the Yucca Mountain site because the site would remove waste from the nuclear power plant that lies right next to the Prairie Island reservation, about 600 yards away. The site has reached its storage capacity and the Prairie Island tribal council claims that radioactive release from the temporary site storage endangers the Prairie Island tribe.[131]

Though my primary analysis focuses on self-identified American Indians, in my reading of the public comments, I encountered many documents that mention the concerns and arguments of American Indians. In some cases, I was able to determine that these statements were not made by American Indians.[132] However, I was not able

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established a long-standing relationship with various federal agencies including the DOE. See American Indian Writers Subgroup Consolidated Group of Tribes and Organizations, *American Indian Perspectives on the Yucca Mountain Project and the Repository Environmental Impact Statement* (Washington D.C., February 1998, MOL 19980420.0041); Colleen Beck, M. Nieves Zedeno, and Robert Furlow, "Working Together: Time, Trust, and the Measure of Success: The Nevada Test Site Cultural Resources Program," *Society for American Archaeology* 15 (May 1997), http://www.saa.org/publications/saabulletin/15-3/SAA23.html (accessed January 30, 2005).

[130] Sherry Cordova, *Letter to the Department of Energy* (September 7, 2001, public comment #330026) http://www.ymp.gov/documents/sr_comm/sr_pdf/330026.pdf (accessed January 30, 2005). All public comments are available at the available at the Yucca Mountain Information Center or via the internet index at http://www.ymp.gov/documents/sr_comm/index.htm.

[131] U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation for Yucca Mountain,* reporter's transcript of proceedings taken on Friday, October 12, 2001 3:00-9:00 p.m. at Bob Rund Community Center, Pahrump, NV, reported by Kevin Wm. Daniel, CCR #711 and Mary Cox Daniel, CCR #711, 16-20.

[132] For example, in her testimony at the September 5, 2001 public hearing in Reno, Melanie Burriesci states, "First off, I feel really embarrassed about all my Indian friends because I think back to the history in the beginning, like how we all came here and took their land, and we broke all these tributes throughout history, and now we're like—now we're doing this to them and their land that is so sacred to them." U.S. Department of Energy, *Site Recommendation for a Geologic Repository for the Disposal of*

to determine this for all of the comments that mention American Indian concerns. Therefore, it is possible that I missed some comments by American Indians because the speaker did not explicitly identify herself as an American Indian. There is also a significant portion of letters submitted that mention the Treaty of Ruby Valley. These letters are probably part of a letter writing campaign because they appear identical even though from a variety of different authors.[133] Though not my primary focus, the comments that include references to American Indians are an important part of the set of discourse about the Yucca Mountain project and will be discussed as relevant in my reading of the texts.

American Indian Argument Themes

Five prominent argument themes emerge from my close reading of American Indian public comments: 1) the importance of the land where Yucca Mountain lies, 2) the relationship between the US federal government and American Indians, 3) concerns with the site authorization process and associated policies, 4) risks resulting from long and short-term radioactive leakage or accidents, and 5) challenges to the scientific and technical basis of the site.[134] Each theme contains variations in individual arguments, which I will discuss in my description and evaluation of each theme.

Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada, reporter's transcript of proceedings taken Wednesday, September 5, 2001 at 7:00 p.m. at Desert Research Institute, Reno, NV, reported by Peggy Baker Hoogs, CCR #160, 10.

[133] An example of this can be seen in the following statement: "Yucca Mountain, located 80 miles northwest of Las Vegas, is on disputed territory claimed by the Western Shoshone Nation under the Ruby Valley Treaty of 1863, but currently held by the DOE." There were 90 identical letters submitted by different people with this same line. See, for example, Helen Weber, *Letter to the Department of Energy* (September 16, 2001, public comment #550517), http://www.ocrwm.doe.gov/documents/sr_comm/sr_pdf/550517.pdf (accessed January 30, 2005).

[134] These are general themes and it is important to note a few qualifiers. First, I performed a close reading of the 52 public hearing statements and public comments to determine argument themes that spanned across the corpus of individual statements and comments. Rather than closely reading each text individually, I assume that the American Indian arguments constitute a text and my evaluation of the argument themes is a close analysis of each theme from this larger text. Though grouping arguments into themes helps us to get a better picture of the types of arguments made by tribal members, we lose some specificity and representation of each text as a whole. Second, individual statements and comments contained anywhere form one to all five argument themes. Third, there is some overlap in the argument themes. Finally, there were arguments that did not fit within the themes, but did not occur with enough frequency across the text to merit a theme.

It is important to note that though I focus on themes in American Indian testimony and commentary as a whole, I am not dismissing the unique concerns of particular tribes. In each argument theme, there was enough similarity in the arguments to group them together. For instance, most tribes advanced arguments that the repository would disrupt the spiritual nature of the land, but because specific spiritual beliefs differ between tribes, the data explicating the spiritual aspects of the land was different. The Western Shoshone, Southern Paiute, and Owens Valley tribes, in particular, share more history and resources than some of the other tribes (especially those from different regions such as the Yakama). Therefore, there is more overlap in some arguments and argument themes than in others. In order to maintain tribal differences within themes, I always state the tribal affiliation of each individual commenter.

Land-based Arguments

Arguments about the physical land of Yucca Mountain and the surrounding area are quantitatively the most common arguments against the site. Within this theme, I identified several sub-categories, or different ways in which arguments are made about the land, including arguments about land ownership and homeland-status, arguments about the spiritual or sacred nature of the land, and arguments about land-use and treatment of land. Together, these arguments represent a perspective on the land that, through comparison with DOE statements about the land, reveals a different understanding and value of land. All of these arguments are based, in part, in a general value of the land. Drawing from Perelman and Olbrechts-Tyteca's loci of values, my analysis not only furthers our understanding of the role of land in the Yucca Mountain controversy, but also our understanding of the role of values in argument and controversy.

Land Ownership

The Western Shoshone lay claim to Yucca Mountain and the surrounding land under the Ruby Valley Treaty of Peace and Friendship signed on October 1, 1863. The treaty delineates a large portion of Nevada as well as parts of California and Utah as

Western Shoshone land.[135] Based on current cartography, the Western Shoshone National Council produced the following map, which reconstructs the territory granted under the treaty (see figure 1).

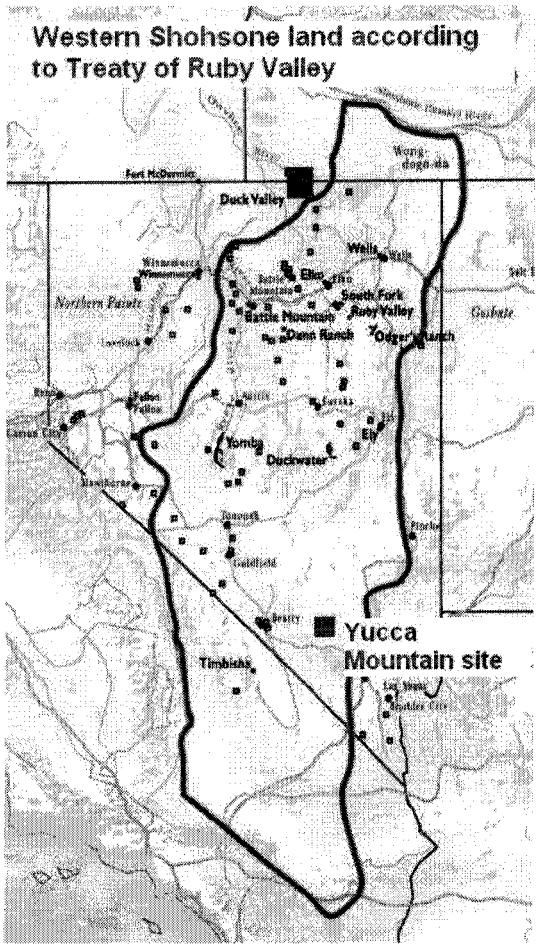

Figure 1. Western Shoshone land base under the Ruby Valley treaty.[136]

In order to evaluate a treaty-based land claim, it is important to discuss the sovereign status of and the role of land for most American Indian tribes in the United States. The Constitution, numerous treaties signed between the U.S. Government and

[135] "Treaty between the United States of America and the Western Bands of Shoshone Indians," October 1 1863, 18 Stat. 689-92. A copy of the treaty is available in Harney, *The Way It Is*, 193-197.

[136] Adapted from a map made by the Western Shoshone Defense project in 1999. This map reflects the Western Shoshone National Council interpretation of Western Shoshone territory under the Ruby Valley Treaty. This map contrasts with the U.S. Government's Indian Claims Commission (ICC) map developed by an anthropologist at the University of Colorado in the 1960's. The ICC map limits the territory significantly to exclude southern Utah, southeastern California, and Yucca Mountain. Crum, 175.

American Indian tribes, and Supreme Court decisions affirm tribal sovereignty. Indeed, American Indian studies scholar Glenn Morris states, "The founding documents of the United States remove any doubt that the nascent state recognized the national sovereignty of indigenous nations."[137] The jurisdiction of tribal sovereignty and self-governance is often limited to reservation boundaries, or "Indian country,"[138] meaning that every reservation is a geographically determined national border. However, many treaties provide some kinds of tribal authority or rights that extend beyond reservation lands and/or retain ownership of the land and grant certain land-use rights to the United States, as is the case with the Western Shoshone treaty, raising legal concerns about jurisdiction over non-reservation lands. Additional concerns arise when considering cultural, spiritual, and archeological connections to the land. Legislation such as the American Indian Freedom of Religion Act (AIFRA) is a declaration that the federal government's commitment to respect American Indian religious practices, which may include access to land outside of reservation boundaries, and adapt policies accordingly. Though the AIFRA does recognize American Indian rights to sacred lands, it does demonstrate a recognition that American Indian religions, which are land-based religions in the case of the tribes involved in the Yucca Mountain controversy, should be respected in federal policy. All of this demonstrates that the relationship between tribes and their land is a complicated one. This relationship is intertwined with the arguments made and will be further explored in the context of specific argument themes.

Turning to the case of Yucca Mountain, jurisdiction over the land is in question. Much of the land within the boundaries defined by the Treaty of Ruby Valley is currently under the jurisdiction of the Bureau of Land Management (BLM) land, the federal government, or Nevada state government. Yucca Mountain lies, in part, within the boundaries of the Nuclear Test Site (NTS) and Nellis Air force Base.

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[137] Glenn Morris, "International Law and Politics: Toward a Right to Self-Determination of Indigenous Peoples," in *The State of Native America: Genocide, Colonization, and Resistance*, ed. M. Annette Jaimes (Boston: South End Press, 1992), 65.

[138] Charles F. Wilkinson, *Indian Tribes as Sovereign Governments: A Sourcebook on Federal-Tribal History, Law, and Policy* (Oakland, CA: American Indian Resources Institute, 1991).

Much of the land surrounding the Yucca Mountain site is BLM land. However, the Western Shoshone claim that federal use of these lands violates the 1863 Treaty of Ruby Valley.

The federal government disputes the Western Shoshone claim to the land based on several rulings and statutes, which are contested by the Western Shoshone. First, they cite the 1962 Indian Claims Commission (ICC) ruling that the Western Shoshone title to land under the Treaty of Ruby Valley was extinguished due to gradual U.S. Government and citizen encroachment onto the land.[139] Though it would seem that the encroachers should vacate the land, logic behind extinguishing the land claim is that because encroachment was so extensive and because American Indian populations are small in comparison to the encroachers, it would be unrealistic to vacate. A 1966 ICC ruling proclaims that the Western Shoshone should be compensated for 24 million acres of lost land with 1872 as the valuation date. The Western Shoshone counter that the 1962 and 1966 ICC rulings are invalid because the federal government violated the ICC process and the rights of the Western Shoshone by not filing the mandated finality clause. Additionally, the Western Shoshone National Council disputes the acreage amount and map of the treaty area that was determined by an anthropologist in the 1960s and instead argues that the land guaranteed under the treaty is 62 million acres. Based on the 1962 and 1966 rulings, the ICC awarded approximately $27 million (the 1872 value of the 24 million acres without interest) to the Western Shoshone in 1979. The Western Shoshone claim that the ICC ruling and compensation is flawed because the ICC did not file a report with Congress to fulfill the "finality" clause of the act, which states that a report must be filed to finalize a claim. An ICC report was never filed with Congress, thus there was no finality in the case. The ICC ruling has also not been completed because the money (now $140 million) is held in

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[139] The Indian Claims Commission was created on August 13, 1946 to hear land claims filed by American Indians against the United States federal government. The ICC did not have the authority to grant recovery of land, so rulings monetarily rewarded tribes. Wilkinson argues that the ICC rulings did not help to strengthen tribal institutions because monetary rewards were distributed to individuals instead of to tribes. The Commission expired in 1978, but claims not yet resolved were transferred to the U.S. Claims Court. Wilkinson, *Indian Tribes,* 12.

trust by the Department of the Interior and has not been dispersed to tribal members. The Western Shoshone refuse to claim it.[140]

Second, the federal government cites the 1985 *United States v. Dann* Supreme Court ruling to support their argument that the Western Shoshone lost title to their land. The *U.S. v. Dann* Supreme Court ruling is the culmination of over ten years of litigation. In 1974, the United States sued Mary and Carrie Dann of the Dann Band of the Western Shoshone for operating a ranch and grazing cattle on federal government land without a permit. The Dann sisters claimed that they were exercising their right to use the land guaranteed under the Ruby Valley Treaty. The 1985 Supreme Court ruling states that the Western Shoshone claim no title to the land because they were given compensation money by the ICC. However, the Western Shoshone refused to accept this compensation. Because the Western Shoshone did not accept the ICC compensation, it is being held by the Department of the Interior. Moreover, the Western Shoshone claim that this decision was flawed because it was based on the ICC decision, which they also argue is invalid.[141]

In order to distribute the money from the ICC claim, the Western Shoshone Claims Distribution Act (S. 618, H.R. 884) was passed by both houses of Congress and signed by the president in 2003-2004. The act mandates the distribution of the ICC money to the Western Shoshone. At the time of writing, the money has not been distributed. The Western Shoshone oppose the act because if the money is distributed, then it symbolically and legally affirms the loss of Western Shoshone land. Distribution of the money and loss of land would then thwart the Western Shoshone's ability to continue to make treaty-based claims to their land.[142]

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[140] For further information on the ICC rulings, see Amnesty International, *Indigenous Rights Are Human Rights: Four Cases of Rights Violations in the Americas* (May 2003), http://www.indianlaw.org/western_shoshone_page.htm (accessed March 21, 2004); Steven Newcomb, *Failure of the United States Indian Claims Commission to File a Report with Congress in the Western Shoshone Case (Docket 326-K), Pursuant to Sections 21 and 22(a) of the Indian Claims Commission Act: A Report Prepared on Behalf of the Western Shoshone National Council* (Eugene, OR: Indigenous Law Institute, January 2003), http://www.nativeweb.org/pages/legal/shoshone/ili-report.html (accessed March 5, 2005).

[141] *United States v. Dann*, 470 U.S. 39 (1985).

[142] *Western Shoshone Claims Distribution Act of 2003,* 108th Cong., 1st sess., H.R. 884.

In addition to contesting the ICC rulings, the *U.S. v Dann* decision, and the distribution bill, the Western Shoshone have pursued two other avenues in their land claims. In 1993, the Western Shoshone National Council, the Dann sisters, and several individual bands, filed a claim with the UN Inter-American Commission on Human Rights. A January 2003 report of the UN's Inter-American Commission on Human Rights concluded that the U.S. claim to Western Shoshone lands is illegal and violates international human rights law. Though the report was released in 2003, after the site authorization hearings, the claim was in process during the site authorization hearings.[143] More recently, in March 2005, the Western Shoshone filed a lawsuit against the federal government, the Secretary of Energy, and the Secretary of the Interior calling for them to halt the Yucca Mountain project on the ground that it violates the Ruby Valley Treaty.[144] This complicated legal history demonstrates that the land and land use determined by the 1863 treaty is contested. Therefore, the proposed Yucca Mountain Waste Repository would be on contested land.

With an understanding of the contested land ownership of Yucca Mountain, I now turn to evaluation of the arguments made by American Indian tribes about this struggle. I first offer some examples of arguments that draw upon the Treaty of Ruby Valley. Then I identify the values and loci of the preferable in these arguments. Finally, I contrast American Indian arguments, values, and loci with the federal government's responses to these arguments, values and loci.

In arguing against the Yucca Mountain site, the Western Shoshone and other tribes invoke the 1863 Ruby Valley Treaty of Peace and Friendship.[145] Western Shoshone Spiritual Leader Corbin Harney states, "The land that you guys are talking about, the DOE, we still haven't heard from the federal government or the state that they own the land. Under the Treaty of 1863, we still own it under your federal

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[143] Amnesty International, *Indigenous Rights are Human Rights.*

[144] Western Shoshone National Council, "Western Shoshone Nation Uses 1863 Treaty;" Rogers, "Western Shoshones file Yucca lawsuit."

[145] The Ruby Valley Treaty was also mentioned in many non-Indian statements and comments. Moreover, one of the form letters that I discovered in the public comments, included a line about the Yucca Mountain site being in violation of the treaty.

law."[146] In another statement, Bill Helmer of the environmental office of Timbisha Shoshone Tribe argues, "The Yucca Mountain project is illegally being proposed on Western Shoshone lands without Western Shoshone approval. This is a violation of the Treaty of Ruby Valley, and tribal sovereignty. In addition, the Western Shoshone National Council of which the Timbisha Shoshone Tribe is a member declared in 1995 that all Western Shoshone lands were a nuclear-free zone, thus barring the storage, use or disposal of all radioactive materials."[147]

Harney, Helmer and others argue that the Yucca Mountain project should not go forward because it is in violation of the Treaty of Ruby Valley and tribal sovereignty. That is, Yucca Mountain is part of the land-base of the Western Shoshone, and the federal government's use of the land violates the Ruby Valley Treaty and sovereignty. In putting forth this argument, the arguers assume a value of the law, specifically the treaty and the legal concept of sovereignty. To value a legal statute such as a treaty implies the locus of the existent that "affirms the superiority of that which exists, the actual, or the real, over the possible, the contingent, or impossible."[148] In this case, the Western Shoshone cite existent legal proof to support their claim to the land and the resulting call for a halt to the Yucca Mountain Project.

As discussed above, however, Yucca Mountain land is contested. The federal government also values the law and draws from different legal forms of proof to support the arguments that the Western Shoshone lost title to the land. For example, in the *Site Recommendation Comment Summary Document*, the DOE states:

> A 1985 U.S. Supreme Court decision (United States v. Dann, 470 U.S. 39 (1985)) held that the Western Shoshone claim to

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[146] U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation of Yucca Mountain,* reporter's transcript of proceedings taken on Wednesday, December 5, 2001 at 3:00 p.m. at Bob Rudd Community Center, Pahrump, NV, reported by Kevin W, McDaniel, CCR #711, 7.

[147] U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation of Yucca Mountain,* reporter's transcript of proceedings taken on Wednesday, October 10, 2001 at 3:00-9:00 p.m. at Longstreet Inn and Casino, Amargosa Valley, NV, reported by Mary Cox Daniel, CCR #710 and Kevin Wm. Daniel, CCR #711, 95.

[148] Perelman and Olbrechts-Tyteca, 94.

> land associated with the Ruby Valley Treaty of 1863 has been extinguished, and that fair compensation has been made. The DOE understands that the Western Shoshone maintain that the Ruby Valley Treaty of 1863 gives them rights to 97,000 square kilometers (37,000 square miles) in Nevada, including the Yucca Mountain region. However, in 1977, the Indian Claims Commission granted a final award to the Western Shoshone people, who dispute the Commission's findings and have not accepted the monetary award for the lands in question. In United States v. Dann, the Supreme Court ruled that even though the money has not been distributed, the United States has met its obligations with the Indian Claims Commission's final award and, as a consequence, the aboriginal title to the land has been extinguished.[149]

As with the arguments about the Treaty of Ruby Valley, the DOE's arguments are based in legal statute, and assume a value of law.

Therefore, concerning ownership of the land, both the Western Shoshone and the federal government use legal proof to support their claim to the land. Both imply a value of Western law and use the locus of the existent, assuming that to uphold the law, one must conform to existing legal documents. However, identifying that both sides value the law and draw upon the locus of the existent does not resolve how each side can value the law and extant legal documents, yet cite different legal evidence and come to different conclusions. Though we might argue that each side prefers the legal evidence that supports their argument, this is an incomplete answer. Looking more closely at the choice of which legal statutes are invoked gives us a better understanding of the implicit loci, or standards, in each side's arguments and the interest at stake for each side.

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[149] U.S. Department of Energy Office of Civilian Radioactive Waste Management, *Site Recommendation Comment Summary Document* (Washington D.C., February 2002, DOE/RW-0548), http://www.ocrwm.doe.gov/documents/csd_a/index.htm (accessed January 11, 2005).

The statements of Harney, Helmer, and other American Indians cite the Ruby Valley Treaty in their claim to the land. Although, as I indicated above, the Western Shoshone have challenged the two legal rulings provided by the federal government to support the government's claim to the land (the ICC ruling and the *U.S. v. Dann* decision), in other venues these challenges are not raised in the public hearing statements and comments. Moreover, the claim that was pending at the time with the UN Inter-American council on human rights and other arguments could have been made to bolster the land claim of the Western Shoshone. Instead, all of the comments that reference the Western Shoshone claim to the land refer to the Ruby Valley Treaty.

To understand the conflict over the opposing claims of the Western Shoshone and the federal government better, reframing of each side's value of the law in light of the locus of order, instead of the locus of the existent, explains how each side can uphold the same values and yet come to different conclusions. Loci of order relate to temporality. Perelman and Olbrechts-Tyteca write that the examples of loci of order "affirm 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."[150] The Western Shoshone argument that cites the Ruby Valley Treaty depends on the locus of anterior order; the federal government's argument that cites the ICC and the *U.S. v. Dann* decision depends on the locus of posterior order.

In other words, arguments that invoke the Treaty of Ruby Valley assume a preference for the founding, early legal statutes. These arguments assume that treaties, the founding documents of the government-to-government relationship between American Indians and the United States federal government, are the supreme law guiding land ownership. Indeed, the treaties provide the clearest and strongest argument for tribal sovereignty in a legal history of dueling assimilationist and separatist policies of the federal government.[151] For tribes seeking to exercise sovereignty, drawing from the treaties and other founding documents that recognize

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[150] Perelman and Olbrechts-Tyteca, 93.

[151] Charles F. Wilkinson, *American Indians, Time, and the Law,* (New Haven: Yale University Press, 1987): 13.

the nation-to-nation status of the relationship between tribes and the federal government is superior to the later legal statutes that may not affirm sovereignty. Legal scholar Charles F. Wilkinson states that "Indian law, more than any body of law that regularly comes before the Supreme Court, is a time-warped field" because most of the basic rights that tribes assert come from treaties and other eighteenth and nineteenth-century laws.[152]

In contrast, the Department of Energy's argument that the land was ceded relies on more recent legal documents and statutes. Relying on the most recent legal statutes aligns with a view of linear progress of ideas and a more recent understanding of the law. The ICC ruling and the *U.S. v. Dann* decision do not fundamentally invalidate the Treaty of Ruby Valley, but they impose an interpretation on the treaty in light of the historical progression of American contact with American Indians in the West. In short, they prefer contemporary interpretations of a legal document to the original document.

American Indians could have made a case based on the most recent legal documents, particularly the finality clause procedural error that invalidated the government's most recent rulings or their claim under review with the UN Inter-American Commission on Human Rights. Yet, those who testified or commented on the land rights of the Western Shoshone chose only to invoke the Treaty of Ruby Valley. In part, this may be because the treaty most clearly delineates Western Shoshone title to land. However, there are current struggles over the land and more recent legal arguments available. The reference to the Ruby Valley Treaty exclusively in American Indian public hearing statements and public comments therefore reveals that in valuing the law, Western Shoshone tribal members prefer early legal statutes and the founding documents of the relationship between American Indians and the federal government. This is opposed to the federal government, in whose interest it is to challenge the early treaty doctrines that, if honored in full, would take away a significant portion of the land-mass of the United States, and also values more recent

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[152] Wilkinson. *American Indians,* 13.

laws that not only reflect the ideal of progress, but are interpretations based in contemporary Indian-federal relations.

Homeland

In addition to claims of land ownership under the Treaty of Ruby Valley, the Western Shoshone, Southern Paiute, and Owens Valley Paiute and Shoshone claim that Yucca Mountain and the surrounding area are part of their traditional homeland. The Western Shoshone are the only tribe that has a treaty-based claim to the land and this is due, in part, to the treaty process. Western Shoshone historian, Stephen Crum, argues that the current day Western Shoshone, Southern Paiute, and Owens Valley Paiute and Shoshones are part of the same ethnicity, and generally speak derivations of the same language. Prior to American contact and treaty making, the Shoshone were nomadic people who lived in tribes and bands in the entire western basin region. The land was not divided up between the different bands; rather all of them shared the land of the Great Basin region. As a result, multiple tribes claim connections to Yucca Mountain and the land surrounding it. During treaty-making and reservation creation, the Shoshones were divided into Northern, Southern, Eastern and Western Shoshone by the federal government. The Western Shoshone negotiated the Treaty of Ruby Valley in 1863 and is the only Shoshone Indian tribe with a treaty. Other tribes have reservation land that was granted under executive order. There were no boundaries of Shoshone land before Western contact, and this explains how the Southern Paiute and Owens Valley Paiute can also claim that Yucca Mountain is part of their homeland.[153]

In the public comments, members of the Las Vegas 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."[154] Similarly,

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[153] Crum; Pritzker, "The Great Basin," 220-248.

[154] U.S. Department of Energy, Hearing for Site Recommendation Consideration of the Yucca Mountain Site for Geologic Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste, reporter's transcript of proceedings taken on Wednesday, December 12, 2001 at 1:00 p.m. at Las Vegas, NV, reported by Heidi Konsten, RPR #516382, 102.

Lora Tom speaking for the five bands of the Paiute Indian Tribes of Utah, argues it is because of "the locations of our original Southern Paiute land that we're concerned the proposed YMP will sit in the heart of our lands."[155] Moreover, according to Lois Whitney, Western Shoshone and member of the Shundahai organization, "Yucca Mountain sits in the middle of my home land [sic]."[156]

Arguments that claim that Yucca Mountain is part of a tribe's homeland imply a long history with the land. This is exemplified in the statement of the tribal chair of the Lone Pine Paiute Shoshone Tribe, Rachel Johnson: "We object to the proposed siting of the repository at Yucca Mountain. The proposed site is in the homelands of our people, lands we have occupied since time immemorial."[157] Another statement, made by Edward Smith, chair of Chemehuevi Indian Tribe, highlights this temporal element of the homeland argument.

> 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...These lands are part of our people and we are part of these lands. The two [sic] connected as one and that connection is everlasting, even though we have been forced throughout history to give up and move away from many areas

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[155]U.S. Department of Energy, *Yucca Mountain Project Comments*, reporter's transcript of proceedings taken on Friday, October 5, 2001 at 2:20 p.m. at Fiesta Hotel, Las Vegas, NV, reported by Christine I. Phelps, CCR #683, 13.

[156] U.S. Department of Energy, *Science and Engineering Report for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada,* reporter's transcript of proceedings taken on Wednesday, September 5, 2001 at 6:00 p.m. at Elko Convention and Visitors Authority, Elko, NV, reported by Deborah Ann Hines, CCR #473, 9.

[157] U.S. Department of Energy, *Public Hearing Session for a Geologic Repository for the Disposal of Spent Nuclear Waste and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada,* reporter's transcript of proceedings taken on Wednesday, October 10 at 3:00-8:00 p.m. at Statham Hall, Lone Pine, CA, reported by Linda L. Jackson, CCR #2985, 11.

> of our traditional homeland. This land is and will always be Indian land.[158]

In addition to claiming that the land is valuable to these tribes because it is part of their homelands, these statements are also based in the claim that these homelands have been inhabited for thousands of years, even since "time immemorial."[159] These arguments are based in a value of the land related to a temporal connection to the land. Crum affirms that the Shoshone creation story assumes that the Shoshone have always lived on this land given to them by the Creator.[160] Their creation story is inherently linked to place. The story does not tell of movement to this place; rather it assumes that the Shoshone have been there since time immemorial. This statement again reflects the loci of order, specifically the locus of anterior order discussed above. In viewing the land, the Paiute and Shoshone tribes use the term "time immemorial" to prefer what comes first to what comes later.

In contrast, the DOE and the federal government do not consider Yucca Mountain as a part of their spiritual homeland for thousands of years. Rather, in his *Site Authorization Recommendation Report*, Secretary Abraham made the following statements: "The Yucca Mountain facility is important to achieving a number of our national goals," "A permanent repository for spent nuclear fuel is essential to our continuing to count on nuclear energy," 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."[161] In these statements, the DOE sees the land in terms of the result or telos of its use. From this perspective, the use of Yucca Mountain for a nuclear waste repository allows for progress, by solving a "problem" of nuclear technology. We can only

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[158] U.S. Department of Energy, *Yucca Mountain Project Comments*, reporter's transcript of proceedings taken on Friday, October 5, 2001 at 2:20 p.m. at Fiesta Hotel, Las Vegas, NV, reported by Christine I. Phelps, CCR #683, 23.

[159] Harney, *The Way It Is*; Pritzker, "The Great Basin," 220, 239

[160] Crum, 1.

[161] Abraham, *Recommendation.*

continue to go forward, like an arrow, and progress with our nuclear technology needs if we solve the nuclear waste crisis. Like the Shoshone, the DOE also values the land. However, instead of a value of the land that is based it being a homeland since time immemorial, the DOE values the result of the use of the land. The DOE is also basing their value of the land in the loci of order, but instead of a locus of anterior, they employ the locus of the posterior that focuses on a linear advancement of time and the telos of permanent storage.

Spirituality

Although several tribes claim spiritual connections with Yucca Mountain, in a series of public hearing testimonies, Calvin Meyers, chair of the Las Vegas Paiute, provided the most vivid description of how the Yucca Mountain project would affect Las Vegas Paiute spirituality. Meyers explains how Yucca Mountain and the surrounding area is part of a path to the afterlife for Southern Paiutes. The project would disturb Yucca Mountain by filling it with radioactive waste, and even waste transportation through the path can affect it. He states,

> The transportation of nuclear waste will go across a very important trail of ours that when we die... [will] take us to the next place where we're supposed to be...We don't know what will happen to us. Will I be a Paiute then? ...Spirituality is something I hold dear, because without my spirituality, I am not a Paiute. Without being able to say that I can go to my hereafter, I can no longer say that I am a Paiute.[162]

Again, we see an argument based on value of the land. The Las Vegas Paiute value Yucca Mountain and the surrounding area because it is part of a spiritual path to the afterlife. The land is valued for its unique quality.

Perelman and Olbrechts-Tyteca state that the locus of quality involves linking a concrete value to the unique; "what we consider as a concrete value seems to us

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[162] U.S. Department of Energy, *Hearing for Site Recommendation Consideration of the Yucca Mountain Site for Geologic Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste,* reporter's transcript of proceedings taken on Wednesday, December 12, 2001 at 1:00 p.m. at Las Vegas, NV, reported by Heidi Konsten, RPR #516382, 179-80.

unique, but it is what appears unique that becomes precious to us."[163] In this case, Yucca Mountain is considered unique because of its spiritual qualities that are precious to the Las Vegas Paiute and other tribes. Specifically, the value of Yucca Mountain for its spiritual properties draws from the locus of the irreparable, and includes the "certitude that the effects, whether or not they were wanted, will continue indefinitely."[164] Meyers employs the locus of the irreparable when he states that if the path to the afterlife is disrupted, his spirituality will be lost and he will no longer be a Paiute. Using one of the loci of quality, the locus of the irreparable, the abstract value of land is made into a concrete value of Yucca Mountain and the surrounding area, and the value is based in the underlying value or preference for preserving the unique and preventing the irreparable.

Using the loci of quality to analyze this discourse can help us to understand the American Indian spiritual connection to the land and the way that connection is reflected in the value they place on the land. Though the example I gave is from the Las Vegas Paiute tribe, other tribes also feel spiritual connections to Yucca Mountain. For example, Jessica Bacoch, Tribal Chair, Big Pine Paiute Tribe of the Owens Valley states, "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."[165] The spiritual connection to the land is based in a belief that the land has unique qualities that will cease to exist if the Yucca Mountain repository is built.

Although the DOE, in the *Comment Summary Document*, recognizes that the area holds cultural and spiritual significance for tribes, they argue that through the Native American Interaction Program and the CGTO, they have considered the perspectives of American Indian tribes, The DOE also argues that the restrictions on

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[163] Perelman and Olbrechts-Tyteca, 89.

[164] Perelman and Olbrechts-Tyteca, 90.

[165] Jessica Bacoch, *Letter to the Department of Energy* (October 3, 2001, public comment #330076) http://www.ocrwm.doe.gov/documents/sr_comm/sr_pdf/330076.pdf (accessed January 20, 2005).

the area, because it is the proposed repository site, have actually helped to preserve cultural resources on the land. In response to arguments about the spiritual nature of the land, the DOE states

> The DOE acknowledges in the FEIS that 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"[166]

What is striking about this response is that, first, they admit that there will be an intrusion into a cultural and spiritual center for American Indian tribes, and secondly, they argue that they also protect the area through its restricted access. In analyzing this response, it is important to consider it in the context of the eventual site authorization decision by Secretary Abraham. Because the site was recommended, the DOE did not consider this intrusion a cost that would outweigh going forward with the project. Recall that the Secretary of Energy made his decision based, in part, on whether there were counter-arguments.[167] This reflects an underlying assumption of the loci of quantity, the greatest good for the greatest amount of people. Though they recognize the impact on spirituality, it does not outweigh the case for going forward. The project, the federal government argues, will benefit the entire country because it is in the national interest.

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[166] U.S. Department of Energy, *Site Recommendation Comment Summary Document*, section 3.3.

[167] Abraham, *Recommendation.*

In contrast, drawing from the loci of essence, which Perelman and Olbrechts-Tyteca describe as valuing individuals to the extent that they embody the essence of something, American Indian statements and comments, in a form of prolepsis, address this issue of the importance of spirituality and the possibility for compensation for the impacts that the repository will have on American Indian spirituality.[168] As shown above, Meyers claims that without his spirituality he will no longer be a Paiute, thus spirituality is the essence from which an individual is defined as Paiute. He continues, "Some of these do not have—they are not mitigatable such as spirituality and even the essence of being the Paiute, there's not mitigation to those two issues because that's not—the Department of Energy, the United States does not have enough money to mitigate this. There's nothing that we would accept."[169] In arguing that the nuclear waste repository at Yucca Mountain would disrupt tribal spirituality, Meyers also claims that American Indian spiritual connections to the land should be valued because spirituality is the essence of being a Paiute.[170] This is also related to the locus of the irreparable in that if one's spirituality is taken away, it is gone forever. Meyers expresses that there is nothing they would accept to replace the loss of essence; once it is gone, it is irreparable.

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[168] Perelman and Olbrechts-Tyteca, 94.

[169] U.S. Department of Energy, *Yucca Mountain Project Comments*, reporter's transcript of proceedings taken on Friday, October 5, 2001 at 2:20 p.m. at Fiesta Hotel, Las Vegas, NV, reported by Christine I. Phelps, CCR #683, 80.

[170] Meyers' argument about the essence of being Paiute may be considered an essentialist argument. In light of the theoretical warnings against essentializing, it is important to note that I am not making claims as to the essence of Paiute or other tribal groups, rather, these are the claims of those testifying. Moreover, feminist theorists have recognized that "strategic essentialism" may be a valuable tool in social movements, especially as used by members of the essentialized group. Noel Sturgeon states that "Additional complexities [in the critique of essentialism] appear if we acknowledge that particular strategic essentialisms may have positive oppositional ends, even while they may limit radical results; or, if we posit that politically well-intentioned anti-essentialisms may have destructive consequences for a promising social movement" (10). Gayatari Spivak, in an interview with E. Rooney, warns that strategic essentialism must be coupled with recognition of the risks of essentialism, even if this seems counterproductive to the movement, else we risk being frozen in the essentialized position. See: Noel Sturgeon, *Ecofeminist Natures: Race, Gender, Feminist Theory, and Political Action,* (New York: Routledge, 1997), 10; Gayatari C. Spivak & Ellen Rooney, "In a word. Interview," *Differences* 1 (1989): 127.

The DOE's response that they have actually helped to preserve the land is puzzling when we consider the nature of American Indian spirituality. If we view plants, animals, and the mountain as resources in need of protection and preservation, then the argument for restricting access to the area makes intuitive sense. If no one can access the area, it will be protected and shielded like a cultural artifact at a museum. As is, anyone who wants to use or visit the mountain needs permission. Members of the public can tour the mountain and the repository site through DOE-arranged tours such as the one I attended in September 2004 (though the tour includes no mention of American Indian resources and spiritual connection to the land). Through the Native American Interaction Program, the DOE invited select tribal elders to visit the mountain and inventory the plants and animals that have cultural significance to the tribes, which resulted in a CGTO publication.[171] However, inviting elders to inventory resources on the land is not the same as allowing access to the land for spiritual ceremonies. While restricting access may help to protect plants and animals from being depleted, this does not acknowledge the argument made by Meyers, Bacoch, and others that using the mountain to store nuclear waste disrupts the spirits that dwell in the plants and the animals and disrupts the Southern Paiute path to the afterlife.

Edward Smith, chair of Chemehuevi Southern Paiute Tribe, acts to address this issue and anticipates the response given by the DOE in the comment summary document. He 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. It is part of the lands that our Creator gave to us. It is a powerful place. We have been prevented from using it and caring for it. The government has disturbed the area for half a century.

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[171] American Indian Writers Subgroup Consolidated Group of Tribes and Organizations, *American Indian Perspectives.*

> Archaeologists have thousands of objects that were left by our ancestors; they were supposed to be left out there. They are offerings to the land.[172]

This directly refutes the DOE's claim that the restricted access is helping to preserve sacred sites at and around Yucca Mountain. Indeed, he argues that archaeological work has actually removed important offerings from the land. Paiute spirituality requires access to the land so that they can care for it, not protection of the land by the DOE.

Land-Use

Charles F. Wilkinson argues that most American Indian tribes have a spiritual and physical connection to land with strong ties to environmental protection of the land.[173] Unlike many non-Native religions in America, he 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 them by their creator."[174] Vine Deloria Jr. adds, "American Indians hold their land—places—as having the highest possible meaning, and all their statements are made with this reference point in mind."[175] Public hearing statements and public comments reveal the importance of land and place in American Indian arguments against the site.

Edward Smith, chair of Chemehuevi Southern Paiute Tribe, articulates the responsibility to care for the land by saying "Our people were created on these lands. 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

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[172] U.S. Department of Energy, *Yucca Mountain Project Comments*, reporter's transcript of proceedings taken on Friday, October 5, 2001 at 2:20 p.m. at Fiesta Hotel, Las Vegas, NV, reported by Christine I. Phelps, CCR #683, 24-25.

[173] Wilkinson, *Indian Tribes.*

[174] Wilkinson, *Indian Tribes*, 50.

[175] Vine Deloria Jr. *God is Red: A Native View of Religion* (Golden, Col.: Fulcrum Publishing, 1992): 62.

they provide to sustain life."[176] This responsibility is linked to spirituality, providing for future generations, and life.

This implies a land-use policy that recognizes the importance of the resources on the land for survival of both current and future generations. Edward Smith states, "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."[177] Lorinda Sam, environmental director for Ely Shoshone Tribe also emphasizes the importance of the resources of the land to survival, "As Western Shoshone people, we hold significant ties to the land. We use the land and its resources for our existence. The Yucca Mountain project can destroy our resources used by tribal members such as water, wood, grasses, pinion nuts, plant for food and medicinal uses by being exposed to radiation."[178] In addition to pointing out that there are many resources in the land, Sam also states that these resources may be lost if the Yucca Mountain Project goes through and pollutes the land with radiation.

Several individuals express the concern over putting nuclear waste in Yucca Mountain because of the effect it will have on the spirits of plants, animals, and the mountain. Edward 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."[179] This also demonstrates the spiritual connections that many tribes have to the land. Marlene Begay, a member of the Walker River Paiute,

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[176] U.S. Department of Energy, *Yucca Mountain Project Comments*, reporter's transcript of proceedings taken on Friday, October 5, 2001 at 2:20 p.m. at Fiesta Hotel, Las Vegas, NV, reported by Christine I. Phelps, CCR #683, 22.

[177] Ibid., 22.

[178] U.S. Department of Energy, *Yucca Mountain Pubic Hearing White Pine*, reporter's transcript of proceedings taken on Wednesday, October 10, 2001 at 3 p.m. at Ely's Bristlecone Convention Center, 150 Sixth Street, Ely, NV 89301, reported by Wanda L. Barnes, CCR #676, 5.

[179] U.S. Department of Energy, *Yucca Mountain Project Comments*, reporter's transcript of proceedings taken on Friday, October 5, 2001 at 2:20 p.m. at Fiesta Hotel, Las Vegas, NV, reported by Christine I. Phelps, CCR #683, 25.

explains the importance of protecting Mother Earth and the consequences of delinquency in this responsibility. She states, "Putting nuclear waste in the land is polluting it and will kill Mother Earth. We have only one earth and one water. Everything is related. If we poison the earth, then we are poisoning ourselves."[180] Before discussing the loci, it is important to note that this is an instance of prosopopoeia (personification) in which the resources of the mountain, and the mountain itself, are viewed as having living characteristics. This is integrally linked to Western Shoshone, Southern Paiute, and Owens Valley Shoshone and Paiute forms of spirituality, in particular, and many forms of American Indian spirituality in general.[181] Spirits inhabit the land, plants, animals, sky, and water.

In these statements, we see a view on land-use that is based in an abstract value of the land. As was the case in the arguments about the spiritual qualities of the land, these arguments depend upon the loci of quality, the unique resources of the land, and the locus of the irreparable. Several individuals state that the Yucca Mountain project may irreparably destroy the resources of the land not only because they might lose plant and animal resources in the form of food or medicine, but also because the spirits will move away. Both would irreparably hurt the livelihood and spirituality of the tribes. The value of the land, then, is not only based in the unique resources of the land, but also in the future of the land. The locus of the irreparable presents a vision of the future that is fundamentally and irreparably changed by the siting of the nation's nuclear waste repository at Yucca Mountain.

In comparing this with the DOE's view of the land, we discover that, while both the DOE and the American Indian tribes value the land, these values differ in use because of the underlying loci that determine how and why the land is valued. In describing Yucca Mountain, the DOE's Office of Civilian Radioactive Waste Management stated, "No one lives at Yucca Mountain," and "There are no known

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[180] U.S. Department of Energy, *Public Comments on Site Recommendation for the Yucca Mountain Project*, reporter's transcript of proceedings taken on Friday, October 12, 2001 at Hawthorne, NV, reported by Nicole M. Rossy, CSR #10698, 17.

[181] See Carbaugh, "Just Listen;" Harney, *The Way It Is;* Wilkinson, *Indian Tribes.*

natural resources of commercial value at Yucca Mountain (such as precious metals, minerals, oil, etc.)."[182] These statements suggest that the federal government considers Yucca Mountain to be an isolated and barren desert, far from population centers and with no natural resources.

This view of the land could be interpreted as an argument for the unique quality of the land. Perelman and Olbrechts-Tyteca suggest, "The uniqueness of a creature or a thing depends on the manner in which we conceive our relationship with that creature or thing."[183] To the federal government the land is viewed as unique because of its location, sparseness, and lack of resources. The quality of the land is conceived of in terms of absence, that is, "there's nothing there." For the federal government, the absence of creatures or things determines a relationship with the land in which it is acceptable to store nuclear waste. The unique quality of the land is precisely that there is nothing there; the land has no commercial value. Nevertheless, the federal government can give it commercial value by siting a nuclear waste repository there. This shifts into the loci of quantity. If we add a large quantity of nuclear waste to the land, the land has value and serves the national interest. This vision of the unique qualities of the land stands in stark contrast to the statements of Sam and others that list the resources of the land that are important to the tribes. American Indians view the land as a place of presence, with many creatures and things of unique quality including spirits, plants, and animals. American Indians do not see this as a place with nothing there. The land has value because of what is already there.

The DOE's argument for siting the Waste Repository at Yucca Mountain does value the land, and their value also depends on an envisioned future, yet the perspective on land-use is based more on the loci of quantity than on the loci of quality. While we could argue that the federal government values the land for its

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[182] U.S. Department of Energy Office of Civilian Radioactive Waste Management, *Why Yucca Mountain: Remote Location* [Web page], http://www.ocrwm.doe.gov/ymp/about/remote.shtml (accessed March 7, 2004); U.S. Department of Energy Office of Civilian Radioactive Waste Management, *Why Yucca Mountain: Restricted Access* [Web page], http://www.ocrwm.doe.gov/ymp/about/restricted.shtml (accessed March 7, 2004).

[183] Perelman and Olbrechts-Tyteca, 90.

unique qualities of being isolated and barren, the perspective on the land is better described by the loci of quantity. According to Perelman and Olbrechts-Tyteca, the loci of quantity assume that "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."[184] From the perspective of the federal government, the land is valuable because of the end goal of solving the nuclear waste crisis, furthering the national interest, both of which are linked to a number of desirable ends (recall the statements about the necessity of the site to allow for continued progress) and because it benefits the nation, a greater number of people than the "handful" of opponents. Governmental land use is transient and commercial-resource-based. American Indian scholar and activist Ward Churchill contrasts the "land-linked nature of indigenous societies" with "transient, extractive corporations" who "leave whenever a given piece of real estate is used up."[185] If there are few people living there, or few resources of commercial value, there is an assumption that the small number of people around the area can move in order to benefit the larger group, and the larger goals of the nation.

However, these assumptions about land-use are antithetical to the American Indian value of the land as having a unique quality that cannot be replicated in another spot. Again, even if the DOE sees unique value in the land, it is solely from a resource-based perspective that looks to the national interest of the greatest number of people, whereas the American Indian perspective, though also resourced-based, assumes a sense of place that connects particular groups of humans with particular places. Donal Carbaugh, in his ethnographic exploration of the communicative form "just listen" among the Blackfeet reveals that particular places hold special meaning because of their resources, historical events, or spirits that inhabit these places.[186] Keith Basso argues, "*sensing* of place—is a form of cultural activity."[187] The way that

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[184] Perelman and Olbrechts-Tyteca, 83-84.

[185] Ward Churchill, "Radioactive Colonization," 276.

[186] Carbaugh, 250-270.

[187] Basso, 143.

one senses place will depend on culture and, as I have shown, the values and loci of values shared by members of a culture. Moreover, as Churchill indicates, tribes cannot just leave a place without irreparable effects on spirituality and identity. Calvin 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."[188] From the perspective of these American Indian tribes, land is valued because of its unique qualities and the unique relationship between humans and land in that particular place. Yucca Mountain is valuable because it is Yucca Mountain. It is a spiritual center. The land was given to the tribes from the creators since time immemorial; the tribes have a responsibility to care for and sustain the land for future generations, and the resources of the land are key to life and sustenance. Because of these reasons, the tribes cannot merely leave to find another place.

In evaluating arguments about land-use, both the DOE and American Indian tribes recognize the unique value of Yucca Mountain, hence drawing from the loci of quality (locus of the unique, and the locus of irreparability). Both also link this value with a vision of the future. What differentiates the two views is that the assumptions of the quality of the land are primary in American Indian arguments. Maintaining the quality of the land for them is more important than the government's argument that the repository will benefit the whole nation. The DOE, instead, uses the quality of the land as an argument for the site because it supports their larger assumption of greater good for a greater number of people (loci of quantity). Even if the land has meaning to American Indians or others living around it, the fact that it is relatively remote from the decision-making core and has a relatively low population means that a lesser number will be impacted than choosing a site in Texas (one of the other sites that was

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[188] U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation for Yucca Mountain,* reporter's transcript of proceedings taken on Friday, October 12, 2001 3:00-9:00 p.m. at Bob Rund Community Center, Pahrump, NV, reported by Kevin Wm. Daniel, CCR #711 and Mary Cox Daniel, CCR #711, 74.

considered prior to the 1987 decision to just evaluate Yucca Mountain) and that they are making a sacrifice for the good of the nation.[189]

In this section, I have looked at a variety of land-based arguments—treaty-based, homeland, spirituality, and land-use—that arose in the public comments and public hearing statements. It is clear that American Indians value the land. However, comparison with the Department of Energy's arguments reveals that they too value the land. The loci of the preferable allows a way to further understanding of how two sides can value the same thing and yet, because they value the thing in different ways, come to opposite conclusions. I have further evaluated the value of the land to the American Indian tribes that participated in the public comment period and by loci that reveal the underlying general assumptions that support the value. In the case of the DOE's arguments that different underlying loci explain how the government's value of the land stands in contrast to the American Indian view of the land. The American Indians use arguments that emphasize the unique qualities of the land, about origins and time immemorial, spiritual paths, and links to particular places. The DOE values the land as a way to solve a problem, move forward, and do what is best for the largest number of people. American Indian arguments for the value of land draw from the loci of anterior order and the loci of quality. First, they have inhabited the land from time immemorial and even have a treaty claim that guarantees the Western Shoshone right to this land, thus placing value on that which comes first. The land also has unique value and qualities; only in this land do they have a spiritual and historical connection. The federal government's arguments about land rely on the loci of quantity and posterior order. The locus of quantity refers to "a good thing useful to a comparatively large number of ends" and order is by the federal government for the telos or end goal of the land use.

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[189] Others have discussed this region as being viewed as a national sacrifice area, beginning with the founding of the Nuclear Test Site. Matthew Glass, "Air Force, Western Shoshone, and Mormon Rhetoric of Place and the MX Conflict," in *The Atomic West,* ed., Bruce Hevly & John M. Findlay (Seattle, University of Washington Press, 1998); Matthew Glass, *Citizens Against the MX: Public Languages in the Nuclear Age* (Urbana: University of Illinois Press, 1993); Valerie Kuletz, *The Tainted Desert: Environmental and Social Ruin in the American West* (New York: Routledge, 1998).

U.S. Federal Government-Tribal Relationship

Although the majority of American Indian arguments against the site fell into the land-based arguments theme, there are four other argument themes. Because of the importance of the value of land to American Indian opponents of the Yucca Mountain site, there will be reference to the value of the land in the four remaining themes. I now turn to the second argument theme regarding the relationship between the federal government and American Indian tribes, especially with regard to environmental decision-making.

As discussed above, the relationship between the federal government and American Indian tribes is complex. Though treaties and early American legal documents affirm that the early government viewed Indian tribes as nations, over the history of America Indian-federal government relations, we see a tension between policies that encourage self-determination and those that encourage assimilation or erode rights.[190] The relationship between the federal government and tribes is historically described as domestic dependency based on two nineteenth century Supreme Court rulings.[191] Domestic dependency, Congressional plenary power over Indian tribes, and the trust responsibility all affirm rights to self-determination, but have also granted the federal government a wide net of authority over the tribes and have been used by the federal government to enact policies, like the unilateral termination of federal protection for tribes through the termination acts, that limited tribal power and attempted to assimilate Indians into American society.[192] For instance, the trust relationship between the federal government and Indian tribes is, in

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[190] Wilkinson, *Indian Tribes,* 3.

[191] The term domestic dependent nation was used in 1831 by Chief Justice Marshall in the *Cherokee Nation v. Georgia* case to describe the relationship between tribal governments and the federal government. The implication is that Indian tribes cannot sue as foreign nations, but are still considered sovereign entities and are not subject to state laws and control. Marshall also described the domestic dependent relationship as one resembling guardian and ward. Marshall stated that his decision in *Cherokee Nation v. Georgia* and subsequent decision in *Worcester v. Georgia*, did not diminish the sovereignty of Indian nations, but allowed the Federal Government to serve as a protector. Sharon O'Brien, *American Indian Tribal Governments* (Norman: University of Oklahoma Press, 1989): 57-58.

[192]Stephen L. Pevar, *The Rights of Indians and Tribes,* 2nd ed., (Carbondale: Southern Illinois Press, 1992): 1-9; Wilkinson, *Indian Tribes*, 3-14;

theory, meant to protect Indian land ownership and ensure that federal policy is in the interest of tribes; in practice, the trust responsibility has been used by Congress to pass legislation harmful to American Indian nations.[193] Most debates about federal policy in Indian country involve discussions of self-determination, government-to-government relations, and the trust responsibility. The controversy over the Yucca Mountain repository site is no exception.

As mentioned above, the Nuclear Waste Policy Act calls for the DOE to conduct public hearings and open a public comment period in order to ascertain public opinion about the siting of the federal nuclear waste repository at Yucca Mountain. While the DOE held a public hearing for representatives of the Consolidated Group of Tribes and Organizations (CGTO), they did not conduct government-to-government consultations with tribes.[194] The CGTO was created in the 1970's by American Indians in the process of securing their rights under the American Indian Religious Freedom Act and preserving cultural resources at the Nevada Test Site. Though the CGTO is opposed to the Yucca Mountain site, a statement of opposition to the project by the CGTO is not comparable to the government-to-government consultation because, although it may contain members of tribal governments of the participating tribes, it is not an official government agency of these tribal governments.

The CGTO and other tribal representatives argue that the federal government must consult with tribes on a government-to-government basis and that interaction with the CGTO or comments and statements in the public comment period do not replace government-to-government consultation. They argue that consultation with the tribes should be different from consultation with the public and that this consultation should recognize the unique relationship between tribes and the federal government. Richard Arnold, Southern Paiute and member of the CGTO, states, "With respect to the government-to-government relations, the CGTO believes and strongly

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[193]Pevar, 26-36; Wilkinson, *Indian Tribes,* 23-31.

[194]U.S. Department of Energy, *Yucca Mountain Project Comments*, reporter's transcript of proceedings taken on Friday, October 5, 2001 at 2:20 p.m. at Fiesta Hotel, Las Vegas, NV, reported by Christine I. Phelps, CCR #683.

recommends that the Department of Energy needs to meet directly with the tribes, coming to their locations and providing invitations or offers actually to the tribes to come out at the tribes' request"[195] In addition, others argue that the tribes should be consulted outside of the public hearing process as well as outside the CGTO process. For example, Chad Smith, tribal archaeologist for the Fort Mojave Indian Tribe argues, "Indian tribes must be consulted on a government-to-government basis, not through the public scoping process. You [the DOE] need to schedule consultations and negotiations with these governments."[196] Calvin Meyers, chair of the Las Vegas Paiute, adds, "The CGTO is not government-to-government....Use of the Consolidated Group of Tribes and Organizations as government-to-government is wrong morally and ethically and I think legally because they didn't speak to the band of Paiute."[197] The argument for government-to-government consultation assumes that the federal government must respect and treat Indian tribes as the governments that they are, and conduct consultation accordingly, as opposed to just hearing their comments through the public hearing process or through CGTO representatives.

Conducting consultations on a government-to-government basis is a matter of justice for American Indians. According to Perelman and Olbrechts-Tyteca, "justice requires giving identical treatment to beings or situations of the same kind."[198] So, the argument for government-to-government interaction is warranted in a value of justice. This value is based in the assumption that the federal government and Indian tribes are beings of the same kind, that they are both governments. This is not a universally accepted assumption. Indeed, Justice Marshall's characterization of American Indian

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[195] U.S. Department of Energy, *Yucca Mountain Project Comments*, reporter's transcript of proceedings taken on Friday, October 5, 2001 at 2:20 p.m. at Fiesta Hotel, Las Vegas, NV, reported by Christine I. Phelps, CCR #683, 5.

[196] Chad Smith, *Letter to the Department of Energy*, (September 21, 2001, public comment #551117, September 2001) http://www.ymp.gov/documents/sr_comm/sr_pdf/551117.pdf (accessed January 30, 2005).

[197] U.S. Department of Energy, *Yucca Mountain Project Comments*, reporter's transcript of proceedings taken on Friday, October 5, 2001 at 2:20 p.m. at Fiesta Hotel, Las Vegas, NV, reported by Christine I. Phelps, CCR #683, 7.

[198] Perelman and Olbrechts-Tyteca, 218.

tribes as domestic dependent nations articulates a relationship in which the federal government and American Indian tribes are not beings of the same kind; domestic dependent tribes would be more analogous to states than to the federal government. Justice Marshall's characterization has influenced most American Indian policy in the United States and is likely to represent the way that the federal government views the relationship. Indeed, in American Indian law, tribes, states, and the federal government are considered three different types of governments that all interact within the United States. However, as we shall see in following arguments, some American Indian tribal chairs do not accept the title of "domestic dependent," or a sub-par status to the federal government and instead view themselves as nations on par with the United States federal government. The call for government-to-government interactions is dependent on the quality of the relationship between the federal government and tribes, and the quality of this relationship is contested. The federal government generally believes this relationship to be a domestic dependency and some of the tribes view this relationship as government-to-government, or nation to nation.

If one wants to argue that American Indian tribes deserve equal treatment because they are in the same class as the federal government, American Indians must establish that tribal governments should be viewed as equal to the federal government. This argument may not be consistent with current Indian law, but is made by Calvin Meyers in his statement at the October 12, 2001 public hearing in Pahrump. "I am the Chairman of my reservation, on my Tribal Council. I have a lot of responsibility. I have all the responsibility of the United States President does."[199] Though this argument is somewhat hyperbolic in its comparison of the responsibilities of the President to a tribal chair, it does nonetheless express the belief that both are heads of state is somewhat equal classes of government.

Regarding the comparison of responsibilities, it could be argued that the president has more responsibility because she or he serves more people, or because the

[199] U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation for Yucca Mountain,* reporter's transcript of proceedings taken on Friday, October 12, 2001 3:00-9:00 p.m. at Bob Rund Community Center, Pahrump, NV, reported by Kevin Wm. Daniel, CCR #711 and Mary Cox Daniel, CCR #711, 74.

country is larger. These arguments are based on a quantitative assessment of the responsibility (as Perelman and Olbrechts-Tyteca term it, a locus in which "the merit of a person is proportional to the number of those to whom he is serviceable"[200]). In contrast, making the argument that a tribal chair and the President are comparable, or by extension tribal government and federal government, assumes the loci of quality. Tribal governments are comparable to the federal government because they both have the unique qualities of governments such as governing councils, responsibility to govern their citizens, and constitutions. While both may value justice, and draw upon the rule of justice, the abstract value of justice is made concrete differently based on each side's definition of government and standards for evaluating what is just.

The DOE counters these arguments claiming that they have consulted with tribes and that consultation with the CGTO is equivalent to government-to-government consultation. The DOE states,

> The federal government recognizes tribal governments as sovereign entities, and DOE interacts with tribal governments on issues of mutual concern. The DOE has interacted mainly with the Consolidated Group of Tribes and Organizations, which comprises representatives of fifteen federally recognized tribes, including the three tribes that would be most directly affected by a Yucca Mountain repository: Southern Paiute, Western Shoshone, and Owens Valley Paiute and Shoshone, one nonrecognized tribe, and one organization.[201]

This implies that the DOE recognizes the governmental status of the tribes, believes that consultation with the CGTO is government-to-government interaction, and thinks that they have spoken to most of the affected tribes. This argument, like the American Indian arguments, is based in a belief in justice. However, it is a justice based in the loci of quantity and not the loci of quality. The argument is based on the locus of quantity through greater numbers in that the DOE has consulted with a large number

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[200] Perelman and Olbrechts-Tyteca, 95.

[201] U.S. Department of Energy, *Site Recommendation Comment Summary Document,* section 3.3.

of tribes, including those directly affected, they have given the tribes a just opportunity to be heard. It is also based in the locus of quality based on applying the general (what is true of a large number of cases) to the specific (fewer cases)—in this case, general comments from a consolidated group of tribes are considered superior to individual specific negotiations with individual tribes.

The point of disagreement between the American Indian arguments and the federal government's appears to be one of definition. What is the definition of government-to-government interaction? For the tribes, government-to-government consultation is individual negotiations with each tribe, and for the federal government, it is defined as consultation with the CGTO through public hearing statements and public comments. Both interpretations are based in a value of justice, with the tribes demanding justice and the DOE defending their process as just. American Indians, including members of the CGTO, evaluate justice based on the quality of interaction, drawing from the locus of the unique. The DOE, conversely, maintains that consultation with the CGTO and evaluating statements and comments from the public comment period constitutes government-to-government interaction. They evaluate justice based on the number of tribes with which they interacted, assuming the locus of the greater number and the locus of the general over the specific.

Site Authorization Process

A third theme in self-identified American Indian public comments and public hearing statements regards the site authorization decision-making process. These arguments express concerns with the DOE's process such as violating proper procedure in site authorization by not making the Final Environmental Impact Statement (FEIS) available to the public before public comment period, not providing adequate notice of meetings, and changing site suitability regulations mid-process to meet the findings of the Yucca Mountain project scientists. Unlike the previous two themes, these arguments do not come primarily from American Indian arguers, but rather, they are common arguments in the entire corpus of public comments and hearings. However, arguments within this theme are often linked to arguments about the government-to-government relationship (which is similarly an argument about

process). In this section, I will specifically focus on the concern with the public hearing process and the argument that the DOE changed regulation standards to fit the conclusion to authorize the site.

Several tribal representatives make arguments about the timing of the process, particularly notice of the hearings and the duration of the comment period. For example, Richard Arnold, Southern Paiute and CGTO representative states,

> Inadequate notice of meetings and receipt of documents has been a continuous problem that the CGTO has experienced and considering the technicalities of the issues and the documents, more time should be provided to make sure those documents are received....The comments period we believe is inadequate for the site evaluation and should be compatible with the EIS. That was six months. During that six month period of time it would allow the Department of Energy to engage in full consultation with the tribes.[202]

Barbara Durham and Bill Helmer, Tribal Administrator and Environmental Director of the Timbisha Shoshone Tribe, in letter of response to the *Yucca Mountain Preliminary Site Suitability Evaluation* add, "The inadequate comment period for the *Yucca Mountain Preliminary Site Suitability Evaluation* also undercuts adequate time for proper government-to-government consultation between the DOE and the Timbisha Shoshone Tribe."[203] Arnold, Durham, and Helmer argue that the public comment process is flawed. Though arguments against the timing of the public comment period were also put forth by members of the public and Nevada government officials, when put forth by American Indians, these arguments are linked to the argument for government-to-government consultation. Together with the previous theme, American Indians are challenging the consultation process.

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[202] U.S. Department of Energy, *Yucca Mountain Project Comments*, reporter's transcript of proceedings taken on Friday, October 5, 2001 at 2:20 p.m. at Fiesta Hotel, Las Vegas, NV, reported by Christine I. Phelps, CCR #683, 4-6.

[203] Barbara Durham & Bill Helmer, *Letter to the Department of Energy*, (October 10, 2001, public comment #330036) http://www.ocrwm.doe.gov/documents/sr_comm/sr_pdf/330036.pdf (accessed January 20, 2005).

Employing the locus of means over ends, there is a proper way of doing things, and this proper process is as important as the result. In focusing on the process, American Indian arguers assume that this flaw in the means (process) is sufficient evidence to support a claim that the end goal (the Yucca Mountain repository) is flawed and should not be pursued. Because the process is flawed, the DOE does not have sufficient information to determine the suitability of the site. Whether or not the site can be proven suitable based on scientific evidence or technical reports, these statements and comments focus on following the process. The means are crucial to and just as important as the ends. This orientation is based in the loci of order specifically, I argue, the locus of means over ends. A focus on the means looks at the present process, and analysis of the present process is inextricably linked to an evaluation of the end.

In response to arguments about the timing of the public hearing process, Secretary Abraham argues, "In light of the extensive opportunities DOE has provided for public input, it is my judgment that the opportunities for hearing and consideration of comments were abundant and met any procedural measure of fairness."[204] In the comment summary document, the DOE specifically cites all of the dates of public hearings, report release dates, extensions to the comment period, the supplemental hearings and comment period, and the number of comments received. The document concludes its response stating, "The DOE believes that the documents and information provided to the public and the time allotted for their review were sufficient to enable the public to formulate their comments regarding a possible site recommendation by the Secretary."[205] Instead of an argument that the ends are more important than the means (the opposite locus), the DOE does not concede that the public hearing process was flawed and instead demonstrates, quantitatively, that it was fair; there was a long time period and over 5000 comments were received. The DOE argues, then, that the means are justified (loci of quantity) and the ends are justified.

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[204] Abraham, *Recommendation*, 33.

[205] U.S. Department of Energy, *Site Recommendation Comment Summary*, section 4.1.

Though the DOE defends its public comment process as fair, it appears as though the American Indian claim about the timing and length of the comment period was successful because the DOE did extend the public comment period a few times and added a supplemental comment period in December 2001. In addition, in the executive summary of the Comment Summary document, the DOE states that additional hearing times were added and the first period was extended in response to requests by the public and Nevada government officials.[206]

The second argument about process that I focus on in this section regards the site suitability regulations. Alan Bacoch, member of the Big Pine Paiute Tribe of Owens Valley, asserts that the DOE created new regulations for evaluation of site suitability. He states that "the PSSE [*Preliminary Site Suitability Evaluation*] contains a preliminary evaluation of the suitability of the Yucca Mountain site for development as a geologic repository based on the DOE's proposed site suitability regulations, to be codified as 10 CFR 963. Since the DOE has an existing set of site suitability regulations, codified as 10 CFR 960, please explain why the DOE is not evaluating the Yucca Mountain site under those regulations, and providing the public the opportunity to see the DOE's evaluation of the site under those regulations."[207] Others who offer similar arguments about these regulations assert that the new regulations (10 CFR 963) ease the burden of proof for the DOE and push along the process of site authorization. This charge also draws from the locus of means and ends, asserting that the DOE has changed the means in order to achieve the desired end.

In response, Abraham defends the change in process by stating that the DOE had to change the regulatory guidelines for many reasons. He states,

> Far from seeking to manipulate its siting Guidelines to fit the site, DOE had no choice but to amend its Guidelines to conform with the new regulatory framework established at Congress's direction by the

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[206] U.S. Department of Energy, *Site Recommendation Comment Summary*, executive summary.

[207] U.S. Department of Energy, *Yucca Mountain Project Comments*, reporter's transcript of proceedings taken on Friday, October 5, 2001 at 2:20 p.m. at Fiesta Hotel, Las Vegas, NV, reported by Christine I. Phelps, CCR #683, 15.

> National Academy of Sciences, the EPA, and the NRC. Moreover, this framework represents the culmination of a carefully considered set of regulatory decisions initiated at the direction of the Congress of the United States and completed nine years later, in which top scientists in the country have participated, and in which expert regulatory authorities, the NRC and the EPA, have played the leading role. These authorities likewise agree that the new regulatory framework, of which the Department's revised Guidelines are a necessary part, forms a coherent whole well designed to protect the health and safety of the public.[208]

The regulatory change is justified, ultimately, by an appeal to the value of public safety, which is rooted in the loci of order and quantity. The locus of posterior order (telos) and the locus of the greatest good for the greatest number of people orient the belief in public safety.

These arguments by American Indians and others opposed to the site challenge the Yucca Mountain site based on procedural issues, implying that the DOE did not follow the proper process for site authorization. These arguments are based in a value of a just deliberative process and assume that the means are as important as the ends. For the DOE, the end goal is articulated as public safety. The Yucca Mountain project is meant to protect the public in many ways, and this end goal serves as a justification for the choices made in the site authorization process. Yet, even with the focus on the ends, the DOE does not concede the issue that the means were not proper or suitable.

Radioactive Risks

The fourth set of arguments is based in analysis of the risk of radioactivity from the proposed Yucca Mountain repository. American Indian tribal representatives and members argue that radiation leakages from the storage casks will reach the water supply and harm future generations, that transportation of waste puts American Indian reservations at risk for accidents, that terrorists may target the site or transportation

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[208]Abraham, *Recommendation,* 37.

routes for deliberate radioactive releases, and that radiation has affected and continues to adversely affect American Indians. These arguments, though somewhat similar to Nevada citizen and government arguments about radiation, are focused on the risks specific to American Indians.

The Timbisha Shoshone Tribe states, "Whereas the Timbisha Shoshone Tribe will be directly affected by the proposed Yucca Mountain project since the Furnace Creek parcel of the Tribe is down –gradient from the groundwater of Yucca Mountain, and the predicted radionuclide leakage from the storage casks will eventually reach the Timbisha Shoshone; and the proposed Yucca Mountain project would adversely affect the future members of the Timbisha Shoshone Tribe as well as all living things at the site vicinity."[209] Corbin Harney (Western Shoshone) and Betty Cornelius (Colorado River Tribes) also express concern that storing waste in the mountain will release radiation into the water. Note the argument is based on the underlying assumption that the site will leak dangerous levels of radiation. In most of the testimony, this assumption is not backed with actual evidence that leakage will occur and that the leakage will be dangerous. Other arguments assume that accidents or terrorist attack could result in large-scale radiation leakages on transportation routes through reservation land or at Yucca Mountain.

The DOE agrees that radiation will be released from the repository, but, citing EPA guidelines for safe levels of radiation (15 milirem for atmospheric and 4 milirem in the ground water), disputes that it will be at a dangerous level. They assert that radiation from the proposed repository will not exceed these levels. "This level of radiation exposure is comparable to, or less than ordinary variations in natural background radiation that people typically experience each year. It is also less than radiation levels to which Americans are exposed in the course of their everyday lives—in other words, radiation "doses" to which people generally give no thought at

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[209] Timbisha Shoshone Tribe, "Resolution No. 18-2001," Submitted with Barbara Durham, *Letter to the Department of Energy*, (October 17, 2001, Public comment #330095), http://www.ocrwm.doe.gov/documents/sr_comm/sr_pdf/330095.pdf (accessed January 20, 2005).

all."[210] The DOE's response shifts a conjectural stasis to one of definition. They agree that radiation will be released, but they define this release as safe.[211]

More interestingly, the Timbisha Shoshone and others frame the radiation risk in relation to future generations. In the statement above, the Timbisha are concerned with radiation because of its effects on future generations. Other members of the Timbisha Shoshone also cite the risk to future generations. Bill Helmer, from the environmental office of the Timbisha Shoshone, states, "That's morally wrong and for us now to harm future generations."[212] In addition, Barbara Durham and Bill Helmer, Timbisha Shoshone tribal administrator and environmental director, state, "It is the responsibility of the Western Shoshone of this generation to *protect* future generations, not poison them."[213] The abstract value is life and the concrete value is future generations. This value is based in the locus of preserving future generations (loci of order). This falls under the loci of order because it assumes a temporal relationship. In order to protect future generations, something has to be done now and that something is to stop the Yucca Mountain repository.

Though American Indians drew from the locus of anterior order in arguments about the land and treaty rights, this argument is based in the locus of posterior order, professing an end goal of protecting future generations. Even though it may seem contradictory to draw from both loci of order, especially when the federal government draws heavily on the locus of the posterior in showing that the Yucca Mountain site is key to solving the problem of nuclear waste and achieving our national security goals, this contradiction dissolves with further examination. First, there is a distinction between protecting future generations from radiation and creating a waste site so that

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[210]Abraham, *Recommendation*, 14.

[211] The counter argument is that the models that predict radioactive release are inaccurate and that the EPA standards for acceptable levels are set at levels that are actually harmful to people.

[212] U.S. Department of Energy, *Yucca Mountain Project Comments*, reporter's transcript of proceedings taken on Friday, October 5, 2001 at 2:20 p.m. at Fiesta Hotel, Las Vegas, NV, reported by Christine I. Phelps, CCR #683, 12.

[213] Barbara Durham & Bill Helmer, *Letter to the Department of Energy*, (October 10, 2001, public comment #330036) http://www.ocrwm.doe.gov/documents/sr_comm/sr_pdf/330036.pdf (accessed January 20, 2005).

nuclear technology can continue to progress. To understand this distinction, the loci of quality and quantity are important. Second, further consideration of the American Indian perspective on time, land, and spirituality provides insight. As discussed above, responsibility to the land given by the creator is an important part of the Western Shoshone, Southern Paiute, and Owens Valley Paiute's value of Yucca Mountain and the surrounding area. Part of the responsibility to the land is to preserve the land for future generations.

Because the site is located near the Nuclear Test Site, many references to radiation risks refer to the testing and cancerous effects of nuclear testing. Western Shoshone spiritual leader Corbin Harney states, "There are so many deaths today caused by radiation. Since 1953, there are so many deaths. A lot of my people have died from cancer. So let's not let this continue."[214] Western Shoshone National Council statements speak of the impacts of nuclear testing more explicitly. "Our experience with nuclear hazards is as victims, advocates and now as scientists. We have experienced the adverse health, social, and economic effects of radioactive contamination downwind from the Nevada Test Site. Our unfortunate experience as downwind victims informs our policy against the proposed high level nuclear waste repository at Yucca Mountain no matter how much has been spent."[215] These comments serve to historicize opposition to the Yucca Mountain repository. The collective memory of the impacts of nuclear testing on downwinders is invoked by those who oppose the Yucca Mountain site.

The radioactive risk argument theme is ultimately based on a value of life, more specifically in preserving future generations, which in turn is based on the locus of the posterior order and the locus of quantity. While the federal government disputes

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[214] U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation of Yucca Mountain,* reporter's transcript of proceedings taken on Wednesday, October 10, 2001 at 3:00-9:00 p.m. at Longstreet Inn and Casino, Amargosa Valley, NV, reported by Mary Cox Daniel, CCR #710 and Kevin Wm. Daniel, CCR #711, 5.

[215] Western Shoshone National Council, *Comments of the Western Shoshone National Council on the Possible Recommendation of Proposed High Level Nuclear Waste Repository at Yucca Mountain* (September 5, 2001, public comment #330001) http://www.ocrwm.doe.gov/documents/sr_comm/sr_pdf/330001.pdf (accessed January 20, 2005).

the level of risk (drawing upon a quantitative threshold to determine the safety of radiation), their advocacy of the Yucca Mountain project is also based in the locus of posterior order and the locus of quantity; that is, the Yucca Mountain project, though it may adversely affect some individuals, is in the best interest of the nation as whole and helps the nation continue to develop nuclear technology.

Scientific Basis for the Site

The final argument theme challenges the science and technology that supports site authorization. Most of the tribes reject the science presented by the federal government and assume that science has been manipulated to guarantee site authorization. Chad Smith, the tribal archeologist for the Fort Mojave Indian Tribe, states, "We do not accept the validity of the nearsighted scientific studies or the flawed Environmental Impact Statement process your office has attempted to impose upon the people of the State of Nevada and Indian Tribes upon whose ancestral lands this project is proposed."[216] Arguments varied and included arguments that the science is difficult to understand, arguments that challenge the scientific models, arguments that identify of geologic dangers such as volcanism, groundwater contamination, and earthquakes, and arguments that assert that site authorization is moved by politics and not science.[217]

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[216] Chad Smith, *Letter to the Department of Energy* (September 21, 2001, public comment #551862) http://www.ocrwm.doe.gov/documents/sr_comm/sr_pdf/551117.pdf (accessed January 20, 2005).

[217] Barbara Durham & Bill Helmer, *Letter to the Department of Energy*, (October 10, 2001, public comment #330036), http://www.ocrwm.doe.gov/documents/sr_comm/sr_pdf/330036.pdf (accessed January 20, 2005); Russell Jim, Yakama Nation Comments on the Yucca Mountain Site Suitability Evaluation, (September 20, 2001, public comment #550991), http://www.ocrwm.doe.gov/documents/sr_comm/sr_pdf/550764.pdf (accessed January 20, 2005); Testimony of Marlene Begay, U.S. Department of Energy, *Public Comments on Site Recommendation for the Yucca Mountain Project*, reporter's transcript of proceedings taken on Friday, October 12, 2001 at Hawthorne, NV, reported by Nicole M. Rossy, CSR #10698; Testimony of Bill Helmer, U.S. Department of Energy, *Yucca Mountain Project Comments*, reporter's transcript of proceedings taken on Friday, October 5, 2001 at 2:20 p.m. at Fiesta Hotel, Las Vegas, NV, reported by Christine I. Phelps, CCR #683, 11-12; Testimony of Chad Smith, U.S. Department of Energy, *Yucca Mountain Project Comments*, reporter's transcript of proceedings taken on Friday, October 5, 2001 at 2:20 p.m. at Fiesta Hotel, Las Vegas, NV, reported by Christine I. Phelps, CCR #683, 26; Western Shoshone National Council, *Comments of the Western Shoshone National Council on the Possible Recommendation of Proposed High Level Nuclear Waste Repository at Yucca Mountain* (September 5, 2001, public comment #330001) http://www.ocrwm.doe.gov/documents/sr_comm/sr_pdf/330001.pdf (accessed January 20, 2005).

Though the arguments about the scientific basis for the site are similar to arguments made by Nevada citizens and government (and will be considered in more detail in chapter three), American Indians who submitted comments or spoke at the hearings also made arguments about how to evaluate arguments. In response to scientific proof of the safety of the site, Calvin Meyers, chair of the Las Vegas Paiute, states that he believes in the advice of a medicine man: "I have read a long time ago and I believe this, because it came from the medicine man, that before the government or anybody else even messed with the—with radiation, they were told not to bother with it because they don't know what to do with it. They don't what it can do to them. They don't know how to get rid of it."[218] This indicates a different value of knowledge. While the tribes certainly employ scientific evidence and challenge the science that supports the Yucca Mountain project, Meyers and others also value the collective knowledge of the tribe. In his book, *Red Earth White Lies*, Vine Deloria Jr. challenges the predominance of Western scientific thought and the public's blind acceptance of scientific fact as "truth." His book posits an alternative to Western scientific knowledge that draws from both science and traditional tribal knowledge.[219]

Scholarship that discusses the role of science in public deliberation states that science often dominates decision-making while non-scientific, pathos-based arguments made by the public are viewed as less important.[220] American Indian arguments represent an alternate perspective on knowledge that displaces the superiority of science, not eliminating it, but adding to it with other knowledge. A strict value of science, as seen in the DOE's justification for the site, is consistent with the emphasis on the locus of posterior order and the locus of quantity. Science and knowledge are continually advancing and progressing to meet the goals of society, just

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[218] U.S. Department of Energy, *Hearing for Site Recommendation Consideration of the Yucca Mountain Site for Geologic Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste,* reporter's transcript of proceedings taken on Wednesday, December 12, 2001 at 1:00 p.m. at Las Vegas, NV, reported by Heidi Konsten, RPR #516382, 181.

[219] Vine Deloria Jr., *Red Earth White Lies: Native Americans and the Myth of Scientific Fact* (Golden, Col.: Fulcrum Publishing, 1997): 4.

[220] Katz and Miller, "The Low-Level," 111-140; Waddell, "The Role of Pathos," 381-400; Waddell, "Saving the Great Lakes," 141-165.

as the Yucca Mountain project, firmly rooted in science, is an end that allows us to achieve our national goals. On the other hand, American Indian systems of knowledge incorporate science and traditional knowledge.

Conclusion

In this chapter, I have identified and examined the predominant five argument themes in self-identified American Indian testimony and public comment. These themes are land-based arguments, U.S.-Tribal relationship, process-based arguments, radiation risks, and challenges to the "sound science" of the DOE. The first two themes are most unique to American Indians and the last three are common arguments made by Nevada citizens and government. However, even though challenges to process, comments on radioactive risk, and rejection of DOE-based scientific claims are also evident in non-Indian arguments, the way that the Western Shoshone, Southern Paiute and Owens Valley Paiute and Shoshones value the land informs the underlying assumptions of the other arguments. In analysis of each of the themes, I identified the underlying values and the loci of preferable. My reading of American Indian argument themes in the site authorization public hearings and comments yields implications for our understanding of the Yucca Mountain controversy, American Indian rhetoric, and argumentation theory.

In the controversy over the siting of the nation's nuclear waste repository at Yucca Mountain, the DOE and American Indian tribes are in conflict. While the DOE supports site authorization and the Yucca Mountain repository, American Indians, of various tribes, almost unanimously oppose the site. The primary reason for American Indian opposition concerns the land. The testimony of American Indians in public hearings and comments submitted during the public comment period reveal a strong value of Yucca Mountain and the surrounding land, as a treaty-based land claim, a homeland, a sacred spiritual site, and a place that holds resources that sustain the tribes. Through comparison with the DOE's arguments about the land including responses to American Indian arguments, we see that the federal government also values the land as a prime location to store nuclear waste because it is a remote, sparsely populated desert land that has already served as a national sacrifice area with

the nearby Nuclear Test Site. So, when both sides purportedly hold the same abstract value of the land, how do we understand and reconcile the different conclusions about whether to authorize Yucca Mountain as the high-level nuclear waste repository?

The loci of the preferable, or the underlying unstated standards for values, offer a way to explore how the same abstract value can play out differently in arguments in controversy. Perelman and Olbrechts-Tyteca argue that "as soon as we try to go into details [about abstract values], we can meet only the adherence of a particular audience" which suggests, in this case, that disagreement does not center on whether we should value the land, but how we value the land. The details differ for the federal government and American Indians and we can see these differences in the loci of the preferable. American Indian arguments generally draw from loci of quality whereas the DOE's arguments generally draw from the loci of quantity, resulting in fundamentally different interpretations of the Yucca Mountain Repository. American Indian argument themes rely on the locus of the unique and the locus of the irreparable. For them, the land is unique and inherently connected to tribes, the connection between tribes and place means that any disruption to the land, such as placing a nuclear waste repository in the mountain, will irreparably change the unique qualities of the land. For these reasons, tribes oppose the siting at Yucca Mountain. On the other hand, the DOE also sees unique qualities to the land, that it is remote and already being used as a national sacrifice area, that justify siting the repository there. These qualities are subsumed, however, in loci of quantity. The DOE recognizes the importance of the land to American Indians, but views the project as being in the national interest. Drawing on the locus of greater good for a greater number of people and the locus of a greater number of desirable outcomes, the DOE establishes that the site benefits the nation, by looking to the end goal of the project. The site is rhetorically constructed as a "solution" to the waste crisis that allows continued development of nuclear power and nuclear technologies (even though the site does not really solve the crisis because it does not have the capacity to store waste beyond what we currently have). The benefits of the site are numerous and benefit the entire nation.

Even if there are impacts on those living in close proximity to the site, these are outweighed by the benefits to the nation.

Considering the difference between the loci of quality and quantity between the DOE and American Indians, we see that, though the government values the land, that value is actually subsumed in a larger value of the national interest. Yucca Mountain, the use of the land, is just a means to an end that is defined as desirable by the DOE. Edward Smith, chair Chemehuevi Southern Paiute, speaks to the differing orientations of American Indians and the DOE on Yucca Mountain:

> I fully expect that the Yucca Mountain repository will one day be nominated and placed on the National Register of Historic Places. I would have preferred, however, that the mountain itself, as well as the surrounding area itself, be placed in the National Register as a sacred site and traditional cultural property rather than as a place that signifies the historic achievements of science. I look forward to the day when scientists, engineers, agencies, policy makers give serious consideration to, rather than simply acknowledge, the cultural value and importance of lands and resources taken for such projects to living Indian people on an equal basis with the nationwide scientific, technological, commercial and economic value currently accorded to them.[221]

Therefore, in exploring the underlying loci that support the DOE's value of the land, we discover that national interest is valued more highly than the land. On the other hand, American Indians challenge this vision of the end goal, not only by asserting the unique qualities of the land and the importance to tribes, but also by challenging the means through which the goal is being attained. Ironically, the value of the land to American Indians could also be interpreted as an argument of national interest, not of the American nation, but of the Indian nations. In addition to different interpretations of the value of the land, this part of the Yucca Mountain controversy is also tied to the

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[221] U.S. Department of Energy, *Yucca Mountain Project Comments*, reporter's transcript of proceedings taken on Friday, October 5, 2001 at 2:20 p.m. at Fiesta Hotel, Las Vegas, NV, reported by Christine I. Phelps, CCR #683, 29.

value of national interest. If, as Perelman and Olbrechts-Tyteca believe, values can serve as important starting points for argumentation, uncovering the values and loci of preferable is an important move in determining the starting points in the controversy between American Indians and the DOE.

This reading of the American Indian argument themes in the Yucca Mountain controversy also helps us to understand the rhetoric and arguments of American Indians. We should be very careful about generalizing across all American Indian tribes because each has its own distinct culture. However, in the case of the Yucca Mountain controversy, there are similar values and orientations in the comments individuals from a variety of different American Indian tribes. For example, though the land holds different specific spiritual value for different tribes, each of the tribes in the texts under study did raise arguments based in spirituality of the land in general. Perelman and Olbrechts-Tyteca 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."[222] I argue that the importance of land to American Indian nations implies a preference for the loci of quality over loci of quantity. Vine Deloria Jr. states this as an antithesis between place and time. He states,

> 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

[222] Perelman and Olbrechts-Tyteca, 85.

> from one context to the other without proper consideration of what is taking place.[223]

It is not just any land or place that is important to American Indians; rather particular places hold unique value. The relationship between humans and these places cannot be replicated in other places. On the other hand, the dominant Western culture, with more emphasis on time and progression, sees connections to particular places as ephemeral and related to resources and the role the land plays in the end goals of the nation.

In relation to argument theory, my reading furthers our understanding of the role of values in argumentation. This chapter demonstrates the complexity and interconnectedness of values in argumentation. I not only explore how opponents can have the same value and come to different conclusions, but also show how values interact with each other. There are also implications for argument criticism. Though Perelman and Olbrechts-Tyteca refer to the loci of the preferable and the loci of values as inventional resources, the loci can and have been used as an analytic tool by rhetorical critics.[224] Specifically, uncovering the loci of the preferable provides nuance to a reading of values in argument. The loci can help us to understand both how arguers that come to different conclusions can draw from the same value and how explicit values can actually serve as means to ascertain implicit values. In reading public controversy, the loci of the preferable can be used to uncover the underlying areas of disagreement so that we may then attempt to find the starting points for argumentation that may have better chances of persuading the other side than arguments that cross each other.

In addition to the role of values in argumentation, the findings of this chapter also reveal two ways of arguing that are unique to American Indian arguments in this case. First, American Indian arguments about the resources of the mountain draw heavily from prosopopoeia, which is linked back to the spiritual beliefs of American Indians in relation to the land. Second, American Indians challenge the use of

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[223] Vine Deloria, Jr., *God is Red,* 62-63.

[224] See Cox; Walker and Sillars; Warnick, "Rehabilitating AI."

scientific evidence with appeals to traditional wisdom and the elders. These appeals, as we will see, are different that the scientific arguments made by the public. American Indian arguments about science actually present an alternate way of evaluating scientific argumentation.

CHAPTER III: NEVADAN PUBLIC SCIENCE

Science is an increasingly important aspect of policy deliberation with debates over stem cell research, global warming, and other policies influenced by scientific proof. Science is of particular importance to environmental policy because much of the proof of environmental problems and proof for solutions to such problems comes from science. However, science is not the only variable to be considered in environmental decision-making. American Indian arguments against the site include both differing ways of interpreting scientific information and social and political considerations that should be evaluated. Nevada citizens in their arguments during the public comment period focus on both scientific challenges to the site and other challenges.

Recall that there are over 5000 public hearing statements and comments from the 2001 site authorization public hearings. The range of arguments made in this stakeholder group is large due, in part, to the large number of public comments by Nevadans. Moreover, unlike the American Indian comments and statements which were almost unanimously opposed to the Yucca Mountain site, Nevadan arguments include both proponents and opponents to the site who offer arguments ranging from pathos-driven personal accounts of family members who died from cancer as a result of nuclear testing, to calls for Nevadans to assume their national responsibility to store waste to protect national security, to challenges to the scientific and technical grounding for the proposed site. However, there are interesting ways in which the public raise scientific arguments such as the way that science, scientific expertise and scientific proof are constructed, contested, and contrasted with other forms of knowledge, expertise, and proof by Nevadans on both sides of the debate. This chapter focuses on these scientific arguments. Through comparison with the federal government's responses to these arguments, we gain a better understanding of the role of public rhetoric of science in environmental decision-making.

Before focusing in on public science arguments, this chapter commences with a brief description of the prominent argument themes in Nevada citizen and government public comments and hearing statements. This is followed by examination

of the public science argument theme. Toward that end, my analysis is situated within relevant literature in the burgeoning area of the rhetoric of science. Then, my reading uncovers the ways in which science, scientific expertise, and scientific proof are rhetorically constructed by Nevadans in public hearing statements and public comments. The chapter concludes with consideration of the theoretical and practical implications of public science for the Yucca Mountain controversy and other environmental controversies.

Nevadan Argument Themes

As mentioned above, Nevadans have mixed responses to and a variety of arguments for and against the Yucca Mountain site. The majority of Nevadans oppose the Yucca Mountain site becoming the future national high-level nuclear waste repository.[225] In addition to the public, the majority of Nevada government officials (from local mayors to U.S. Senators) oppose the site. Indeed, long-time opponent of the Yucca Mountain project Harry Reid stated upon assuming his new position as Senate Minority Leader, "I'll continue to fight as hard as I can on Yucca Mountain."[226] Though the majority of Nevadans oppose the Yucca Mountain site, there are also staunch advocates for the site. The main arguments advanced by both opponents and proponents can be seen in an examination of site authorization hearing statements, public comments, and DOE comment summary documents.

Opponent arguments against the Yucca Mountain site generally fell into the following categories:

1. opposition to nuclear industry (and arguments for alternatives to nuclear power)
2. distrust of the DOE (comparisons to past projects like nuclear testing and accusations of secrecy)

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[225] The most recent poll, as of this writing, was a poll conducted by Public Opinion Strategies and commissioned by Nevada Senators Harry Reid and John Ensign which found that 70 percent of Nevadans oppose the Yucca Mountain repository site (+/-4 margin of error). Steve Tetreault, "Poll: Nevadans Remain Opposed to Yucca Mountain, *Las Vegas Review Journal,* December 19, 2004, 4B.

[226] Erica Werner, "Reid Vows to Continue Fight on Yucca Mountain as Minority Leader," *Associated Press State & Local Wire,* November 16, 2004.

3. challenges to the repository site design (flaws in site design, technical aspects)
4. claims that the site is based on faulty science (geology, hydrology, nuclear physics)
5. hostility to the site authorization process (regulations, laws, and public involvement)
6. arguments that nuclear waste storage results in public health and safety risks (transportation, terrorism, radiation releases, accidents)
7. arguments about the fairness of siting in Nevada, and concerns about environmental justice (mainly focused on Native Americans in the area).[227]

Each of these argument themes includes many different arguments against the site. Moreover, individual statements and comments often drew from multiple themes. Though I did not count the number of arguments within these themes, my reading suggests that, in line with public opinion, arguments against the Yucca Mountain site are more prominent than those in favor of the site.

Yucca Mountain site proponents generally defended or rearticulated the results of the federal government's conclusions. In addition, many of the proponent comments also appear to be designed to argue with other members of the public. Proponent arguments fell in the following categories:

1. arguments about the nuclear waste crisis and its effects on the continuation of nuclear power and national security
2. arguments about responsibility to have the site in Nevada to benefit the rest of the nation
3. arguments concerning placement of the site in what is already a nuclear wasteland from past nuclear testing
4. arguments about economic benefits to the state
5. arguments regarding inevitability of the site

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[227] These categorizations are based in both my reading of the primary public and government comments and my reading of the DOE's categorization in their comment summary documents. There are arguments that either do not fit into any of these categories or fit into multiple categories.

6. defenses of the DOE's scientific and technical arguments

As in the case of opponent argument themes, each of these themes includes many different arguments against the site and individual comments often drew from multiple themes.

Science played a prominent role in both opponent and proponent arguments about the Yucca Mountain site for a few reasons. First, the main decision criterion for site authorization is that the Secretary of Energy determines if the site is scientifically and technically suitable for geologic high-level nuclear waste storage. Secondly, the DOE released two documents for public review during the public comment period, both of which emphasized the scientific and technical basis for the site. The *Yucca Mountain Science and Engineering Report* was released on May 7, 2001 along with a Federal Register Notice that announced the public comment period and stated "The Department intends for the [*Yucca Mountain Science and Engineering Report*] and its supporting documents, to be used by the public as an aid in providing comments on the technical information and data underlying the Department's consideration of a possible recommendation of the site."[228] Later, on August 21, 2001, the DOE issued the *Yucca Mountain Preliminary Site Suitability Evaluation* (PSSE), a technical document that justifies the site and reviews the DOE's site suitability guidelines (10 CFR Part 963).[229] Finally, in his call for public comments, Lake H. Barrett, acting director of the Office of Civilian Radioactive Waste Management, suggested topics for comment on the Yucca Mountain PSSE including the radiation standard and the adequacy of the findings of the PSSE.[230] Though there were a wide variety of

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[228] U.S. Department of Energy Office of Civilian Radioactive Waste Management, "Yucca Mountain Science and Engineering Report; Site Recommendation Consideration and Request for Comment," 23013.

[229] The Preliminary Site Suitability Evaluation is no longer available. See: Department of Energy, Office of Civilian Radioactive Waste Management, *Yucca Mountain Site Suitability Evaluation,* (February 2002, DOE/RW-0549) http://www.ymp.gov/documents/sse_a/index.htm (accessed February 13, 2005).

[230] U.S. Department of Energy Office of Civilian Radioactive Waste Management, "Site Recommendation Consideration; Suggested Topics for Public Comment Process," *Federal Register* 66 (169), August 30, 2001, http://www.ocrwm.doe.gov/newsroom/documents/topics_frn.pdf (accessed February 13, 2005): 45845.

argument themes, some of which were procedural or pathos-driven, many of the comments and statements specifically responded to these documents or questions, or more generally addressed the scientific and technical basis of the site.

Situating Public Science

Before discussing my findings, it is important to discuss the rhetoric of public science, a concept that became important and developed in relation to the texts. The rhetoric of public science is part of the larger study of the rhetoric of science and is both rooted in literature in the field and explicated in aspects of this particular case. The term rhetoric of science casts a wide umbrella under which critics and theorists engage such topics as the rhetorical nature of science, debates between scientists, and communicating science to the public. Though the rhetoric of science is a broad area of inquiry, for the purposes of this study, I am particularly concerned with the role of science, scientific expertise, and scientific proof in public controversy. Philip Wander distinguished scientific rhetoric in public deliberation as a particular form of rhetoric that merits study because the technical and esoteric nature of scientific knowledge can overwhelm, intimidate, or silence the common citizen's voice in policy deliberation.[231] This, however, assumes that the science in public policy debates is offered by scientific experts and is meant to educate the public. In this chapter, I argue for the study of public science, that is, the role of science in the rhetoric of the public, by analyzing a case study of the ways that science is used by members of the Nevada public in their arguments for or against the Yucca Mountain site. Before turning to this case, in this section, I situate the study of public science in previous literature.

One Way or Dialogic

Much of the work that has been done in the rhetoric of public science focuses on the public's understanding of science as communicated to them.[232] This is often

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[231] Philip C. Wander, "The Rhetoric of Science," *Journal of the Western Speech Communication Association* 40 (1976): 226-235.

[232] Carol Reeves, "Owning a Virus: The Rhetoric of Scientific Discovery Accounts," in *Landmark Essays on Rhetoric of Science: Case Studies,* ed., R. A. Harris (Mahwah, NJ: Hermagoras Press, 1997): 151-165; Craig Waddell, "The Role of Pathos," 381-400; Richard M. Weaver, "Dialectic and Rhetoric at Dayton, Tennessee," in *Landmark Essays on Rhetoric of Science: Case Studies,* ed., R. A. Harris (Mahwah, NJ: Hermagoras Press, 1997): 107-125.

conceptualized by scientists, policy-makers, and the public as a one-way model of information transfer from scientists or technical experts to the lay public for the purpose of policy-making, education, or crisis management. One of the important contributions of the rhetoric of science literature has been a challenge to this one-way model of communication. For example, Wynne argues, "the public understanding of science represents an interactive process between lay people and experts rather than a narrowly didactic or one-way transmission of information."[233] Ideally, in the case of public participation in policy-making decisions, discussion of science should be a dialogic interactive process.

The fact that policy-making agencies conceptualize public participation in environmental decision-making as a chance to educate the public about the scientific and technical grounding for policies such as the Yucca Mountain Repository is demonstrated by section 114(a)(1) of the NWPA mandates that "the Secretary shall hold public hearings in the vicinity of the Yucca Mountain site for the purposes of informing the residents in the area of such consideration and receiving their comments."[234] In addition, my reading of the public hearing archives reveals that public hearings often began with presentations by employees of the Yucca Mountain Project about the suitability of the site and posters were arranged and staffed by employees in the lobbies of hearing locations to teach the public about the suitability of the site.[235] This suggests that the DOE may have viewed the public comment period, in part, as a way to educate the public about the scientific and technical justification of the site. Despite this informative element of the public hearings, consideration of all public comments is mandated in the NWPA and the comment summary documents produced by the DOE respond to the public's arguments,

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[233] Brian Wynne, "Knowledges in Context," *Science, Technology and Human Values* 16 (1991): 114.

[234] As cited in: Department of Energy Office of Civilian Radioactive Waste Management, "Executive Summary," *Site Recommendation Comment Summary Document.*

[235] For example, Tim Sullivan, team leader for YMP, gave a presentation to open the December 5, 2001 Battle Mountain public hearing. U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation of Yucca Mountain,* reporter's transcript of proceedings taken on Wednesday, December 5, 2001 at 4:00 p.m. at 625 S. Broad, Battle Mountain, NV, reported by Lisa M. Manley, CCR #271.

suggesting a more dialogic model. The question for the Yucca Mountain case is whether the public comment period indeed fostered a dialogic interaction between the public and experts when it came to scientific and technical matters.

Scientific Reason

Another contribution to our understanding of the role of science in public deliberation is the rhetorician's challenge to the dominance of scientific reason. Thomas Farrell and Thomas Goodnight address the limitations of the technical sphere of argumentation in public discourse.[236] Alan Gross' identification of social drama in the recombinant DNA controversy also points to "the failure of technical knowledge to resolve social, ethical, or political dilemmas."[237] In his study of the Cambridge Experimentation Review Board's (CERB) discussion of recombinant DNA, Craig Waddell argues that scientists employ technical forms of argumentation in discussions with the public, in which logos is valued above ethos and pathos.[238] Scientific reason, he contends, can be problematic because rational appeals can be just as "inauthentic and deceptive" as emotional appeals are often assumed to be, lack the motive to push people to action, and can lead to immoral decisions.[239] This argument by Waddell assumes that technical reason is communicated to the public via experts and circulates in the public forum. It assumes that technical reason is one form of reason among other ethos, pathos and logos appeals, all of which should be evaluated in light of the proposed policy.

In the Yucca Mountain site authorization decision, the NWPA calls for scientific reason to be valued above other considerations through the wording that mandates that the Secretary of Energy make the site authorization decision based on the scientific and technical suitability of the site. Recognizing the importance of social and national interest considerations in the site authorization decision, Abraham, in

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[236] Farrell and Goodnight, "Accidental Rhetoric," 271-300.

[237] Alan G. Gross, "Public Debates as Failed Social Dramas: The Recombinant DNA Controversy," *Quarterly Journal of Speech* 70 (1984): 406.

[238] Waddell, "The Role of Pathos."

[239] Waddell, "The Role of Pathos," 382.

producing his site authorization report, stated that after evaluating the scientific and technical suitability of the site, he would also look to the national interest and perform a cost benefit analysis with counter-arguments.[240] Though this recognizes the complexity of policy decision-making, scientific and technical proof is still valued over the other considerations. More importantly, the scientific and technical suitability is evaluated by looking at one set of arguments only; he does not consider science as discussed by public participants in the environmental decision-making process. This chapter will ask how technical proof is used and valued by the public.

Science and the EIS

Returning to Waddell's point that appeals to scientific reason can be just as "inauthentic and deceptive" as ethos and pathos are often assumed to be, scholarship that explores the role of Environmental Impact Statements (EIS) in environmental policy-making and public participation in decision-making reveals that scientific and technical proof and expertise may be linked to pre-determined policy objectives.[241] Jimmie Killingsworth and Jacqueline Palmer argue that scientific experts in the EIS environmental policy are complicit in "sustaining governmental control and perpetuating a rational social order"[242] Understanding Environmental Impact Statements as rhetorical documents allows us to evaluate the scientific and technical proof and expertise constructed in these documents in relation to the government's

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[240] Abraham, *Recommendation.*

[241] This claim extends beyond the Environmental Impact Statement. Gordon Mitchell, in his book on the controversy over missile defense technology, reveals that contracted "boutique" scientists produce research that conforms to policy objectives, such as minimizing the effectiveness of technology to avoid accusations of violating the ABM Treaty. More recently, the Union of Concerned Scientists released a report stating that the Bush administration suppresses or manipulates scientific evidence that goes against the administration's policy objectives, and pressures administrative agencies, such as the EPA, to produce results that support policy objectives. See Gordon R. Mitchell, *Strategic Deception: Rhetoric, Science, and Politics in Missile Defense Advocacy* (East Lansing: Michigan State University Press, 2000); Union of Concerned Scientists, *Scientific Integrity in Policymaking: An Investigation into the Bush Administration's Misuse of Science* (March 2004) Union of Concerned Scientists, Two Battle Square, Cambridge MA, 02238-9105, 617-547-5552, http://www.ucsusa.org/documents/RSI_final_fullreport.pdf (accessed March 14, 2005).

[242] Killingsworth and Palmer, 164.

goals and needs.[243] In her analysis of Bureau of Land Management (BLM) EISs, Clare Ginger contends, "EISs can be understood as a form of argumentative discourse in which agency personnel frame issues and make normative arguments through technical analyses."[244] Moreover, in their demarcation of the EIS genre, Charles Bazerman, Joseph Little and Teri Chavkin argue that the EIS, though perceived to be meaty scientific documents, often fall short in providing extended data and scientific consensus.[245]

These essays suggest that the Environmental Impact Statement should not be taken at face value and remind us that EISs are *argumentative texts* that are filled with scientific and technical *arguments* that bolster the policy objectives of the authors. My argument is not that the science presented in EISs is inherently flawed and suspect but that the EIS and similar documents may be one of the forms of one-way information transmission between environmental decision-makers with a predetermined policy and the public. In addition to recognizing that these documents are arguments that often support policy objectives, it is important to note that these documents are meant to be presented to and evaluated by the public. The EIS process was created in response to citizen calls for more access to information in environmental decision-making.[246] Before being finalized, each EIS is presented in draft form to the public and public comments are solicited. In the case of Yucca Mountain, the Draft Environmental Impact Statement was released in 2000 and the requisite hearings occurred that same year. In her analysis of the DEIS hearings for the Yucca Mountain EIS, Jeanne Ratliff points out that though the DEIS hearings are an invitation for public participation, "In actuality, however, it is a procedure whose instrumental purpose is to ensure that a government entity—in this case the Department of Energy (DOE)—maintains control

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[243] Charles Bazerman, Joseph Little, and Teri Chavkin, "The Production of Information for Genred Activity Spaces: Informational Motives and Consequences of the Environmental Impact Statement," *Written Communication* 20:4 (2003), 467; Clare Ginger, "Discourse and Argument in Bureau of Land Management Wilderness Environmental Impact Statements," *Policy Studies Journal,* 28 (2000).

[244] Ginger, 292.

[245] Bazerman, Little, and Chavkin, 468-9.

[246] Bazerman, Little, and Chavkin.

of the system and creates a narrow path for action, treating citizen involvement as basically noise in the democratic process."[247] Public hearings are constructed as a way for the public to comment on the DEIS which, of course, assumes that they have read and evaluated the DEIS. Considering the fact that EISs do not always include full scientific data for evaluation and that EISs are often thousands of pages, this places a heavy burden on the public to formulate comments. However, the public should not have the burden of proof, which traditionally belongs to the party advocating change. This process shifts the burden of proof to the public.

Though I am not examining the EIS or the EIS public hearings in the Yucca Mountain Project, the EIS is similar to the scientific and technical documents, such as the *Yucca Mountain Science and Engineering Report* and the *Yucca Mountain Preliminary Site Suitability Evaluation*, released by the DOE prior to the site authorization public hearings. In the case of the site authorization hearings, several public hearing statements and comments refer to the lack of access to and problems with reading and understanding the scientific information released by the DOE during the public comment period.[248] For example, Nevadan Paul Vroom states in a Las Vegas public hearing, "Sadly, I'm just getting information now, probably too late, on it...I would like to see a more concerted effort to make the public aware of this process, of the information, the pros and cons, to give us a better opportunity maybe to make an informed decision on this"[249] Ratliff argues that in the Yucca Mountain and other DEIS hearings "citizens are expected to come to the table with enough scientific

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[247] Jeanne Nelson Ratliff, "The Politics of Nuclear Waste," 372.

[248] Testimony by Ralph McCrackin, U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation for Yucca Mountain* [Court reporter session], reporter's transcript of proceedings taken on Wednesday, September 5, 2001 at 6:00 p.m. at 232 Energy Way, North Las Vegas, NV, reported by Mary Cox Daniel, CCR # 710,; Testimony by Paul Vroom, U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation for Yucca Mountain* [Court reporter session], reporter's transcript of proceedings taken on Wednesday, September 5, 2001 at 6:00 p.m. at 232 Energy Way, North Las Vegas, NV, reported by Mary Cox Daniel, CCR # 710, 80-81.

[249] Testimony by Paul Vroom, U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation for Yucca Mountain* [Court reporter session], reporter's transcript of proceedings taken on Wednesday, September 5, 2001 at 6:00 p.m. at 232 Energy Way, North Las Vegas, NV, reported by Mary Cox Daniel, CCR # 710, 80-81.

knowledge to make technical comments."[250] This, I argue, is true of the site authorization hearings as well.

The EIS is one way in which scientific proof and expertise are present in environmental policy-making. Again, this is a top-down, expert to public, type of information. Research into the rhetorical nature of EISs and the expectations of public participation in relation to the EIS reveals that the EIS genre may serve to perpetuate preference for scientific proof, one-way transmission of scientific information to the public, and a silencing of public voices. Environmental politics are thus constructed as a divide between "experts who have institutionalized access to authoritative information and influence, and on the other hand, the general public whose sources of information and whose power to influence policy remains uncertain."[251] Yet, when the government expects the public to be able to make scientific and technical arguments, as is the case with the Yucca Mountain site authorization hearings, we see that the public is caught in an ironic catch-22. The public is expected to make scientific and technical comments about the site in response to the technical documents released by the DOE for public review, but the policy makers don't take these arguments seriously because either they have already made up their minds (and constructed the reports to support policy) or they make scientific and technical decisions based on their own experts. This model of scientific communication considers the public as able to absorb scientific and technical information as communicated to them from the "experts," but unable to make competent scientific and technical arguments.

Public Science

As stated above, although some rhetoricians have argued that public communication about science must be dialogic, much scholarship is still focused on public understanding of scientific information. The SAGE publications journal, *Public Understanding of Science,* is devoted to interdisciplinary conversation about how the public understands and interprets the scientific information as transmitted to them

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[250] Ratliff, 372.

[251] Killingsworth and Palmer, 163.

from scientists or through news media. For instance, sociologists Patrick Sturgis and Nick Alum explore the level of scientific knowledge in the public as a determinant of lay attitudes toward science.[252] Though much of the scholarship in the public's understanding of science comes from researchers in fields other than rhetoric, we also see that many studies in the rhetoric of science also tend to focus on public understanding of science. Instead, we need to focus on the public's use of scientific proof and expertise in public deliberation. Public science, therefore, should be defined not as the role of scientific proof and expertise from above in public deliberation but rather as the emergent scientific proof and expertise that is rhetorically constructed by members of the public in deliberation.

Studying public science involves challenging the privileged status afforded to scientific expertise and proof. Charles Alan Taylor argues that demarcation of science is an important factor in understanding the rhetoric of science. Taylor asserts the necessity of interpretations of the rhetoric of science that "do not start by privileging only those texts that scientists would label appropriately scientific."[253] Celeste Condit adds, "taking public discourse seriously also mandates that one avoid the tendency to view the inevitably messy, multifaceted, and truncated public appropriations of scientific theories as though they were different versions of the presentation of pure science that could be corrected simply by better scientific training."[254]

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[252] Patrick Sturgis and Nick Alum, "Science in Society: Re-evaluating the Deficit Model of Public Attitudes," *Public Understanding of Science* 13 (2004): 75-81. Other examples of articles that tend to focus on the public's understanding of scientific information include: Benjamin R. Bates, "Public Culture and Public Understanding of Genetics: A Focus Group Study," *Public Understanding of Science* 14 (2005): 47-65; Joshua M. Greenburg, "Creating the 'Pillars': Multiple Meanings of a Hubble Image, *Public Understanding of Science* 13 (2004): 83-95; Mike Michael, "Ignoring Science: Discourses of Ignorance in the Public Understanding of Science," in Alan Irwin and Brian Wynne, eds. *Misunderstanding Science: The Public Reconstruction of Science and Technology* (Cambridge: Cambridge University Press, 1996); Jon D. Miller, "Public Understanding of, and Attitudes Toward, Scientific Research: What We Know and What We Need to Know," *Public Understanding of Science* 13 (2004): 273-294.

[253] Charles Alan Taylor, "Defining Science: A Rhetoric of Demarcation," (Madison: University of Wisconsin Press, 1996): 14.

[254] Celeste Michelle Condit, *The Meanings of the Gene: Public Debates About Human Heredity* (Madison, University of Wisconsin Press, 1999): 12.

Recognizing and exploring the public's view of science does not mean that anything stated by the public should be considered as valid science, but it does demand that we consider these arguments, including their underlying values and logic, if we are to understand and resolve public controversy. Celeste Condit argues that

> Public discourse should be understood as appropriating science for its own ends, ends which are perfectly valid and necessary—ultimately more necessary than science itself. From this perspective, 'public rhetoric' is not what is left over after the science, logic, action or other substance is left out, as is implied by the frequent misuse of the phrase mere rhetoric. Rather, public rhetoric consists of a set of communicative interactions through which members of a community share with each other their good reasons for choosing courses of action together, where these good reasons include evidence and logic, but also necessarily, social values and affective relationships and identities.[255]

Taylor and Condit argue that to study the rhetoric of science we also need to study and give credence to the rhetoric of the public that may be considered novice or faulty science by true scientists.

Because of the importance of science in environmental policy decisions, environmental activists have long recognized the importance of both challenging scientific evidence and expertise offered by those in support of policies that they oppose, and of presenting their own science. Killingsworth and Palmer argue that environmental activist groups see value in engaging in scientific discourse and that they use science to challenge policy makers, often resulting in debates over scientific evidence.[256] They state that "environmental groups have always sought to demonstrate a scientific basis for their perspective"[257] While scientific discourse might still overwhelm some citizens, as Wander suggests, the integration of science into

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[255] Condit, *The Meanings of the Gene,* 12-13.

[256] Killingsworth and Palmer, 103.

[257] Killingsworth and Palmer, 51.

environmental activist discourse suggests that scientific rhetoric in public deliberation is commonly used by both policy makers and activists.

Bazerman discusses the construction of scientific information by citizen activists in an anti-nuclear campaign. He argues that activists in an anti-nuclear group started to research, produce, and publish scientific information for engaging in debate with policy-makers and to rally public support. They sought to de-link science from the government, which, especially in relation to nuclear science, tended to be secretive. Speaking of the activist-produced information, Bazerman argues, "What would provide the validity of the information would be its source in the scientific community and, increasingly, its independence from government-commissioned and controlled science. This was to be science that came from citizens and served the needs of citizens—science in the public interest."[258] While a focus on public science may seem to uphold the privilege for science, it does not because it exposes science as an institution with internal controversy. More importantly, it destabilizes scientific expertise coming only from the government. Activist information campaigns provide the public with the means to produce public science.

Public science is an important area of study. Public controversy and policy-making inevitably involve both public participation and some form of scientific proof or expertise. While it is important to recognize that science is but one form of proof from which we draw to develop good reasons for policy action, it is also important to examine how science is used by the public and how government science is perpetuated in relation to this public science. This chapter is meant to understand the public science in the Yucca Mountain site authorization decision better.

Public Science in Nevadans' Statements

Public science is a bottom-up approach to the rhetoric of science that focuses on the ways that the public engage in scientific debate, especially in regard to policy decision-making. Analysis of the Yucca Mountain site authorization public comments reveals the way science, scientific proof, and scientific expertise are constructed,

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[258] Charles Bazerman, "Nuclear Information: One Rhetorical Moment in the Construction of the Information Age," *Written Communication* 18:3 (2001), 273.

contested, and contrasted with other forms of knowledge. This public rhetoric of science is revealed in the views of science and the use of or challenging of scientific proof and expertise that emerges from members of the public and is used in arguments about public controversy.

Scientific Expertise

"Science" is introduced into the public comment period in multiple ways. One manifestation is the invocation of scientific expertise. In this section, I address the question: How is scientific expertise rhetorically constructed in Nevadan arguments for and against the Yucca Mountain site?

Not surprisingly, one of the ways that scientific expertise is constructed in the texts is through development of one's ethos. A portion of public hearing statements and public comments were offered by individuals who identified themselves as scientists and proceeded to make arguments related to the scientific and technical safety of the site. Many of these self-identified scientists claim to be in favor of the project or neutral. Some scientists stated previous affiliation with other branches of the federal government such as the Environmental Protection Agency (EPA) or the Department of Defense (DOD). Others are self-identified scientists who are opposed to the project.

Dr. Jacob Paz, who spoke at multiple meetings and submitted multiple written comments, constructs his ethos as a neutral scientist. He states, "My name is Dr. Jacob Paz. Just very briefly, my education. I have a PhD from Brooklyn Polytech. I was a research assistant professor, worked for the EPA...I have several uncertainties which have been ignored and need additional research. My approach is based upon scientific data and scientific ethics. I don't take a side. I work with both sides."[259] Though Paz states that he is neutral, his testimony raises questions and challenges the science in the *Preliminary Site Suitability Evaluation.* His other testimony and comments also challenge the site and he states that the Secretary should not recommend site

[259] U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation for Yucca Mountain* , reporter's transcript of proceedings taken on Wednesday, September 5, 2001 at 6:00 p.m. at 232 Energy Way, North Las Vegas, NV, reported by Kevin Wm. Daniel, CCR #711 and Mary Cox Daniel, CCR # 710.

authorization.[260] Considering that his audience is the DOE and that he challenges the scientific and technical suitability of the site, it is not surprising that Dr. Paz chooses to construct his ethos. In doing so, Paz invokes the values of "scientific data and scientific ethics."

Clinton Bastin, a retired chemical engineer who previously worked for the DOE submitted a letter in response to the possible recommendation of the Yucca Mountain site. As an opponent of the site and former DOE employee, Bastin's letter holds the weight of his former affiliation with the DOE in addition to the strength of his arguments challenging the site. Bastin argues that the site is not safe because fissionable material can be retrieved to make bombs even 200 years in the future: "Neither Yucca Mountain nor any other site is suitable for permanent disposal of used nuclear fuel or nuclear waste canisters that contain weapons material, unless safeguards can be assured for ten half-lives of any such materials. For plutonium-239, this would be about 240,000 years; for neptunium-237, which has been used by USDOE for a nuclear explosive, 20 million years. Since safeguards for these time periods cannot be assured, permanent disposal of unreprocessed used nuclear fuel or "immobilized" plutonium in waste canisters would not be a responsible action."[261] In addition to building his own ethos as an engineer, Bastin also cites evidence from scientific journals such as *Nuclear News* and *Science,* providing legitimacy to his claims.

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[260] In all, Paz testified once at the September 5, 2001 public hearing in Las Vegas, and submitted 6 written comments to the DOE. See Dr. Jacob Paz, *Letter to the Department of Energy* (July 4, 2001, public comment # 550009), http://www.ocrwm.doe.gov/documents/sr_comm/sr_pdf/550009.pdf (accessed March 14, 2005); Dr Jacob Paz, *Letter to the Department of Energy* (July 6, 2001, public comment # 550010), http://www.ocrwm.doe.gov/documents/sr_comm/sr_pdf/550010.pdf (accessed March 14, 2005); Dr. Jacob Paz, *Letter to the Department of Energy* (September 19, 2001, public comment # 550575), http://www.ocrwm.doe.gov/documents/sr_comm/sr_pdf/550575.pdf (accessed March 14, 2005); Dr. Jacob Paz, *Letter to the Department of Energy* (September 26, 2001, public comment # 550994), http://www.ocrwm.doe.gov/documents/sr_comm/sr_pdf/550994.pdf (accessed March 14, 2005); Dr. Jacob Paz, *Letter to the Department of Energy* (October 1, 2001, public comment # 550540), http://www.ocrwm.doe.gov/documents/sr_comm/sr_pdf/551540.pdf (accessed March 14, 2005); Dr. Jacob Paz, *Letter to the Department of Energy* (October 10, 2001, public comment # 551856), http://www.ocrwm.doe.gov/documents/sr_comm/sr_pdf/551856.pdf (accessed March 14, 2005).

[261] Clinton Bastin, *Letter to the Department of Energy*, (September 5, 2001, public comment #550121, http://www.ymp.gov/documents/sr_comm/sr_pdf/550121.pdf (accessed March 14, 2005).

An example of a scientist in favor of the site authorization is Gene Saucier, a geologist and 15-year resident of Nevada, who states, "I'm a geologist, I've been a professional geologist for 30 years, and I've been following this nuclear waste controversy since I entered my career. I lived in New Mexico before living here, I lived there for 15 years, and the waste site down there [was, sic] and still is as controversial as it is here. My opinion as a geologist and all the geologists I know and am friends with is that Yucca Mountain is a safe place to store nuclear waste. Nothing is entirely 100 percent safe in the world. There is no such thing as no risk."[262] He continues by laying out arguments that are in line with the DOE's scientific and technical justifications for the site.

In this case, when speaking to the DOE that has produced the scientific and technical reports and data upon which the eventual site recommendation was based, it would seem that Saucier and others in favor of the project would not need to bolster their ethos and persuade the Secretary of Energy to authorize the site. However, with the majority of Nevadans in favor of the site, scientists in the public may have used the public hearings as an opportunity, not to persuade the Secretary of Energy, but to engage in the controversy with other members of the public. Adapting the concepts of consummatory (internally directed rhetoric meant to re-affirm worth and identity) and instrumental (externally directed rhetoric that expresses the goal of the movement) functions form the rhetoric of social movements;[263] the statements of scientists in favor of the site fulfill both. Though the independent scientists in favor of the project are not necessarily an organized social movement against the project, because of the

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[262] U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation for Yucca Mountain,* reporter's transcript of proceedings taken on Thursday, October 4, 2001 at 3:00-8:00 p.m. at Washoe County Health Department, Reno, NV, reported by Peggy Baker Hoogs, CCR #160, 107-108.

[263] Robert S. Cathcart, "Movements: Confrontation as Rhetorical Form," *The Southern Speech Communication Journal* 43 (1978): 233-47; Richard A. Cherwitz, and Kenneth S. Zagacki, "Consummatory Versus Justificatory Crisis Rhetoric," *Western Journal of Communication* 50 (1986): 307-324; Richard B.Gregg, 1971. "The Ego-function of the Rhetoric of Protest," *Philosophy & Rhetoric* 4 (1971): 71-91; Randall A. Lake, "Enacting Red Power: The Consummatory Function in Native American Protest Rhetoric." *Quarterly Journal of Speech* 69 (1983): 127-142; R. L. Scott, and D. K. Smith, "The Rhetoric of Confrontation," *Quarterly Journal of Speech* 55(1969): 1-8

extent to which the public disagrees with the site, identity enactment may serve an important consummatory function. Speaking at a public hearing in favor of a project that the majority of participants oppose, enacting one's identity as a scientist may serve the individual egoistic function of political efficacy and the group function of increasing cohesion and reaffirming identity among other scientists who are in favor of the project. If they are trying to reach opponents in the public, the instrumental function is to persuade and respond to the counterarguments of the rest of the public (that the Yucca Mountain science is biased) by establishing themselves as independent scientists who have independently reviewed the reports and concluded that the site is scientifically and technically sound.

Many scientists in favor of the site argue that the public is scientifically and technically illiterate. For example, Steve Crawford, a physicist and atmospheric scientist in favor of the project states, "The level of science education, especially in the physical sciences, is an abomination. Due to the ignorance of basic physics in the general population the word 'radioactivity' can, and is, being used as a boogyman to scare the people of Nevada into bad policy."[264] Also, Bill Phillips a physicist and fourth generation Nevadan, after offering a list of scientific qualifications and stating that he worked for the EPA, argues, "and you hear things in the newspapers outside the state that 70 percent of the people in the state are against Yucca Mountain. That's just flat [sic]—that's probably true because 70 percent of the people or 80 percent in the state are technically illiterate. But 100 percent of the people—100 percent of the people...interruption...who are technically literate and technically educated in radiation field and who have seen the calculations and seen what the DOE says are in favor of it."[265] These statements in favor of the project are meant to damage the credibility of public commenters by describing them as ignorant about science.

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[264] Steve Crawford, *PSSE Evaluation* [e-mail to the Department of Energy] (September 21, 2001 public comment # 550191), http://www.ymp.gov/documents/sr_comm/sr_pdf/550191.pdf (accessed January 30, 2005).

[265] U.S. Department of Energy, *Hearing for Site Recommendation Consideration of the Yucca Mountain Site for Geologic Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste,* reporter's transcript of proceedings taken on Wednesday, December 12, 2001 at 1:00 p.m. at Las Vegas, NV, reported by Heidi Konsten, RPR #516382, 141.

Indeed, there is a common conception among scientists and scholars that the public is scientifically illiterate. In an analysis of the quantitative trends in the public's understanding of science, Jon D. Miller reports that only 20% of the public has civic scientific literacy.[266] In his book, *Science, Nonscience, and Nonsense,* Michael Zimmerman, a professor of biology and an ecologist, laments the scientific literacy in the American public and calls for better education in the sciences so that the public can participate in environmental policy debates.[267] While I do not deny that a large portion of the public may be "technically literate," and that it is in the interest of environmentalists and the public to understand and challenge the science used to support environmental policy, dismissing arguments because the public is scientifically illiterate is dangerous for a few reasons. First, this dismissal reifies the assumption that scientific and technical reason is more important than social, political and emotional arguments. Second, dismissal based in scientific illiteracy is based in sweeping claims meant to apply to all of the arguments of the public and to further the point that there is no disagreement among "the experts" in the DOE who support the Yucca Mountain project. Finally, dismissing these arguments creates the catch-22 that I described earlier, in which the public is expected to comment on the scientific and technical evidence, but when they raise arguments, they are criticized for being illiterate.

Although some of the public comments and statements reveal a value in establishing scientific ethos, other comments and statements, both in favor of and opposed to the site, explicitly deny having scientific expertise. For example, Adrain Solkover, a Nevada citizen who opposes the project, states, "I am not a scientist, however, I would like to report my findings from respected publications regarding the

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[266] Miller, 290.

[267] Michael Zimmerman, *Science, Nonscience, and Nonsense: Approaching Environmental Literacy* (Baltimore: Johns Hopkins University Press, 1995).

DOE's past performance record."[268] Speaking in favor of the Yucca Mountain site, James Preston Baxley, a Lincoln county resident and professional truck driver, states,

> Now, I don't know—I'm not an engineer or a scientist, but this much I do believe...We've now reached the point where—it's like this rose. It's beautiful. Some people only see the rose and other see the thorns. Now I see the rose with this when we can run an aircraft carrier as big as one of them we have now without ever having to fuel it again. That's a real positive. Or a submarine that can stay under water until they just come up, but not for lack of fuel. 20 years between fueling. Now who knows how many hundred years in the future you'll never convince me that it will leak. I hauled it [nuclear waste] into Barneville, South Carolina, and I seen the extent they went to taking care of things there, and think we got a more secure potential site here in Nevada than we had in South Carolina.[269]

These "I am not a scientist, but..." statements occur often in the public hearing statements and public comments. These statements are an interesting ethos move in that they state one's qualifications through an absence of scientific qualifications. Yet, both of the above speakers make important ethos moves after the "I am not a scientist, but..." Solkover draws upon derived ethos by pointing out that his report is derived from "respected publications." Baxley draws upon his personal experiences as a truck driver hauling nuclear waste in South Carolina. These statements simultaneously undermine the value placed on scientific expertise and reify the importance of scientific expertise. These commenters undermine the value placed on science by stating that they are not scientists but can still produce good arguments by citing sources or citing personal experience. They also reify the value of scientific expertise

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[268] U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation for Yucca Mountain* , reporter's transcript of proceedings taken on Wednesday, September 5, 2001 at 6:00 p.m. at 232 Energy Way, North Las Vegas, NV, reported by Kevin Wm. Daniel, CCR #711 and Mary Cox Daniel, CCR # 710.

[269] U.S. Department of Energy, *Yucca Mountain Public Hearing Lincoln County,* reporter's transcript of proceedings taken on October 11, 2001 at 3:00 p.m. at Senior Citizen Center, Caliente, NV, reported by Wanda L. Barnes, CCR #676, 32-33.

with the "but" statement which implies that a scientist would be most qualified, but that the arguer has something to say too. They recognize and reinforce that scientific expertise and proof is important in making the decision about Yucca Mountain, but also challenge that arguments can only come from "scientists."

Scientific expertise plays an important role in environmental decision-making, especially in the case of the Yucca Mountain repository. The NWPA mandates that the Secretary of Energy make a site recommendation based on scientific and technical suitability. Moreover, the public comment period was introduced, in part, as a way for the public to comment on the various scientific and technical reports produced by the DOE. The situation calls for science to play a key role in the public's response to the Yucca Mountain site. My reading of the ways that scientific expertise is constructed in the public commentary about the Yucca Mountain site reveals, not surprisingly, that scientific expertise is carefully constructed and presented by opponents of the site as a way to bolster their arguments against the site and persuade the DOE against site recommendation. However, two somewhat surprising things emerge from my reading. First, scientists in favor of the site construct themselves as experts too. They probably enact their identity as scientists not to persuade the DOE, but to persuade the rest of the members of the public. The construction of scientific expertise by independent scientists at the public hearings serves to respond to the counterargument of opponents that DOE science is biased. Presenting their scientific qualifications establishes the speakers as scientists whose independent judgment leads them to be in favor of the site. Second, those members of the public who make a point of stating that they are not scientific experts attempt to challenge the value of scientific expertise by offering other forms of expertise, like disciplined reading of public records or personal experience with nuclear waste disposal. However, through "I am not a scientist, but..." statements, these individuals actually reinforce a value of scientific expertise by suggesting that lack of such expertise is something that should be confessed.

(Mis)Trust of DOE Science

Another way in which the role of science enters into public commentary about the Yucca Mountain site is through statements that explicitly challenge or affirm the

DOE's scientific conclusions, not through scientific evidence, but through trust in science. While proponents assert trust in the DOE's scientific proof, opponents often argue that the DOE's scientific proof is suspect and biased. Because scientific evidence is not raised in these arguments, the argument is one of trust and not one that we would traditionally consider science or scientific proof.

Proponents of the Yucca Mountain site often make statements of trust in the DOE's scientific proof.[270] For example, Nevada citizen Brian Elkins states, "I'd just like to tell you, I'm supportive of the Yucca Mountain project. I'm confident that American science, technology and engineering can solve whatever problems exist. It's unfortunate it's become a political football and that the Nevada legislative delegations in Congress seem to be opposed no matter what. And that disturbs me. I'd like to make it clear that that does not represent my views, nor the views of many of the

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[270] Testimony of Yoli Bell, U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation for Yucca Mountain* , reporter's transcript of proceedings taken on Wednesday, September 5, 2001 at 6:00 p.m. at 232 Energy Way, North Las Vegas, NV, reported by Kevin Wm. Daniel, CCR #711 and Mary Cox Daniel, CCR # 710; Testimony of Brian R. Elkins, U.S. Department of Energy, *Hearings for Site Recommendation Consideration of the Yucca Mountain Site For Geologic Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste,* reporter's transcript of proceedings taken on Wednesday, December 12, 2001 at 1:00 p.m. at Caliente Senior Center, Caliente NV, reported by Deborah Ann Hines, CCR #473, 13; Testimony of Mr. Jannsen, U.S. Department of Energy, *U.S. Department of Energy Availability Session on the Possible Site Recommendation of Yucca Mountain,* reporter's transcript of proceedings taken on Thursday, October 18, 2001 at 10:00 a.m.-6:00 p.m. at Las Vegas Science Center, Las Vegas, NV, reported by Kristine A Flucker, CCR #403, 5-7; Testimony of Rick Knight, U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation for Yucca Mountain* , reporter's transcript of proceedings taken on Wednesday, September 5, 2001 at 6:00 p.m. at 232 Energy Way, North Las Vegas, NV, reported by Kevin Wm. Daniel, CCR #711 and Mary Cox Daniel, CCR # 710; Testimony of Tom Leonard, U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation for Yucca Mountain* , reporter's transcript of proceedings taken on Wednesday, September 5, 2001 at 6:00 p.m. at 232 Energy Way, North Las Vegas, NV, reported by Kevin Wm. Daniel, CCR #711 and Mary Cox Daniel, CCR # 710; Testimony of Robert Rupert, U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation for Yucca Mountain* , reporter's transcript of proceedings taken on Wednesday, September 5, 2001 at 6:00 p.m. at 232 Energy Way, North Las Vegas, NV, reported by Kevin Wm. Daniel, CCR #711 and Mary Cox Daniel, CCR # 710, n.p.; Testimony of Bon Taylor, U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation for Yucca Mountain,* reporter's transcript of proceedings taken on Thursday, October 4, 2001 at 3:00-8:00 p.m. at Washoe County Health Department, Reno, NV, reported by Peggy Baker Hoogs, CCR #160, 33; Testimony of Sam Urusini, U.S. Department of Energy, *U.S. Department of Energy Availability Session on the Possible Site Recommendation of Yucca Mountain,* reporter's transcript of proceedings taken on Tuesday, October 2, 2001 at 10:00 a.m.-6:00 p.m. at Yucca Mountain Science Center, 4101 Meadows Lane, Las Vegas, NV, reported by Mary Cox Daniel, CCR #710, 9.

people that I know and talk to here in Nevada."[271] In another example, Sam Armijo, Nevada resident, states, "We have a country that's incredibly talented with technology. I think it's unbelievable that we can't solve the so-called problems of this disposing of nuclear waste at Yucca Mountain. I think an incredible amount of money has been spent. I think the Department of Energy has done its best in a technical sense, but I believe has done a poor job of communicating with the public."[272] In both of these statements, the testifiers assert a trust in science and technology specifically linked to our country's talent with science and technology. This adds a patriotic bent to the argument in which we are being asked not just to trust in science, but also to trust in *American* science and to trust in our country.

In addition to a call for trust in the science, proponents make a call for trust in the Department of Energy. Richard Pacheco, a Nevada citizen who claims to have been indirectly employed by DOE for a number of years, states, "I don't think we're going to solve the problem [of nuclear waste] by butting heads with the DOE. I think what happened here is we've had a political decision made, and we're going to have a scientific implementation of that political decision...If we're going to get it [the Yucca Mountain site]-- and like I said, the DOE people are not stupid. I don't think they're going to build a nuclear repository in the state of Nevada and use boogie man science to justify it. That would be absolutely stupid. But they're not stupid, folks. Right? They are not stupid."[273] In this statement, Pacheco lays out what seems a very reasonable

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[271] Testimony of Brian Elkins, U.S. Department of Energy, U.S. Department of Energy Public Hearing on the Possible Site Recommendation for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada, reporter's transcript of proceedings taken on Saturday, December 8, 2001 at 11:00 a.m. at the Reno-Sparks Convention Center, Reno, NV, reported by Debora Ann Kreidler, CCR #719, 14.

[272] U.S. Department of Energy, U.S. Department of Energy Public Hearing on the Possible Site Recommendation for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada, reporter's transcript of proceedings taken on Saturday, December 8, 2001 at 11:00 a.m. at the Reno-Sparks Convention Center, Reno, NV, reported by Debora Ann Kreidler, CCR #719, 13.

[273] U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation for Yucca Mountain*, reporter's transcript of proceedings taken on Wednesday, September 5, 2001 at 6:00 p.m. at 232 Energy Way, North Las Vegas, NV, reported by Kevin Wm. Daniel, CCR #711 and Mary Cox Daniel, CCR # 710.

argument to trust the DOE because it would be "stupid" to construct a site based in flawed science.

In another example, Tom Leonard, Nevada resident and engineer, states, "I followed this issue since the 1980s. The perception in this public hearing is that only the interveners and the anti's have legitimate public comments. I've listened to the sometimes hysterical and outrageous nonscientific rhetoric of the opponents. I have read both the newspapers and the project science. The effort has been far more rigorous and exacting than any project in history...Politicians, do your duty and follow the law. Listen to the DOE, the national labs, and the National Academy of Science."[274] Leonard, an engineer who claims to have read the project science before concluding in favor of the Yucca Mountain project, uses his expertise and experience of reading through the project science to call for politicians to listen to, or trust, the DOE and other organizations that have released reports in favor of the project. Though slightly different, both Pacheco and Leonard call for politicians and the public to trust in the DOE. Employing common sense reasoning, Pacheco says that the DOE would be stupid to use faulty science. This, however, does not consider that the DOE science could be biased in favor of the site. Employing his ethos as an engineer who has read the science, Leonard says that we should listen to the DOE because he has verified the project science as "rigorous and exacting."

Interestingly, all four of theses statements also make negative remarks about the opposition. Elkins suggests that legislators are blind in their opposition and challenges the assumption that Nevada politicians' stances are representative of the whole public. Armijo states that the DOE has not communicated the science well to the public, implying that the public is ignorant of science. Pacheco commits a straw person fallacy and misrepresents the opponents as claiming that the DOE is using boogieman science, instead of representing their arguments as valid forms of criticism. Leonard accuses opponents of using non-scientific rhetoric and asserts that they are

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[274] U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation for Yucca Mountain*, reporter's transcript of proceedings taken on Wednesday, September 5, 2001 at 6:00 p.m. at 232 Energy Way, North Las Vegas, NV, reported by Kevin Wm. Daniel, CCR #711 and Mary Cox Daniel, CCR # 710.

not open to legitimate appeals from proponents in the public. The call to trust in science or trust in the DOE, then, also serves to overwhelm opposition to the project by painting the opponents in a bad light. As I argued in the previous section, proponents are likely not trying to persuade the DOE, but are trying to persuade the rest of the public and/or to have an opportunity to engage in the debate.

It is important to note that the Department of Energy has created an extensive public relations campaign to educate the public about the Yucca Mountain site including the Yucca Mountain Information Center with user-friendly scientific demonstrations of the safety of the site and tours of the Yucca Mountain site.[275] For some, this campaign has created trust in the DOE. Nevada citizen Sam Ursini offered a public comment after touring the mountain, "Having visited the tunnel in its entirety today and having been briefed by the scientists, I am utterly convinced that the safety considerations are well thought through and the disposal of radioactive material should be deposited in the repository at Yucca Mountain. Is that enough?"[276]

The call to trust in science and the DOE directly refutes one of the key arguments made by opponents of the project that the science is flawed and cannot be trusted. Lou Benezet, a Nevada resident and member of the anti-nuclear and anti-Yucca Mountain repository citizen activist group called Citizen Alert, argues, "Yucca Mountain was singled out before it was ever evaluated scientifically. Science has always had to be manipulated to make the foregone conclusion fit whatever evidence they were able to come up with."[277] Another Citizen Alert member and Nevada

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[275] I have attended both of these.

[276] Testimony of Sam Urusini, U.S. Department of Energy, *U.S. Department of Energy Availability Session on the Possible Site Recommendation of Yucca Mountain,* reporter's transcript of proceedings taken on Tuesday, October 2, 2001 at 10:00 a.m.-6:00 p.m. at Yucca Mountain Science Center, 4101 Meadows Lane, Las Vegas, NV, reported by Mary Cox Daniel, CCR #710, 9.

[277] U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation for Yucca Mountain* , reporter's transcript of proceedings taken on Wednesday, September 5, 2001 at 6:00 p.m. at 232 Energy Way, North Las Vegas, NV, reported by Kevin Wm. Daniel, CCR #711 and Mary Cox Daniel, CCR # 710, n.p; See also Testimony of Erin Stocker, U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation for Yucca Mountain* [Court reporter session], reporter's transcript of proceedings taken on Wednesday, September 5, 2001 at 6:00 p.m. at 232 Energy Way, North Las Vegas, NV, reported by Mary Cox Daniel, CCR # 710, 57-8.

resident, Kalinda Tilges, echoes Benezet's argument, "I used to think that sound science would be the trick because sound science would create good jobs, but I realize now that if you grease enough scientists' palms, they'll give you scientific data to prove the moon is made out of green cheese."[278] Benezet, Tilges, and others call upon the lack of trust in the independence of science to suggest that the DOE's science is flawed. Herbert Marks, Las Vegas resident, argues that we should not trust science because there is no agreement in the scientific community. "The DOE is trying to sell us on the perfection of their science. We don't want to be coerced into their views. Science will have different views, depending on who you talk to. We don't want to be subject to the risks and dangers. We don't want our children and our future generations to be subject to those risks...You will live to apologize if you bring us Yucca Mountain."[279]

Opponents argue that the DOE should not be trusted because it changed the standards originally proposed in the NWPA when the scientific data did not fit with the original standards. Nevada Representative Shelley Berkeley argues, "Scientific evidence against the proposed Yucca site is plentiful, but each time legitimate arguments are raised, standards for Yucca Mountain are changed. On three separate occasions, the State of Nevada has demonstrated, using DOE's own data, that the site should be disqualified under both the EPA standards and DOE's own internal site screening regulations, and each time the DOE or Congress has changed regulations to ensure that Yucca Mountain is not disqualified, regardless of the health and safety consequences to Nevadans."[280]

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[278] U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation for Yucca Mountain*, reporter's transcript of proceedings taken on Wednesday, September 5, 2001 at 6:00 p.m. at 232 Energy Way, North Las Vegas, NV, reported by Kevin Wm. Daniel, CCR #711 and Mary Cox Daniel, CCR # 710, n.p.

[279] U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation for Yucca Mountain*, reporter's transcript of proceedings taken on Wednesday, September 5, 2001 at 6:00 p.m. at 232 Energy Way, North Las Vegas, NV, reported by Kevin Wm. Daniel, CCR #711 and Mary Cox Daniel, CCR # 710.

[280] U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation for Yucca Mountain*, reporter's transcript of proceedings taken on Wednesday, September 5, 2001 at 6:00 p.m. at 232 Energy Way, North Las Vegas, NV, reported by Kevin Wm. Daniel, CCR #711 and Mary Cox Daniel, CCR # 710. See also Testimony of Lou Benezet, U.S.

Together these arguments express distrust for the DOE's scientific conclusions and stand in opposition to the proponent calls to trust the DOE's science. In both cases, however, the public comments and statements neither provide evidence to support these claims nor offer scientific arguments. Perhaps the lack of evidence is indicative of an enthymematic argument in which the audience fills in the evidence. However, if these speakers are attempting to persuade opponents, it would seem that enthymematic evidence would not suffice. In these comments, science is not necessarily evaluated based on its content, but on the source of the science. The fact that the scientific evidence comes from the DOE provides the support for either argument; depending on the arguers' or arguer's standpoint, the source of the science makes it either trustworthy or not trustworthy.

This second manifestation of "science" in public commentary on the site authorization decision, trust of science, is not actually supported by analysis of the scientific data. Science, then, is viewed not as something to be evaluated by a set of field-based scientific standards, but as something to be evaluated based on the source of that information which includes all three artistic forms of proof. Both sides' arguments about the trustworthiness of the scientific information are really making arguments about the trustworthiness of the Department of Energy.

However, when we look at the DOE's general response to challenges to the science and the DOE, we see that they just cite external sources of support that have independently reviewed their findings.

> The DOE's work on Yucca Mountain is subject to external regulation by other federal agencies and has been reviewed by international professional organizations. Site characterization information for Yucca Mountain, for example, was collected under quality assurance plans approved and accepted by the NRC. Four U.S. national laboratories and the U.S. Geological Survey collected most of the field data and

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Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation for Yucca Mountain* , reporter's transcript of proceedings taken on Wednesday, September 5, 2001 at 6:00 p.m. at 232 Energy Way, North Las Vegas, NV, reported by Kevin Wm. Daniel, CCR #711 and Mary Cox Daniel, CCR # 710, n.p.

> interpreted the results. These laboratories commissioned independent reviews of their results, as did the DOE, often as formal independent peer reviews. Since the start of data collection for site characterization, the DOE has engaged in informal consultation with the NRC, as directed by the NWPA. As a result of this consultation process, the NRC has made known its views on the correctness of the data and the validity of the DOE's interpretations. The DOE has formally committed to resolution plans for those areas where professional views and interpretations differ. [281]

The DOE goes on to state that there is an international consensus that geologic disposal is the best option. [282] In this response, the DOE defends their science with derived ethos, citing the other agencies that have been involved in the process of review. This seems a reasonable response. Yet, considering that governmental scientific and technical reports are rhetorically constructed to support policy objectives,[283] opponents of the Yucca Mountain project would have reason to question the legitimacy of review by other governmental organizations.

Scientific Proof

Science can be deployed in many ways in public argumentation. The previous argument theme concerns a way that science can be used as an abstract concept that supports or denies an argument. A trust in science is difficult to quantify and depends on the audience's faith in science as well as the faith in the agency involved in producing the science. Science in the abstract is used as a form of support for a claim about the trustworthiness of the source. Science in this abstract form is polysemous and used as a channel for multiple conclusions. Instead of an argument that employs scientific method or scientific proof, trust or mistrust in science is used to make arguments about something else, namely the worthiness of the source. Another way to

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[281] U.S. DOE, *Site Recommendation Comment Summary Document,* Section 4.1.7

[282] Ibid.

[283] Bazerman, Little, and Chavkin; Ginger; Mitchell.

employ science in argumentation is to make arguments about scientific claims and conclusions. This form of scientific argument, though it may still be subject to multiple meanings, uses science in a more concrete way than the use of "trust in science." Science is associated with particular claims, studies, and conclusions about the Yucca Mountain site. There are several ways that participants in the public comment period use scientific proof and challenge scientific proof in particular cases.

Raising Questions

One way in which scientific proof is engaged in the public hearing testimony and comments is through challenging the scientific and technical proof provided in the DOE's documents. Though we might expect a challenge to come through counter argumentation, that is, through providing scientific evidence that directly disputes the DOE's science, challenges to the DOE's scientific and technical reports more often came in the form of questions or calls for more research. Raising a question is a particular communicative form in which someone brings something up as a relevant issue to be discussed, though a direct answer is not always given or expected.[284] In the public comment period, raising questions was a common way of challenging the scientific findings of the federal government.

For example, Dr. Jacob Paz, a former EPA scientist who spoke at multiple hearings and submitted numerous documents during the public comment period, raised many questions about the science presented in the DOE's technical reports. Recall his ethos-building statement that the Yucca Mountain project has many unanswered questions and incomplete study. In another statement, Paz raises questions about oxidation by manganese oxide and calls for more research on the issue. He states, "I read the [D]EIS, I read the related literature, and I have not found very clear and precise scientific evidence to address the issue of oxidation by manganese oxide, which is present in large quantity in the Yucca Mountain. Only by additional research

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[284] Jack Bilmes "Tactics and Styles in the 1992 Vice Presidential Debate: Question Placement," *Research on Language and Social Interaction* 34 (2001): 151-181; Jay Leighter and Laura W. Black, "'I'm Just Raising the Question": An Analysis of 'Question(s)' and Meanings in Debate and Deliberation," paper presented at the National Communication Association National Convention, Miami Beach, Florida, November 2003.

it can be addressed and solve the issue."[285] In raising the issue of oxidation, Paz challenges the scientific proof in the scientific and technical documents that are being used by the DOE to argue that the site is suitable.

Others use the strategy of raising questions or issues to challenge the legitimacy of the DOE's scientific and technical basis. Jane Feldman, from the Toiyabe Chapter of Sierra Club says, "One of the most serious issues that has been raised by the scientific work at Yucca Mountain is ground water contamination. The hydraulic relationships between the lower carbonate aquifer and the volcanic units and the alluvian [sic] units beneath and down gradient of the aquifer are poorly understood. Will there be contamination in the Amargosa River? Will that contamination spread to other aquifers? Without clear answers to these questions, locating the nation's high-level nuclear waste in irretrievable underground tunnels in the Nevada desert is unacceptable."[286] Feldman does not offer an outright, scientifically based counterargument to the DOE's assertion that groundwater contamination from the site is not a significant risk, and instead raises the issue as one needing more research.

In a final example, Nevada citizen Mr. DeBottari raises the issue of the use of helium in the metal storage casks.

> DOE proposes to use helium, page 3-78 [in the PSSE], to conduct the heat from the center of the waste package to the outside ambient. Helium is a very difficult gas to contain, as it easily diffuses through metal. The welds may be structurally strong, but I question the robustness of the metal cask to contain helium, even through 500 years. This comes from experience of at least 30 years in the use of helium. I would like the DOE to show why they think they

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[285] U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation for Yucca Mountain* , reporter's transcript of proceedings taken on Wednesday, September 5, 2001 at 6:00 p.m. at 232 Energy Way, North Las Vegas, NV, reported by Kevin Wm. Daniel, CCR #711 and Mary Cox Daniel, CCR # 710.

[286] U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation for Yucca Mountain* [Court reporter session], reporter's transcript of proceedings taken on Wednesday, September 5, 2001 at 6:00 p.m. at 232 Energy Way, North Las Vegas, NV, reported by Mary Cox Daniel, CCR # 710, n.p.

> have solved this problem, and how they can prove it, and more important, how do they know the helium is in the container before the site is closed? Again, I do not want an answer to be, it was studied. Where was it studied, what's the page number?[287]

DeBottari, in addition to raising the question about helium also explicitly challenges the DOE's scientific study of the site and anticipates what the DOE's answer will be. In calling for the DOE not to merely state that helium was studied, DeBottari also suggests that the DOE uses the response "it was studied" to dismiss scientific questions.

We can see Secretary Abraham's response to the demand for further study in the *Site Recommendation Report.* Abraham categorizes these arguments against the site as "Assertion 2: The Project Has Received Inadequate Study" and replies,

> Critics have said that there has been inadequate study to determine Yucca Mountain's suitability. To the contrary, and as I believe section 6 ["Is Yucca Mountain Scientifically and Technically Suitable for Development of a Repository?"] of this Recommendation makes clear at length, the characterization process at Yucca Mountain is unprecedented for any even remotely comparable undertaking. Indeed, Yucca Mountain studies have now been underway for nearly five times as long as it took to build the Hoover Dam and more than six times the entire duration of the Manhattan Project. Yucca Mountain is, by any measure, the most exhaustively studied project of its kind that the world has ever known...At this early stage, and with many more years before the Yucca Mountain site could become operational, the request for yet more preliminary study, even before seeking a license from the NRC, is unsupportable. Additional study will be undertaken at stages to come as an appropriate part of the licensing process. For these reasons I have concluded that the current body of accumulate scientific and technical knowledge

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[287] U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation for Yucca Mountain* , reporter's transcript of proceedings taken on Wednesday, September 5, 2001 at 6:00 p.m. at 232 Energy Way, North Las Vegas, NV, reported by Kevin Wm. Daniel, CCR #711 and Mary Cox Daniel, CCR # 710.

> provides a more than adequate technical basis to designate the Yucca Mountain site.[288]

At other points in the report, Abraham also argues that it is impossible to answer every question raised about the site and to obtain certainty, especially concerning radiation release up to 10,000 years in the future. However, because of the preliminary results, he argues we should build the site anyway.

The Secretary's response serves to dismiss what could be strong scientific arguments against the site because they raise questions as opposed to offering specific counterarguments. Abraham uses two arguments about process instead of providing answers to the questions raised about oxidation, helium, and groundwater contamination. First, he argues that a lot of study has been done and more will be done in the next licensing step, and second, he argues that it would be impossible to answer every question This response suggests that instead of raising issues and questions, opponents should specifically challenge the scientific results and present the reason why those results make the site unsuitable.

Common Sense Science

Opponents of the site do make specific challenges against the scientific and technical suitability of the Yucca Mountain site. For example, opponents argue that the mountain's geologic features make it an unsuitable place to store nuclear waste. These arguments came from Nevada residents who did not self-identify as scientists. Their arguments are scientific because they raise scientific issues, but draw from anecdotal information and personal experience or observation as opposed to the type of scientific proof provided in the DOE's scientific and technical documents. Many of the arguments are "common sense" arguments. The two main geological arguments raised by the opponents concern earthquakes and volcanoes.

Regarding the risk of earthquakes in the region, Ralph McCracken, Amargosa Valley resident, states "Seismic activity. Yes. What was it, about three or four years ago, we had a pretty good one. Shook several of our mobile homes in the valley pretty

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[288] Abraham, *Recommendation*.

good and some of them had to be releveled [sic] and reset on their stands. Obviously, we are not an area that's immune from seismic activity. And I'm talking to you about things that are within 25 miles of Yucca Mountain."[289] Terry Kozlowski, Las Vegas resident, argues that Las Vegas is classified as a 2b earthquake zone and compares this to California, a level 3 zone. "And we know what kind of earthquakes they have in California. We've had our own earthquakes here. Not quite as devastating as the ones you find in California, but I think that this facility would be better located in a less earthquake tolerant area." [290] These arguments are enthymematic in assuming that the audience will fill in the premise that an earthquake will damage the waste repository and release radiation into the environment and endanger the public.

In response to public comments about the seismic activity of the site, the DOE states, "Scientists and engineers expect earthquakes to occur at Yucca Mountain. The NRC requires that all licensed nuclear facilities be designed and constructed to withstand the effects of natural phenomena, including earthquakes, such that their operations do not represent a threat to public health and safety. Based on the results of analyses (reported in S&ER Rev. 1, Section, and YMSD, Section 12) of the long-term performance of the repository, which considered the effects of future earthquakes, the DOE concludes that a repository at Yucca Mountain could operate safely."[291]

Volcanism is a second area of common sense scientific argumentation that arises from the public comments and hearing statements. Ralph McCracken, Amargosa Valley resident, also states, "Well, you have to be a blind man not to look around in the area there and see the cinder cones that are coming up through the valley

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[289] U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation for Yucca Mountain* [Court reporter session], reporter's transcript of proceedings taken on Wednesday, September 5, 2001 at 6:00 p.m. at 232 Energy Way, North Las Vegas, NV, reported by Mary Cox Daniel, CCR # 710.

[290] U.S. Department of Energy, *U.S. Department of Energy Hearing Session on the Possible Site Recommendation of Yucca Mountain,* reporter's transcript of proceedings taken on Friday, October 19, 2001 at Yucca Mountain Information Center, Las Vegas, NV, 49; See also: Testimony of Betty McKenna, U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation for Yucca Mountain* [Court reporter session], reporter's transcript of proceedings taken on Wednesday, September 5, 2001 at 6:00 p.m. at 232 Energy Way, North Las Vegas, NV, reported by Mary Cox Daniel, CCR # 710, n.p.

[291] U.S. DOE, *Site Recommendation Comment Summary Document,* section 4.3.2.

floor. You have a cinder cone mine just a few miles down the road from it. Go down to the entrance to Death Valley and there is another very obvious cinder cone there. You go up towards Beatty and you look off to the west, another cinder cone. The water temperature in the wells in Amargosa Valley is very common, 70 degrees. Serious warmth there. Another indicator of volcanic activity."[292] Nevada resident Frederic George Tucker states, "it must be some form of stupidity to try to store a highly dangerous substance which will last for millions of years in an active volcanic area."[293] Again, these statements employ common sense argumentation.

Not surprisingly, the DOE responds with scientific tests that show that even though a volcanic eruption could occur in or near the repository, that the risk is very small. Moreover, they argue that a volcanic eruption of contaminated ash would meet the Nuclear Regulatory Commission's radiation safety standards. The *Site Recommendation Comment Summary Document* states that "the presence of past volcanism and the existence of small, extinct basaltic volcanoes, the youngest of which is 80,000 years old, does not make the site unsuitable for long-term waste disposal" and references where issues of volcanism were addressed in the *Science and Engineering Report, Yucca Mountain Suitability Determination*, and the Final version of the EIS.[294] Specifically, the DOE addresses the risk of volcanic activity and radioactive contamination from such activity, stating the

> The occurrence of 80,000-year-old volcanic activity does not, in itself, make a site unsuitable for geologic disposal. There is always a probability of volcanic activity anywhere although, of course, this probability varies from small to large depending on the region. Careful

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[292] U.S. Department of Energy, *U.S. Department of Energy Public Hearing on the Possible Site Recommendation for Yucca Mountain* [Court reporter session], reporter's transcript of proceedings taken on Wednesday, September 5, 2001 at 6:00 p.m. at 232 Energy Way, North Las Vegas, NV, reported by Mary Cox Daniel, CCR # 710, n.p.

[293] U.S. Department of Energy, *Hearings for the Site Recommendation Consideration of the Yucca Mountain Site for Geologic Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste,* reporter's transcript of proceedings taken on Wednesday, September 12, 2001 at 5:00 p.m. at Longstreet Casino, Amargosa Valley, NV, reported by Deborah Ann Hines, CCR # 473, 3.

[294] U.S. Department of Energy, *Site Recommendation Comment Summary Document,* section 4.3.3 (132)

> analysis of the geologic setting of Yucca Mountain summarized in Section 3.1.2 of the SSE [*Site Suitability Evaluation*], using abundant data on regional volcanoes, their ages, and peer-reviewed models of structural control of volcanic centers, has produced a probability estimate of the likelihood of a dike intruding the repository. The probabilistically based result is 1 in 62,500,000 per year (6,250 in 10,000 years), which is an extremely small chance. In the unlikely event that a volcanic dike intersects the repository, there is a chance that a volcano would form at the surface with magma flowing through a portion of the repository (the eruptive event) (S& ER Rev, 1, Section 4.3.2.1.2). This probability is approximately 1 chance in 77 million per year). The resultant dose from erupted, contaminated ash to a member of the critical population (residents of Amargosa Valley) has also been calculated through a probabilistic approach. As discussed in Section 3.1.2 of the SSE, comparison with the radiation protection standards for licensing in 40 CFR Part 197 (66 FR 32074) and 10 CFR Part 63 (64 FR 8640), shows that the risk (probability-weighted dose) from such a low-probability event would likely be below the NRC licensing-related regulatory limits.[295]

The *Site Recommendation Comment Summary Document* concludes its response to this issue stating, "past volcanism in the Yucca Mountain region is well characterized and indicates a very low probability of future volcanic disruption of a repository. The DOE focuses its investigations on the number, ages, and geologic structural control of smaller basaltic eruptions found within the Yucca Mountain region to evaluate the potential for future volcanism."[296] I included a large portion of the DOE's response to volcanism to demonstrate how the "scientifically-based" answer of the DOE seems to overwhelm the common sense argument of the opponents. While it is certainly

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[295] Ibid.

[296] U.S. Department of Energy, *Site Recommendation Comment Summary Document,* section 4.3.3 (132).

possible to challenge the probability and radiation safety standards, the common sense challenge does not hold up against the mass of reports and probability calculations cited by the DOE. The response also presents a challenge to opponents should they decide to argue against the DOE's response because they would have to wade through all of the cross-referenced documents.

Arguments made by the public about seismic activity and volcanism assume a common sense, intuitive logic that is meant to challenge the DOE's site authorization. However, with the emphasis placed on scientific evidence and proof, these arguments are overwhelmed by the DOE's science in favor of the site and disregarded for lack of scientific information. In both DOE responses, they simply refer back to the points in the DOE documents that address the risk of earthquakes or volcanoes disrupting the repository. While the common sense arguments may actually be rooted in more "scientific' challenges, when presented without scientific data, though they may be persuasive to the common sense of the audience, the DOE is not forced to defend their scientific findings, but rather to state that they have science to back up their claims.

Conclusion

In this chapter, I have focused on the role of science, scientific expertise and scientific proof in the public hearing statements and comments by Nevadans in the site authorization hearings. Scientific arguments take up a relatively large portion of the public comments, though unlike the previous chapter, these arguments are made by both proponents and opponents of the project. My reading has looked at the construction of scientific expertise, trust and mistrust of the science of the DOE, and challenges to the scientific proof presented by the DOE. Unlike previous research that considers the public's reception of scientific information or rhetorically examines the rhetoric of experts, in this chapter, I specifically turned to the rhetoric of public in regard to science. Earlier in the chapter, I posed the question of how the public uses and employs science in the site authorization hearings. In the conclusion, I not only answer this question, but also argue for significance and importance of studying public science.

Considering the arguments of proponents, who generally agree with the scientific justifications presented by the DOE, many of the claims were ethos-based claims meant to provide credibility to the Department of Energy's conclusions and call for the public to have faith in both the superiority of "American science and technology" and in the DOE itself. There are two important implications of these ethos-based arguments. First, arguments calling for trust in science and technology reinforce the superiority of technical reason over "non-scientific," "hysterical" and "emotional" arguments, despite rhetorician's arguments that technical reason alone is insufficient to grapple with social issues and policy decisions. Secondly, in evaluating arguments of the proponents it is important to consider the multiple purposes and audiences to which the arguments may be addressed. Although the public comment period may be perceived, on face, as providing an opportunity for the public to comment to and persuade the Department of Energy, we can also consider it an opportunity to persuade other members of the public. In this light, proponent comments can be seen as having both an instrumental and consummatory purposes. Proponent arguments serve the instrumental goal of persuading the rest of the public who oppose the project, especially those present at the hearings. Under the assumption that the comments in the public hearing process are intended to persuade the DOE, it seems somewhat surprising that the scientist proponents would take such care in developing their ethos as scientists, when their conclusions are the same as the DOE's. However, when we view the purpose as persuading other members of the public, we can see the construction of scientific ethos as a form of prolepsis that responds to the common opposition argument that the DOE's science is biased. Moreover, in a controversy with such widespread public opposition, proponents may also have wanted to speak in a venue where they thought they would be heard by other members of the public. The argument of opponents can also be seen as enactments of identity and public announcements of their stance on the issue that serve the internal function of publicly affirming one's identity and increasing cohesion among others who support the project. This sort of consummatory rhetoric is typically applied to social movement rhetoric; however, in this case, we are reminded that public enactments of

identity and statements of one's position are an important element in public discourse about controversial issues.

Opposition arguments that addressed science also raised ethos-based claims about scientific expertise and about trust in science and the DOE. In addition, opponents employed logos-based arguments to challenge the scientific justification for the site. Yet, instead of introducing clearly articulated scientific proof (conforming to the standards of the scientific community) that challenges the DOE's science, opponents raised questions and offered arguments based in common sense reasoning.

Considering the arguments of the opponents, it is likely that because of the way that the public hearings are perceived as a means for further educating the public, the arguments of the public opponents of the site never really had a chance of persuading the Secretary of Energy not to recommend the site. As mentioned above, though scholars call for public deliberation about policies informed by science, particularly environmental policy, to be conceived as a dialogic form of communication as opposed to a one-way transfer of information, we see that in this case, the process seemed to be relatively monologic. Even though the DOE did produce comment summary documents in which they responded to the issues raised by the public, close examination of these responses, especially regarding seismic and volcanic activity, reveal expository responses with references back to the scientific reports that had been released for public review during the public comment period rather than evidence based responses on specific issues. So, while the existence of the public comment period and the DOE's comment summary documents suggest that the process is dialogic, both the way that the DOE responded to public comments and the stated purpose of the meetings to educate the public further suggest that the process is not one of open deliberation.

Nonetheless, the onus does not fall solely on the Department of Energy to make the process dialogic. Rather it requires that the public participate by criticizing the Yucca Mountain project. Over 5000 public comments submitted during the site authorization public comment period, not to mention public commentary on the DEIS in 1999, show that many members of the public wanted to take part in the process and

have their comments heard. However, my analysis in this chapter reveals that public commenters faced many constraints in getting heard. First, though this chapter focuses on public commentary about science, recall that the Nevada public argument themes included many other issues besides science. Yet these non-scientific arguments are not valued as highly by the DOE. Recall that the Secretary of Energy, in compliance with the NWPA, places ultimate value on technical reason by stating that, in evaluating whether or not to authorize the site, he will look first to the scientific and technical justification for the site and *then,* only after determining the scientific foundation, to the other issues of national interest, and other counterarguments. Opponents are thus constrained on their choice of arguments. For their arguments to count in the Secretary's determination, they have to address the science.

Moreover, because of the value of technical reason, an expectation is placed on the public that they understand and respond to the scientific and technical documents, reports, and arguments released by the DOE in favor of the site. As stated earlier, this puts the public in a catch-22 in which they are expected to respond to the science, but they are not taken seriously because they are not considered to have the expertise or they do not directly criticize the DOE's intricate scientific and technical reports. The common sense arguments introduced by the public are merely replied to with informative answers that show "it has been studied," reiterating the conclusion that the scientific and technical justification for the site is grounded, and listing where to find the data and conclusions in the reports.

To overcome these constraints and meet the expectations of the Department of Energy, it seems that the public merely needs to provide scientific challenges to the DOE's reports. However, my reading of the construction of both ethos and logos in Nevadan public opposition to the site suggests that members of the public, even scientists, may feel that they are unable to offer a direct challenge because they do not have the ethos of a scientist who has conducted a specific study on the issue. Those scientists who speak in opposition to the project do establish their ethos as scientists, but then proceed to raise questions about the DOE's scientific and technical arguments instead of using the same evidence that supports their questions to construct arguments

against the site. Arguments with support, as opposed to questions that merely raise issues, would create the expectation that the DOE respond by defending their science as opposed to informing through answering a question. Indeed, through raising questions as a strategy of challenging the DOE opponents are actually allowing the DOE to continue to frame the hearings as pseudo-educational. Those non-scientists in the general public who challenge the DOE's science invoke "I am not a scientist but..." statements and/or common sense reasoning. The former acts to undermine the speaker's own ethos and reinforce the importance of scientific expertise. It is as though the speakers feel the need to confess their lack of scientific expertise. My reading suggests that, in addition to the constraints placed on public arguers by the DOE that one must provide scientific proof to challenge the site, there may be a self-imposed constraint that one cannot truly challenge the DOE without scientific expertise.

Evaluating these arguments based on whether they meet the purpose of persuading the DOE, we could judge that they have failed. However, we might also consider, as was the case with the proponents, that speaking at the public hearings or submitting public comments also serves the purpose of persuading and rallying support of other members of the public, whether they are proponents, opponents or undecided. This is certainly an important function of the arguments of opponents to the Yucca Mountain site. However, if the goal of opponents is to stop the project, the public somehow has to reach the DOE or the federal government more generally. Based on my reading of the public hearing comments and the constraints, the public should engage more fully in the scientific debate about Yucca Mountain by offering scientific arguments. Instead of raising questions, general arguments about method, and common sense arguments that can be easily dismissed by the DOE, opponents need to cite the scientific information that they claim is available to debunk the site, they need to pose arguments as opposed to questions, and they need to interrogate the scientific method of the DOE's reports. This form of public science, I think, has a chance of effectively challenging the methods and results of published scientific studies.

Sociologist Steve Fuller calls for a radical change in the way that science is conceptualized in his advocacy of secular science.[297] He argues that "The invocation of scientific findings (almost any findings will do) has turned out to be the most ideologically palatable means of coercing the populace available to democratic governments" and calls for the government to stop producing science and to start distributing science for public, scientist and non-scientist critique, and educating the public to be scientifically and technically literate such that "science is driven by the entire community of enquirers."[298] It is likely that the DOE and other parts of the government will not give up their power to shape opinion and policy through science lightly. Fuller's call for a change in government science policy must come from below.

Public scientists and citizens should strive to become more educated about scientific policy and method and should start to challenge scientific findings. Michael Zimmerman and Steve Fuller both call for increased scientific literacy among the public. Biologist and ecologist Michael Zimmerman argues that scientific literacy does not mean that all decisions will be made solely on science in the absence of politics and ethics or that all members of the public will be scientists; rather, the public should become "conversant with basic scientific principles and methodology."[299] Zimmerman makes a rather large assumption that the public is by and large scientifically illiterate to which I am not comfortable adhering. However, increasing the level of scientific literacy remains an important a step in the right direction.

Scientific literacy does not necessarily address the problems that arose in the Yucca Mountain site authorization hearings in which there were scientifically literate people posing questions and challenges. Scientific critique in public policy decision-making also requires access to information and resources with which one can make reasoned scientific arguments, whether or not they include alternate scientific data.

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[297] Steve Fuller, "The Secularization of Science and a New Deal for Science Policy," *Futures* 29 (1997): 483-503.

[298] Fuller, 489-490.

[299] Zimmerman, xiii.

Drawing from Bazerman's notion of activist science, environmental and citizen activist movements can play an important role in disseminating scientific and technical information to the public, which can serve as inventional tools for challenging and debating science.[300]

Public science, however, should not also fall into the trap of privileging technical reason. While scientific literacy will be a crucial tool in increasing public participation in environmental decision-making, we must also never forget that scientific and technical reason can be complemented by other forms of reason and knowledge. Condit warns against definition of "worthy" scientific critique "as requiring accompaniment by scientific data."[301] This involves not only challenging scientific conclusions with scientific data, as the scientists do, but also making reasoned arguments about the scientific method. One example of this is Celeste Condit's challenge to brain sex research as being problematic because the choice of hypotheses are based in a dichotomous, and outdated, theory of gender. Condit reminds us that "scientific findings can be challenged for flaws in practice and also for linguistic insufficiencies"[302] In addition to challenging science in multiple ways, we should also continue to challenge environmental policy from multiple vantage points not limited to science. Gregg Walker and Steven Daniels admirably advocate for civic science in which "scientific inquiry and scientific and technical knowledge are clearly essential, when working through environmental conflict and developing environmental policy. Yet, there needs to be a space too, for citizen concerns and traditional (local and indigenous) knowledge."[303]

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[300] As was the case with the anti-nuclear movement's information dissemination campaign that Bazerman describes.

[301] Celeste Condit, "How Bad Science Stays That Way: Brain Sex, Demarcation, and the Status of Truth in Rhetoric of Science," *Rhetoric Society Quarterly* 26 (1996): 93.

[302] Condit, 85.

[303] Gregg B. Walker and Steven E. Daniels, "Dialogue and Deliberation in Environmental Conflict: Enacting Civic Science," in Susan L. Seneca, ed. *The Environmental Communication Yearbook, Volume 1* (Mahwah, NJ: Lawrence Erlbaum, 2004): 136.

In this chapter, I have evaluated the Nevada public's use of science in the Yucca Mountain site authorization public comment period. I have found that not only does the DOE perpetuate an understanding of science and model of public participation that constrains the ability of the public to meaningfully participate in scientific critique and environmental decision-making but that there may also be self-imposed constraints on the public's ability to participate in scientific debate. My findings suggest that the public can and should engage in public debate over science and suggests that the manner in which it was done in the Yucca Mountain hearings did not achieve the purpose of stopping the project (though likely achieved the other purpose of persuading other members of the public). To foster public engagement in environmental decision-making, there needs to be a push from below, from public scientists challenging the science of policy makers, but with scientific data, linguistic means, and reasoned challenges to scientific method.

CHAPTER IV: THE DOE'S CONSTRUCTION OF OPPOSITION

American Indians and Nevadans put forward arguments against the site authorization decision in the public comment period. Because the site was already authorized, it appears that these arguments were not persuasive to the decision-makers. In the federal government site authorization documents there are responses to some of the counterarguments offered by opponents. The federal government decided to go forward with the project, arguing that the counterarguments did not outweigh the arguments in favor of the site. As discussed in chapter one, the site authorization process as laid out in the Nuclear Waste Policy Act (NWPA) calls for the Secretary of Energy, Spencer Abraham at the time of the site authorization decision in 2002, to recommend a site, followed by the President's approval, an opportunity for the governor of the state in which the site will be located to veto the site, and final approval by the United States Congress. The NWPA also stipulates that the Secretary make a determination based in the scientific and technical foundation for the site.

The federal government's official site authorization documents include the Secretary of Energy's site recommendation report and letter to the President, the President's site authorization letter to Congress, the House of Representative's report on the approval of Yucca Mountain site, and the Senate report on the approval of the Yucca Mountain site.[304] My reading of these documents reveals that the main arguments laid out by Abraham in his report are summarized in his letter to the president and are, with minor exception, replicated in the Presidential and Congressional texts. The Secretary's report, then, became an important inventional tool in the construction of the President's letter to Congress and the Congressional Reports. Of the documents, the Secretary Abraham's forty-five-page recommendation report contains the most comprehensive and clear articulation of the federal government's justification for the site. This chapter is a close examination of the *Recommendation by the Secretary of Energy Regarding the Suitability of the Yucca*

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[304] Abraham, *Recommendation;* Abraham, *Secretary of Energy Letter*; Bush, *Presidential Letter*; U.S. House, *Approval of Yucca Mountain Site*; U.S. Senate, *Approval of Yucca Mountain Site.*

Mountain Site for a Repository Under the Nuclear Waste Policy Act of 1982 (hereafter referred to as *Recommendation* or the Secretary's site recommendation report).

One of the main arguments in the *Recommendation* is that arguments in favor of the site outweigh the arguments against the site. The text also contains a section devoted to identifying and responding to what Secretary Abraham considered the main arguments against the site. Although there was a document released by the DOE that summarizes all of the arguments submitted in the comment period and provides responses to those arguments,[305] Abraham choose seven arguments against the site to which he responded in the site recommendation report. This choice of arguments is a significant rhetorical choice that constructs the opposition to the site in a particular way. Based on the arguments identified in the report, the Secretary of Energy, the President, and both Congressional reports make a cost-benefit analysis argument that the arguments for site authorization outweigh those against it. Considering that chapters 2 and 3 highlight some of the arguments against the site that arose in the site authorization public comment period, evaluation of the Secretary's site recommendation report reveals that some of these arguments were excluded from the report. This chapter focuses on the way that the report rhetorically constructs and responds to opponents and opposition arguments, paying particular attention to the inclusion and exclusion of opponents and opposition arguments in the site authorization documents. This chapter describes the structure and arguments presented in the *Recommendation,* lays the theoretical and critical foundation for my reading, and closely reads the section entitled "None of the Arguments against Yucca Mountain Withstands Analysis" in the Secretary's site recommendation report, attending to the rhetorical construction of counterarguments and opponents.[306]

Secretary Abraham's Site Recommendation Report

In February 2002, Secretary Abraham recommended the approval of Yucca Mountain as the future high-level nuclear waste repository stating,

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[305] U.S. Department of Energy Office of Civilian Radioactive Waste Management, *Site Recommendation Comment Summary Document.*

[306] Abraham, *Recommendation,* 31-45.

> After reviewing the extensive, indeed unprecedented, analysis the Department has undertaken, and in discharging the responsibilities made incumbent on the Secretary under the Act [NWPA], I am recommending to the President that Yucca Mountain be developed as the Nation's first permanent, deep, underground repository for high-level radioactive waste. A decision to develop Yucca Mountain will be a critical step forward in addressing our Nation's energy future, our national defense, our safety at home, and protection for our economy and environment."[307]

This statement reveals what is to come in the *Recommendation.* In addition to reference to the "extensive" scientific and technical research into the site, Abraham also contends that the siting decision is essential to the nation's survival. This introductory statement serves to frame his decision to authorize the site and sets up the cost benefit analysis that he performs when he responds to counterarguments. Even this short introductory statement reveals how Abraham rhetorically lays a heavy burden for arguments against the site to challenge the "extensive" and "unprecedented" analysis that supports the siting decision and/or to demonstrate that there are sufficient costs to going forward with the project that warrant risking our energy security, national defense, safety in the wake of the 9/11 attacks, economic stability, and our environment. The burden of proof is shifted to the opponents in this way. Abraham implies that because so much time, money and research has gone into the project, that it should go forward unless evidence arises to challenge this or arguments tip the cost benefit analysis.

Abraham then lays out the implications of the decision, the decision-making process, and the decision criteria. Citing the responsibilities and process laid out in the NWPA, Abraham reports that after site authorization, the site will undergo another review in the Nuclear Regulatory Commission (NRC) licensing decision. He also points out that he considered multiple sources of information, including technical

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[307] Abraham, *Recommendation*, 6.

reports, independent scientific review, and public comments, in making his determination. The decision criteria are of particular relevance to my analysis of the text. Abraham states,

> Pursuant to that responsibility [both as granted in the NWPA and as the Secretary of Energy], I concluded that I should use three criteria in determining whether to recommend approval of the Yucca Mountain Project. First, is Yucca Mountain a scientifically and technically suitable site for a repository, i.e., a site that promises a reasonable expectation of public health and safety for disposal of spent nuclear fuel and high-level radioactive waste for the next 10,000 years? Second, are there compelling national interests that favor proceeding with the decision to site a repository there? Third, are there countervailing considerations that outweigh those interests?[308]

While the first consideration is mandated by the NWPA, the second two considerations were added by Abraham as "appropriate checks on a pure suitability based decision" to be evaluated *after* determination of the scientific and technical suitability of the site.[309] The second two criteria are choices made by Abraham that are crucial to the way that he rhetorically constructs and responds to opposition to the site.

The remainder of the Abraham's report is organized around these three decision criteria. In regard to the first, the report argues that the site is scientifically and technically suitable for a high-level nuclear waste facility and lays out the results of the various evaluations and reports (including the *Yucca Mountain Science and Engineering Report, Yucca Mountain Site Suitability Evaluation*, and the Draft EIS). Concerning the second criterion, the national interest, Abraham argues that the Yucca Mountain repository is in the national interest because it solves the nuclear waste crisis, allows continued development and use of nuclear power and technology, preserves our energy security, powers our naval fleet, allows the nation to

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[308] Abraham, *Recommendation,* 9.

[309] Abraham, *Recommendation,* 9.

decommission nuclear weapons and meet non-proliferation goals, protects the environment by safely storing nuclear waste and allows for the continued use of "clean burning" nuclear power, allows continuation of nuclear research, medical and humanitarian programs, and assists anti-terrorism efforts by moving 171 potential terrorists sites to one location. The arguments presented by the Secretary regarding the first two criteria may include flawed arguments that could be challenged by opponents—indeed public hearing comments and statements reveal that opponents did challenge the scientific suitability of the site as well as the national interest.

Although a close reading of the first two criterion would likely yield important insight into the Yucca Mountain controversy (and will be the objects of further criticism), this chapter focuses on the final criteria: "are there countervailing considerations that outweigh those interests?"[310] Focusing on this criterion is important because it allows for an evaluation of which counterarguments were included or excluded in the cost-benefit analysis and an examination of the rhetorical construction of the opposition in Abraham's report.

Evaluating Rhetorical Exclusion

Evaluation of the Abraham's construction of the opposition is informed by an assessment of what opponents and opposition arguments are included in the *Recommendation* and, through comparison with the opponents and arguments present in the public hearings, what arguments and opponents are excluded. In this case, because the Secretary of Energy's case for going forward is in part grounded in a claim that none of the counterarguments outweighs the case for going forward, it is important to evaluate the counterarguments that are included and excluded in this cost-benefit analysis in order to evaluate the argument. Looking for excluded voices, then, is a crucial part of evaluating the strength of the DOE's argument for the Yucca Mountain site. Traditionally, the realm of rhetorical criticism includes the study of texts and what is said in those texts. However, there are cases in which we should also uncover what is not said in the text. For example, one may determine the available

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[310] Abraham, *Recommendation*, 9

means of persuasion in a given rhetorical situation (what was not said) and compare those with what was actually said to understand better the choices made by the rhetor in constructing a text. Alternatively, a critic might seek to determine the unstated premises of an enthymeme (what is not said) to understand the way that what is said can persuade audiences through an unstated premise. In looking at a the inclusion and exclusion of arguments in a text, such as the *Recommendation,* a reading of what is said in the text is necessary to determine which arguments are included, and a reading of other texts, in this case public hearing statements and public comments, is necessary to argue for an excluded argument or voice. This suggests the importance of a close reading of multiple texts in a controversy. In addition to viewing each text as an individual object of study, we may also see the set of texts that make up the controversy as an object of study. Viewing the controversy as a text means that one can support claims for what is not said in one text with evidence of what is said in a text that is in conversation with that text.

When exclusion of arguments is discovered, how do we, as rhetorical critics and theorists, support criticism of the exclusion of arguments or groups of people? The rhetorical concepts of ideological criticism and the third persona can help to answer this question.

Ideological Criticism exposes underlying ideologies in discourse or argument. It is a form of criticism that does political work by revealing the workings and effects of ideological formations, such as capitalism, patriarchy, or colonialism in a text. According to Philip Wander

> an ideological turn in modern criticism reflects the existence of crisis, acknowledges the influence of established interests and the reality of alternative worldviews, and commends rhetorical analysis not only of the actions implied but also of the interests represented. More than informed talk about matters of importance, criticism carries us to the point of recognizing good reasons and engaging in right action. What

> an ideological view does is to situate "good" and "right" in the historical context, the efforts of real people to create a better world.[311]

Hence, ideological criticism involves making judgments about rhetorical artifacts based on recognizing ideological formations, vested interests and alternatives. Ideological criticism opens the door for an evaluation of excluded arguments by posing the question of who is served in the choice to exclude.

One way to determine and focus on excluded arguments and opponents is to attend to a "Third Persona" that "focuses on audiences 'negated' through the text—the language, the speaking situation, the established order shaping both."[312] So, ideological criticism, and more specifically the third persona, allows for a discussion of what arguments count, and how arguments are included or excluded, and the vested interests in such decisions. Abraham's analysis of counterarguments in the *Recommendation* excludes certain opponents and arguments, and this chapter explores a third persona that is negated in the text and the ideological interests at play in this exclusion.

Construction of the Opposition

Abraham's site recommendation report rhetorically constructs an opposition to the site which is then used to perform a cost benefit analysis to see if any of the arguments made by the opposition can outweigh the arguments in favor of the site (that it is scientifically suitable and in the national interest). Abraham constructs the opposition through the way he talks about the opponents to the site and the opposition arguments to which he responds.

Opponents

In the case of Yucca Mountain, there are diverse voices of dissent including Nevada citizens, American Indian tribes, academics, scientists, representatives from non-profit organizations, and activists. Despite this diversity of opponents to the site, the site recommendation report is limited in its identification of opponents to the site.

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[311] Wander, "The Ideological Turn," 18.

[312] Wander, "The Third Persona," 216

The *Recommendation* implies that elected officials and citizens of Nevada are the most significant voice of opposition to the Yucca Mountain site. When opposition to the site is discussed, it is often discussed in relation to Nevada. Nevada Governor Kenny Guinn is the only opponent that Secretary Abraham refers to by name in his site recommendation report.[313] The choice to represent the governor officials and citizens of Nevada as the primary opponents of the Yucca Mountain site is a natural choice considering the NWPA-mandated veto right of the state in which the site will be located and that Nevadans do constitute the largest, by population, source of opposition to the site. However, an explanation for an inclusion of Nevadans as the opponents to the site does not explain the exclusion of other opponents, such as American Indian tribes.

Although Guinn and Nevadans are the only named opponents in the *Recommendation,* opponents of the Yucca Mountain site are also referred to more generally in the site recommendation document as "critics" and "opponents."[314] The only clarification of who the critics and opponents may be comes when Abraham explains how he came across the opposition arguments. In his report, Secretary Abraham claims that in compiling his report and addressing arguments of his opponents, he drew from "the views of members of the public including those expressed at hearings and through written comments."[315] In his explanation of the public hearing process, Abraham states, "my predecessors and I invited and encouraged public, governmental, and tribal participation at all levels."[316] While Abraham acknowledges that he has evaluated the public comments and hearing

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[313]Abraham, *Recommendation*; U.S. House, *Approval of Yucca Mountain Site*; U.S. House Subcommittee on Energy and Air Quality of the Committee on Energy and Commerce, *Hearing: A Review of the President's Recommendation to Develop a Nuclear Waste Repository at Yucca Mountain Nevada*, 107th Cong., 2nd sess., 2002; U.S. Senate, *Approval of Yucca Mountain Site*; U.S. Senate Committee on Energy and Natural Resources, *Hearing: Yucca Mountain Repository Development*, 107th Cong., 2nd sess., 2002.

[314] Abraham, *Recommendation,* 32-45.

[315] Abraham, *Recommendation,* 8.

[316] This point, that tribes were invited to provide comments, appeared a few other times in the full document. These are the only references to American Indians and there arguments in the document. Abraham, *Secretary*, 32.

statements, he does not go into any more detail about the opponents and critics of the project beyond these two statements. This is significant because, in combination with the naming of Nevadans and Guinn as opponents, it reinforces the role of the Nevada Government as the main opponent to the site.

The naming of opponents is one way in which the Secretary's site recommendation report differed from the other federal site recommendation documents. In addition to naming Guinn, Congressional hearings and reports names other Nevada government officials as opponents to the project including Nevada Senators John Ensign and Harry Reid and two Nevada Representatives, Jim Gibbons (2nd district) and Shelley Berkley (1st district). Interestingly, while these texts still represent Nevadans as the main opponents to the site, they represent more people as opponents than the Secretary's report does including academics, representatives from non-profits and other organizations, and government officials from other states. In addition to referring to opponents by name, the choice of whom to invite to speak at Congressional hearings helps to construct a picture of the opponents. Congressional hearing transcripts include opponents such as Joan Claybrook of Public Citizen, James David Ballard (Professor of Criminal Justice at University of Michigan), Ross C. Anderson (Mayor of Salt Lake City, Utah), Stephen M. Prescott (Executive Director of the Huntaman Cancer Institute in Salt Lake City, Utah), and Victor Gilinski (former NRC Commissioner).[317] Though these texts included more opponents to the site, the opponents are still primarily associated with Nevada and do not clarify opponents who participated in the public comment period.

Considering the presence of over twenty different American Indian tribes at the public hearings, a public hearing held specifically for tribes, written public comments submitted by tribes, and the DOE's interactions with the Consolidated Group of Tribes and Organizations before the public comment period, the Secretary's rhetorical construction of opponents in the *Recommendation* downplays, if not completely

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[317]Abraham, *Recommendation*; U.S. House, *Approval of Yucca Mountain Site*; U.S. House, *A Review of* U.S. Senate, *Approval of Yucca Mountain Site*; U.S. Senate Committee on Energy and Natural Resources, *Hearing: Yucca Mountain Repository Development*, 107th Cong., 2nd sess., 2002.

excludes, tribes as opponents. Tribes are only mentioned in reference to encouraging their participation in the public comment period, but the statement does not necessarily imply that tribes actually participated and voiced opposition. Reading this document alone, one might assume that the only opposition to the site came from Nevadans. It is possible that Abraham does not mention the tribes specifically because he assumes that they will be covered by the general phrases "public," "opponents," and "critics." However, considering the history of assimilationist policies by the federal government discussed in chapter 2, it is also possible that the exclusion of tribes from the list of opponents perpetuates the assimilation of American Indians into the general population. This specifically goes against the argument made by the tribes in the public comment period that the DOE should hold separate government-to-government consultations with the tribes, precisely because they have a different relationship with the federal government and have different concerns about the project.

Opposition Arguments

The federal government's texts construct an image of the opposition not only through identifying individuals and groups of people who oppose the project but also through the choice of opposition arguments presented and responded to in the texts. Because the opposition arguments presented in the President's and Congress' texts were largely the same as those presented in the Secretary's report, this section focuses on the arguments in the *Recommendation.* In this section, Abraham identifies seven arguments against the site and states "The final question I examine is whether the arguments against its designation rise to a level that outweighs the case for going forward. I believe they do not, as I shall explain. I do so by briefly describing these principal arguments made by opponents of the Project, and then responding to them."[318] Considering the volume of arguments waged against the site in the public comment period (over 5000 individual comments), Abraham could not be expected to respond to all of them. Instead, he categorizes seven principal arguments to which he

[318] Abraham, *Recommendation,* 31-32.

will respond. The choice of the word principal, I argue, is important because it implies that he considers these the most important. The seven principal arguments are:

1. Assertion 1: The citizens of Nevada were denied an adequate opportunity to be heard.
2. Assertion 2: The project has received inadequate study.
3. Assertion 3: The rules were changed in the middle of the game.
4. Assertion 4: The process tramples states' rights.
5. Assertion 5: Transportation of nuclear materials is disruptive and dangerous.
6. Assertion 6: Transportation of wastes to the site will have a dramatically negative economic impact on Las Vegas.
7. Assertion 7: It is premature for DOE to make a site recommendation for various reasons (because of a GAO report that criticized the project, an unrealistic timeline, and the 293 technical items that the NRC said need to be resolved before licensing).[319]

Considering the argument themes of American Indian opponents and Nevada opponents, it is certainly true that many opposition arguments did fall into the above categories and assertions. Abraham responds to each of these "assertions" and concludes that none of these *principal* counterarguments outweighs the case for going forward.[320] Instead of addressing all of the counterarguments, Abraham rhetorically constructs a picture of the opposition arguments. Because he claims to respond to the principal arguments, there is an implication that the other arguments, or "assertions," are not as important, central, or voluminous as these ones.

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[319] As stated above, though I am focused on the Secretary's site recommendation report, it is important to note that the other federal government site authorization documents resemble the arguments laid out in this report. The other documents, when responding to counterarguments, included various combinations of these nine arguments and three categories. Abraham, *Recommendation,* 32, 33, 37, 38, 39, 49.

[320] Note the use of the word assertion instead of argument. Assertion implies an argument with little backing or one that is easy to refute as opposed to an argument, which has a weightier connotation.

Close reading of the document and Abraham's respond to each of these arguments reveals that American Indian arguments are excluded from the principal counterarguments. Recall that American Indian arguments fell into five themes: the land, federal-tribal relations, flaws in the site authorization process, radioactive risk, and science. The exclusion of American Indian arguments is apparent in three ways. First, a mere glance at the list of assertions shows that two of the five American Indian argument themes discussed in chapter 2 are not included in this list; these are the arguments about land and arguments about the federal-tribal relationship.

Second, considering the other three argument themes, it is conceivable that these could fit within the report's seven assertions. For example, American Indian arguments about the flaws in the site authorization process could be covered under assertion 1: "The citizens of Nevada were denied an adequate opportunity to be heard" and assertion 3 "The rules were changed in the middle of the game." Arguments about radioactive risk and challenges to the scientific justification of the site could potentially be covered in assertion 2 that "the project has received inadequate study" and assertion 5 "transportation of nuclear materials is disruptive and dangerous," as well as in other sections of the report which argue that the radioactive protection at the site is suitable and offer other scientific justification for the site. However, in answering these assertions that American Indian arguments could fall under, the Secretary's report does not acknowledge that these assertions came from tribes as well as members of the public. Although there is one point in which Abraham alludes to the fact that there may be opposition from American Indian tribes when he provides a response to the first assertion, stating "my predecessors and I invited and encouraged public, governmental, and tribal participation at all levels."[321] This, however, does not state that the tribes oppose the project. Instead, they are grouped in with Nevada citizens and government under the title of "citizens" not being heard. Considering the arguments made in the

[321] Abraham, *Secretary*, 32.

public comments period about recognizing the unique government-to-government relationship between the government and tribes, it is likely that American Indian arguers would challenge this titular characterization.

Third, although there are three American Indian argument themes that could potentially be included in Abraham's list of assertions, evaluating the way that Abraham responds to these arguments suggests that he does not respond to the unique concerns raised by the tribes. American Indian concerns about the site process included claims that there were not enough opportunities to speak and that the government failed to consult tribes on a government-to-government basis. When Abraham addressed the first assertion, that Nevadans were denied an opportunity to be heard, he recounts the public comment period, but does not address that Indian tribes were denied an opportunity to be heard. American Indian arguments about radioactive risk and the science used to justify the site are uniquely different than those of Nevadans because they demonstrate a historical assessment of the connection between tribes and the Nevada Test Site (NTS) and the impacts of such a connection, and because they offer differing ways to evaluate science. In responding to assertions, and in the rest of the report where Abraham demonstrates that the site is scientifically sound and will not release radiation, he does not address these unique concerns.

Viewing only the Secretary's report, one might assume that the opponents and opposition arguments identified in these documents were the only challenges to the Yucca Mountain site, and if not the only, then the most important challenges. However, arguments in the public comment period reveal that American Indian tribes in the area unanimously opposed the site and offered several opposition arguments about land, treaty-rights, and the government-to-government status. Though it could be argued that the *Recommendation* is only one document, the other federal site authorization documents repeat the same arguments listed above and make no mention of tribal opposition and tribal arguments. Therefore, in the Secretary's rhetorical construction of the opposition, it is as if American Indian opponents and their

arguments do not exist (or do not merit the "principal" counterargument status). This is particularly important because, as argued above, the Secretary's report set the pattern for all subsequent documents by the President and Congress, thus amplifying the problem of exclusion of arguments from a somewhat esoteric report by the DOE with a limited audience to a much wider audience in Presidential and Congressional texts.

In addition to the testimony and comments during the public comment period, several tribes and activist groups have vocally opposed the project. One example, discussed in chapter 2, is the new lawsuit filed against the government that the Yucca Mountain project violates the Ruby Valley treaty. The Western Shoshone Defense Project (WSDP) and the Shundahai Network are two nonprofit activist organizations associated with the Western Shoshone that oppose the Yucca Mountain site.[322] In addition to Western Shoshone opposition to the site, members of American Indian environmental justice organizations, such as Winona LaDuke and other members of Honor the Earth, Indigenous Environmental Network (IEN), and the National Environmental Coalition of Native Americans (NECONA) also oppose the site.[323] The Yucca Mountain site is an issue that concerns American Indians from tribes across the nation.

These tribes and organizations actively oppose the Yucca Mountain repository site. In addition to a strong web presence, they have sponsored visible protest and activist strategy events, signed letters to Congress and statements of opposition to the site, and sent representatives to speak at public hearings. For instance, Johnnie Bobb

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[322] Opposition to the Yucca Mountain site is not the sole focus of either of these organizations, but rather one of the many issues addressed by each group. Western Shoshone Defense Project, "Who and What are We?" [Web page], http://www.wsdp.org/who.htm (accessed July 19, 2004); Shundahai Network, "The Shundahai Network: Who We Are," [Web page], http://www.shundahai.org/Shundahai_Network_Information.htm (accessed July 19, 2004).

[323] The Yucca Mountain repository is not the sole focus of these organizations, but each includes Yucca Mountain among the issues they address. Honor the Earth, "Mission Statement," [Web page], http://www.honorearth.com/abouthte.html (accessed July 19, 2004); Indigenous Environmental Network, "About the Indigenous Environmental Network," [Web page], http://www.ienearth.org/iensub.html (accessed July 29, 2004). NECONA, "Home Page," [Web page], http://www.alphacdc.com/necona/ (accessed July 29, 2004).

of the WSNC organizes the annual Walk on Sacred Land, or Newe Sogobia Mava'a Mia in the Western Shoshone language, in which Western Shoshone activists walk and run around Yucca Mountain to call attention to their right to this land.[324] The Shundahai Network organizes an annual event at the Nuclear Test Site to call for a stop to nuclear testing and waste on Yucca Mountain. The WSDP sponsors an annual spring gathering for activists to discuss Western Shoshone land rights issues, including the Yucca Mountain site, which I attended in May 2004. There were discussions, presentations, and strategy sessions about the Yucca Mountain site. These groups along with NECONA are also represented in an April 10 2002, Nevada Congressional Delegation announcement of national and local environmental and American Indian activist groups opposed to the Yucca site.[325] Taken together with the public hearing comments, there is a public of American Indian tribes and activist groups opposed to the Yucca Mountain repository and other forms of nuclear technology on Indian land.

Despite both the presence of official participation in the public comment period and activist presence outside of the process, American Indian opposition to the site is excluded from the report. Taken together, these groups and their actions constitute a public of American Indian tribes and activist groups opposed to the Yucca Mountain repository and other forms of nuclear technology on Indian land. What is absent from the report is as important as what is included in the text. Though there is a strong movement among Western Shoshone, Southern Paiute, and Owens Valley Paiute and Shoshone tribes and other Indian activists groups and tribes in opposition to the Yucca Mountain repository, these opponents and their arguments are not

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[324] The 2002 event was covered in local newspapers such as Keith Rogers, "Runners Protest Nuclear Toll," *Las Vegas Review Journal*, May 12, 2002, online edition, http://www.reviewjournal.com/lvrj_home/2002/May-12-Sun-2002/news/18727573.html (accessed July 29, 2004).

[325] A press release about this announcement is available on Senator Ensign's web site. "Nevada Delegation Announces Hundreds of Environmental Groups Supporting Fight Against Nuclear Waste Plan," *Yucca Mountain and Nuclear Waste Issues Page* [Web page], April 10, 2002, http://ensign.senate.gov/issues/yucca_mountain.htm (accessed July 29, 2004). Furthermore, Senator Reid brought this up in a question to Secretary Abraham in the Senate hearings: "I'm sure you [Abraham] are aware that there are 500 local environmental groups, 49 national environmental groups who all oppose everything that you are doing regarding nuclear waste. Are you aware of that?" See the U.S. Senate Committee, 34.

included in the site authorization documents. American Indian opponents are the third persona, the audience that is negated in the text through exclusion. The remainder of this paper explores the implications of this exclusion of arguments.

Conclusion

Through examination of the construction of the opposition, opposition arguments, and rhetorical strategies in the Secretary's site recommendation report, we can understand the controversy over nuclear waste siting, and the relationship between American Indians, the federal government, and nuclear technology. Why are American Indian opponents and their arguments excluded in the site authorization texts? There are several potential responses to this question.

The first possible response is that American Indian arguments against the site fall within the Secretary's categories so, in effect, their arguments are not excluded. While it is true that American Indians made some arguments that would fall under the seven arguments to which Abraham responded, as I showed in my analysis of American Indian public hearing statements and public comments, there are other arguments that are significant in their omission such as the claim that Yucca Mountain falls on land that is claimed by the Western Shoshone under the 1863 Treaty of Ruby Valley, and the argument that the repository will have significant negative repercussions on tribal spiritual practices and resource-use. Although chapter 2 reveals that the DOE does provide answers to some of these arguments in the *Site Recommendation Comment Summary Document,* it is important to remember that, unlike Abraham's site recommendation report, the *Site Recommendation Comment Summary Document* was not widely released to the public and was not mimicked by the President and Congress in their cost-benefit arguments. These arguments made by American Indians are important challenges to the site and, though they may have been responded to in the comment summary document, represent significant omissions in this public, official justification of the Secretary's site authorization decision.

Even if the American Indian argument themes that could fall within the categories addressed by the Secretary, those that address the process, radioactive risk, and scientific and technical challenges, are subtlety different. As presented in

Abraham's report, "opponents" frame their arguments in terms of the risk of transporting materials through major cities and population centers. While these concerns are not absent from American Indian transportation arguments, activists constructed their arguments about the safety of the site to reflect the safety of the mountain, plant and animal resources, and spirits. Regarding scientific concerns, recall that American Indians challenged the superiority of scientific knowledge as compared to indigenous forms of knowledge.

Regardless of how similar or dissimilar American Indian arguments may be to the opposition arguments as presented in site recommendation report, the *Recommendation* does not name American Indian tribes as opponents. Rather, it identifies opponents as the state of Nevada, the public, and critics. Perhaps the general references to "opponents" and "critics" of Yucca Mountain in the texts were intended to include American Indian activists. Indeed, some of the arguments made by American Indian groups resemble the safety and sound science arguments addressed in the site authorization texts; however, these arguments were attributed to Nevada citizens and the Nevada governor and not to American Indians. Even if we accept the argument that American Indians could fall into the category of the public or critics, the argument is problematic considering the history of assimilationist pressure on tribes in the United States. This exclusion, then, may be a vested interest in continued assimilation. Tribes are sovereign governments that do not want to be assimilated into the public. Just as the state of Nevada is named as an opponent of the project, tribes should also be named as opponents.

A second possibility is that the Secretary of Energy was unaware of American Indian opposition to the site at the time of writing the report. However, this is unlikely. Not only did American Indian tribes make arguments during the public comment period that the Secretary claims to have evaluated in making his decision[326], but these arguments were also compiled and responded to in the comment summary documents

[326] Abraham, *Recommendation,* 32.

produced by the Department of Energy[327] that the Secretary also claims to have evaluated in making his decision. Though one could argue that responding to arguments in the comment summary document means that the arguments were not entirely excluded by the federal government, it is important to note that Abraham rhetorically constructs the main opponents and opposition arguments against the site in a way that excludes American Indian arguers and arguments.

There are two critical distinctions between the comment summary document and the recommendation report. First, the comment summary document is not an official report to recommend the project. Second, the comment summary document was not widely released to the public and is much harder to find than the site recommendation report. Indeed, the comment summary document which clearly recognizes American Indian arguments (though, as chapter two demonstrates, does not respond well to these arguments) bolsters the argument that the Secretary and the DOE were aware of American Indian arguments and chose not to include them in the cost-benefit analysis argument in the site recommendation report. Beyond participation in the public comment period, we should also bear in mind there is a movement of American Indian activists opposed to the Yucca Mountain high-level nuclear waste repository. Members of these groups profess their arguments on Web sites and in protest events. From personal conversations with DOE employees at the Yucca Mountain Information Center, it is clear that that the DOE is aware of tribal opposition. If this is true, it brings into focus the rhetorical nature of Abraham's construction of the opposition. In his official recommendation and justification of the site, Abraham excluded the arguments of American Indians from consideration.

The third possible answer is that environmental policy-making often excludes public voices. Much scholarship in environmental rhetoric and communication focuses on public input in environmental policy, the Not-In-My-Back-Yard syndrome (NIMBY), and environmental justice movements. Absence of public input in environmental policy-making is a common problem as Jeanne Ratliff argues in her

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[327] U.S. Department of Energy Office of Civilian Radioactive Waste Management, *Site Recommendation Comment Summary Document.*

analysis of public hearings held in Salt Lake City regarding the preparation of an Environmental Impact Statement for the proposed nuclear waste repository at Yucca Mountain. Her article concludes that the public hearings did not have a significant impact on the policy decision.[328] This finding is typical of environmental communication that tends to be a one-way process of communication in which policy makers view public hearings and other forms of public feedback as an opportunity to educate the public and clarify misconceptions.[329] While the public participation process in this case was flawed in many of the ways indicated in the literature and new ways as indicated in chapter 3, there was some level of public participation and the public hearing statements and comments are mentioned in the Secretary's report. Abraham's treatment of the public hearings in his report, however, excludes American Indian arguments.

The fourth possible answer is that the Abraham and/or the DOE do not consider American Indian arguments to be *principal* arguments. Although I believe that the contents of the American Indian arguments about the land and government relations should be considered principal arguments, it is possible (indeed likely) that not everyone agrees. Abraham might consider these issues resolved and thus not principal; for example, chapter 2 shows that the DOE's response to the Ruby Valley Treaty argument is that the issue has been resolved and the Western Shoshone tribe has lost title to the land. However, the issue is not resolved as the issue is still in litigation. Moreover, in responding to the seven "assertions" in the *Recommendation,* the Secretary also presents the assertions as resolved, meaning that if an argument is considered resolved from the perspective of the DOE, it should not eliminate an argument from being principal. It could be also be argued that American Indian arguments are not principal because there are not enough speakers (52 out of the entire hearings). However, we cannot evaluate arguments on quantity alone, a small number

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[328] Ratliff, "The Politics of Nuclear Waste," 359-380.

[329] Belsten, "Environmental Risk Communication," 41; Katz and Miller. "The Low-Level," 111-140; Ratliff, "The Politics of Nuclear Waste"; Renz, "Communicating About Environmental Risk," 1-18; Waddell, "The Role of *Pathos,*" 381-400; Waddell, "Saving the Great Lakes," 141-165.

of significant and quality arguments should be considered even if there is not a high quantity. Thinking back to the analysis of the loci of values in chapter 2, if it is the case the American Indian arguments were not considered to be principal arguments because of their quantity, this may reflect the difference between the loci of quantity that are prevalent in the DOE's arguments versus the loci of quality which are more common in the arguments of American Indians.[330]

So, what do we make of the Secretary of Energy's choice to rhetorically construct his opponents and opposition arguments in a way that excludes American Indian arguments? How can we explain this rhetorical exclusion? There are at least two explanations: that the arguments were strategically excluded in the interest of the federal government or that incompatibilities in worldview between American Indians and the federal government prevented Abraham from recognizing these arguments as principal.

Strategic Exclusion

First, it is possible that Abraham strategically excluded this set of arguments. In this possible answer, the exclusion of American Indian arguments was rhetorically constructed to create a guise of open deliberation and reasonableness, and to maintain a system of radioactive colonization. Considering the former, by introducing and responding to some of the counterarguments, the Secretary can argue that he has considered counterarguments and engaged in a cost benefit analysis. To an undecided or uniformed audience this may seem reasonable. However, this construction creates a guise of a deliberative moment that seeks multiple perspectives from the public to help develop policy while actually using the process as a way to justify a proposal that is almost a forgone conclusion. In this case, the Secretary's site recommendation report is not meant to open deliberation about the Yucca Mountain repository. Rather these texts, collectively, serve a justificatory purpose. Through reference to public hearings, construction of the opposition, and responses to opposition arguments, the texts make a case for the Yucca Mountain site. This tactic works rhetorically to suggest that the

[330] Perelman and Olbrechts-Tyteca, 83-96.

DOE is cognizant of opposition, willing to engage in debate, and willing, as Abrahams said, to evaluate whether counterarguments offer significant reasons to abandon site authorization. This apparent reasonableness also appears in later documents based on the Secretary's report. The construction and refutation of opposition arguments makes the decision-makers look reasonable. However, because American Indian arguments raise issues of fairness, treaty rights, and historical treatment of American Indians, mention of these arguments may make the DOE look less reasonable. The Yucca Mountain project is in the federal government's interest, and part of convincing the public that it is in their interest too, is to look like they have made a reasonable effort to deliberate.

In regard to the latter, the exclusion of American Indian voices could serve the interests of continuing a system of radioactive colonization and avoid discussion of American Indian sovereignty. These issues expand beyond just the Yucca Mountain controversy. According to Rebecca Bjork, "a post colonialist critique of language does not seek to trace the outlines of 'some nefarious Western imperialist plot' but rather to explore the ways that ideological constructions of colonialism are expressed in various texts."[331] An ideological construction of colonialism can also occur in what is not said in a text. That is, colonialism is expressed in the fact that American Indian arguments are excluded in the set of opposition arguments identified in the site authorization texts. Through identifying the audiences neglected in the text, the third persona, I uncover a strategy that serves the interests of the federal government and the "national interest." This strategy serves the national interest of having Yucca Mountain to store waste and serves the national interest of continued internal colonization of American Indians.

Not only is it an act of colonialism to exclude voices, but exclusion of these voices also allows the federal government to avoid refuting counterarguments that could potentially provide a reason to abandon the Yucca Mountain site. American Indians who spoke in the hearings called for the federal government to honor treaty-

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[331] Bjork, "Public Policy Argumentation," 214.

rights, their use of the land for spiritual and other purposes, and to conduct negotiations in a government-to-government fashion. These arguments are also tied into radioactive colonization, that the nuclear waste siting process as one part of an unsatisfactory colonial relationship between nuclear technologies and indigenous land. This is made explicit in arguments of activists outside of the formal public comment process.

Recall from chapter 1 that radioactive colonization is the alleged consistent and targeted use of American Indian lands to sustain the nuclear industry while harming indigenous populations. Before discussing how the exclusion of arguments may be a form of radioactive colonization, it is important to highlight the history of radioactive colonization. Nuclear waste storage is dangerous to tribal lands and peoples just as other elements of the nuclear production process have been. According to the Declaration of the Indigenous Anti-Nuclear Summit, the nuclear industry,

> which has waged an undeclared war, has poisoned our communities worldwide. For more than fifty years, the legacy of the nuclear chain, from exploration to waste, has proven through documentation to be genocidal and ethnocidal and a most deadly enemy of Indigenous peoples.[332]

Nuclear technologies, they argue, are not only poisoning indigenous communities, but are also enemies of humankind, thus affecting those living on the borderlands as well as non-Indian lands and peoples.

American Indian environmental justice groups and other activist organizations attempt to expose this relationship with examples of nuclear development on American Indian lands. A report prepared by the Indigenous Women's Network states, "In 1975, 100% of all federally produced uranium came from Indian reservations. That same year there were 380 uranium leases on Indian Lands, as compared to four

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[332] As cited in Honor the Earth, "Background Information: Nuclear Waste and Native Lands," [Web page], http://www.honorearth.org/ejik/energy/background.html (accessed February 22, 2004).

on public and acquired lands."[333] A preponderance of uranium mining and milling occurred on Navajo and Pueblo lands in the four corners region of the United States and on the lands of tribes in the Greater Sioux Nation in the Black Hills. Uranium mining and milling pollutes the land and its people with radiation.[334]

In addition to uranium mining and milling, nuclear testing occurred on Western Shoshone land. According to Healing Ourselves and Mother Earth, a non-profit activist organization dedicated to educating about the effects of nuclear radiation, "In 1948, Western Shoshone lands were seized to create the Nevada Test Site, forcing over 100 families to abandon seasonal or permanent family camps. No compensation was ever offered. The Western Shoshone is the most bombed nation on Earth, with over 1,000 nuclear bombs detonated on their lands by the U.S. and Great Britain."[335]

Nuclear power reactors are also related to American Indian tribes in many instances. Though nuclear power plants in the United States are not predominantly located on American Indian lands, activists note examples of power plants placed on the border of reservations.[336] NECONA founder Grace Thorpe explains: "In 1973 and 1974, two nuclear power reactors commenced operation at Prairie Island, Minnesota, only a few hundred yards from the homes, businesses, and child care center of the Prairie Island Mdewankanton Sioux. The facility was on the site of the ancient Indian village and burial mound, dating back at least 2,000 years."[337] She continues to argue that accidents and plant leakages often affected reservation residents. Closed reactors

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[333] Indigenous Women's Network, *Indigenous Environmental Perspectives: A North American Primer* (report prepared for the United Nations Conference on the Environment and Development, and Protecting Mother Earth Conference, 1992). Available from Indigenous Women's Network, P.O. Box 164, Lake Elmo, MN 55042.

[334] Churchill, 262-282; Grindle and Johansen: 203-211.

[335] Healing Ourselves and Mother Earth, "Western Shoshone Treaty Rights," [Web page] http://www.h-o-m-e.org/Shoshone/shoshone.htm (accessed April 23, 2004). See also Ward Churchill, "The Struggle for Newe Sogobia: The Western Shoshone Battle for Their Homeland," in *Struggle for the Land: Indigenous Resistance to Genocide, Ecocide, and Expropriation in Contemporary North America* (Monroe, ME: Common Courage Press, 1993), 197-216.

[336] LaDuke.

[337] Thorpe, "Our Homes Are Not Dump Zones."

are also potential sources of radioactive waste and pollution such as the Hanford reactor in Washington. The Nez Perce, the Umatilla, the Yakima, and the Wanapum tribes all claim treaty or cultural rights to the land upon which Hanford sits.

Further, nuclear waste is linked to American Indians in cases other than Yucca Mountain. In response to the crisis of nuclear waste created from the nuclear power and weapons industry and the expectation that the national repository would open in 1998, Congress created the Office of Nuclear Waste Negotiation to find a site for temporary monitored retrievable storage (MRS) of high-level nuclear waste (such as fuel rods and byproducts from nuclear weapons manufacturing) until the repository opens. Both states and Indian tribes were approached by the office. "When the siting process was implemented, however, the only parties who ultimately remained in serious consideration turned out to be American Indian tribes 'raising accusations of environmental racism.'"[338] Though the MRS program was discontinued because of funding cuts, tribal lands may still be the site for private temporary waste facilities. A consortium of energy companies called Private Fuel Storage (PFS) and the Tribal Government of the Skull Valley band of the Goshutes tribe signed an agreement in 1997 to lease reservation land (surrounded by Utah) for temporary storage of 40,000 metric tons of nuclear reactor waste.[339] This private storage site is awaiting approval by the NRC.

This history prompts activists to argue that the Yucca Mountain site is yet another instance of radioactive colonization and environmental racism. In reference to the Yucca Mountain site, the Goshutes' deal with PFS, and the MRS program, Honor the Earth states "the federal government and nuclear industry have targeted Native lands for waste storage for a decade."[340] Prominently displayed on the NECONA homepage, Grace Thorpe proclaims, "We must unite as people of the world to stop the

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[338] Gowda and Easterling, 917-929.

[339] These companies currently store waste in dry casks on nuclear power plant sites.

[340] Honor the Earth, "Nuclear Waste on Native Lands," [Web page], wysiwyg://316/http://www.honortheearth.com/nuclear/bkg.html (accessed April 2, 2204).

nuclear industry that is dividing and contaminating us."[341] Harney, of the Shundahai Network says,

> It's in our back yard...it's in our front yard. This nuclear contamination is shortening all life. We are going to have to unite as a people and say no more! We, the people, are going to have to put our thoughts together to save our planet here. We only have One Water...One Air...One Mother Earth.[342]

These arguments are constructed to suggest that the decision to store waste at Yucca Mountain will not only have tangible effects on the Western Shoshone, but also perpetuate a complex relationship between the federal government, the nuclear industry, and American Indian nations.

It is in the government's interest not only to perpetuate radioactive colonization but also to keep it under wraps. Through constructing the opposition to exclude American Indian activists and their arguments, the federal government is able to justify the Yucca Mountain site and avoid discussion of American Indian sovereignty and the historical relationship of radioactive colonization between American Indians and the federal government. Locating the third persona in the text allows for better understanding of how the federal government may be strategically excluding voices in the national interest.

Incompatible Worldviews

A second possible answer to the question of why American Indian arguments are excluded is that Abraham failed to recognize these as principal arguments because of the incompatible worldviews and value systems held by him and the tribes. Specifically, through an evaluation of the loci of the preferable that underlie both American Indian and DOE perspectives on land, we see that while American Indians draw upon the loci of quality, the federal government draws on the loci of quantity. The DOE's arguments and values uphold the greatest good for the greatest number of

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[341] NECONA, "Home page," [Web page], http://oraibi.alphacdc.com/necona/ (accessed March 1, 2004).

[342] As cited in Shundahai Network, "Home Page," [Web page], http://www.shundahai.org/ (accessed July 31, 2004).

people and assume that a greater number of desirable outcomes is better than a smaller number. Considering this, it is possible that the Secretary of Energy does not consider radioactive colonization or sovereignty a significant counterargument because it does not affect a large number of people. Moreover, American Indian and Western perspectives on land differ significantly, and the Secretary of Energy, even if he read the testimony or comment summaries of American Indians, may not comprehend or care about how or why the land is important to American Indians.

In the end, strategic exclusion and incompatibility of world-views are not mutually exclusive; it is possible that both of these considerations influenced the Secretary's decision to construct the opposition in a way that excludes American Indian arguments. This implies that the Secretary of Energy rhetorically constructed the opposition to the site. This is a problematic construction because it elides significant counter arguments by American Indians. Using Wander's notion of the third persona reveals that the American Indian opponents are a third persona. Drawing on ideological criticism, one of the ways that I attempted to explain the exclusion of American Indian arguments is through my argument that avoiding this discussion is in the interest of the federal government. It allows the federal government to appear reasonable (in answering some arguments against the site) while also avoiding the subjects of American Indian sovereignty and radioactive colonization. I also argued that fundamental differences in values and loci of the preferable between the federal government and tribes might explain the exclusion. The federal government may see the American Indian arguments as few, and see the tribes as small populations who should sacrifice Yucca Mountain in the name of national security.

This chapter expands our understanding of rhetorical tactics of radioactive colonization and exclusion, and our understanding of how, for rhetorical critics, what is not said can be just as important as what is said. We should continue to explore the rhetorical constructions of exclusion and seek to uncover reasons for the exclusion. If this case is a matter of strategic exclusion, one way to call upon the Secretary of Energy and the DOE to attend to these arguments is to get the message out to the larger public to mobilize support and pressure on the DOE. Concerning incompatible

values, we should work to understand better the differences in values and then demand that differences in values should be considered in relation to participation in environmental decision-making.

CHAPTER V: CONCLUSION

The Nuclear Waste Policy Act (NWPA) gives the federal government (primarily the Secretary of Energy and Department of Energy) the responsibility for storing high-level waste and spent nuclear fuel from government and commercial sources. The NWPA also ushered in the controversy over where to locate the nation's first permanent geologic repository. The NWPA dictates the process through which one or more repositories are selected, constructed, and managed and is therefore a seminal aspect of nuclear waste storage policy in the United States. Though the 1982 NWPA mandated investigation of multiple sites for comparative analysis, it was amended in 1987 to relieve the Department of Energy (DOE) of the duty to evaluate multiple sites and designated Yucca Mountain as the only site to be investigated for a permanent nuclear waste repository. After years of studying the Yucca Mountain site, in 2002 the federal government authorized the Yucca Mountain site arguing that it fit the NWPA guidelines for site characterization. The site, they argue, is not only scientifically and technically suitable, but it is also in the national interest.

The 1987 amendment leads some opponents to argue that the Yucca Mountain site was deemed a forgone conclusion by the federal government. For example, Nevadan Lou Benezet, a speaker at one of the public hearings, states, "Yucca Mountain was singled out before it was ever evaluated scientifically. Science has always had to be manipulated to make the foregone conclusion fit whatever evidence they were able to come up with."[343] With all of the time (over twenty years of research) and money (over $7 billion to date) that has been put into the project, it is understandable that many proponents believe that the project is well-studied and that it makes more sense to go forward than to abandon the project. Indeed, my interactions with DOE Yucca Mountain Project employees on the Yucca Mountain tour and at the Yucca Mountain Information Center revealed a belief by the employees that the project would go forward and that it would be unwise to change paths when so much

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[343] U.S. Department of Energy, *Site Recommendation for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada,* reporter's transcript of proceedings taken Wednesday, September 5, 2001 at 7:00 p.m. at Desert Research Institute, Reno, NV, reported by Peggy Baker Hoogs, CCR #160, n.p.

time and money had been put into the project. Even if the project is viewed as a foregone conclusion by members of the public and government, scrutiny of the Yucca Mountain project from multiple vantage points is necessary and desirable whether it results in abandoning or improving the Yucca Mountain site for nuclear waste storage. In the vein of public scrutiny of the Yucca Mountain project, a segment of this dissertation scrutinized the federal government's rhetorical and argumentative strategies in justifying the site. I examined the rhetorical dynamics of the justification of the decision to site the nation's high-level nuclear waste repository at Yucca Mountain.

Many opponents do not believe that the site is a forgone conclusion (even if the federal government perceives it as such). Opponents are critical of the Yucca Mountain site and have not given up in their fight to stop nuclear waste from being stored there or their call for changes in the process. Despite site authorization in 2002, there are still ways that the project could be stopped, or if not stopped, improved through critical examination of the project. The Yucca Mountain must still undergo Nuclear Regulatory Commission (NRC) licensing (both to begin construction and, once constructed, to begin accepting waste) and the DOE must develop a transportation plan. The DOE is currently working on preparing the licensing application which they describe as "the largest, most complex document" they have ever undertaken.[344] Both licensing and transportation planning provide opportunities for further criticism of the project that could conceivably halt or stall it. Moreover, the site is not scheduled to begin accepting waste until 2012 at the earliest, allowing time for opponents to continue to challenge the site.[345] Recently, several issues and lawsuits have raised concerns about the project including the Western Shoshone National Council's lawsuit claiming that the site violates the 1863 Treaty of Ruby Valley, the

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[344] U.S. Department of Energy Office of Civilian Radioactive Waste Management, *Annual Report to Congress* (Washington, D.C., December 2004, DOE/RW-0569), http://www.ocrwm.doe.gov/pm/program_docs/annualreports/04ar/fy_2004.pdf (accessed April 10, 2005).

[345] Steve Tetreault, "Energy Officials Turn Shy in Talk about Yucca Schedule," *Las Vegas Review Journal* March 11, 2005 http://www.reviewjournal.com/lvrj_home/2005/Mar-11-Fri-2005/news/26048040.html (accessed March 28, 2005).

nuclear industry's lawsuits against the project delays, reports that ground water data was falsified by a US Geological Survey (USGS) employee in support of the project, and members of Congress pushing for evaluation of alternatives to the project.[346] The Yucca Mountain site has been an issue of controversy for over twenty years. Those involved in current and past struggles against the Yucca Mountain site challenge the perception that the project is a foregone conclusion. Part of this dissertation scrutinized one form of public opposition to the site by evaluating argumentation in the NWPA-mandated site authorization public comment period. The public comment period presents a formal venue for public argumentation that allows for critical examination of both the arguments against the site and the process of public and American Indian participation in environmental decision-making.

Though there are multiple moments and vantage points from which one may explore the rhetorical and argumentative dimensions of the Yucca Mountain siting controversy, this dissertation focused on a critical moment in the controversy, the 2002 site authorization decision. This is a critical moment because it moved the project a step closer to fruition by initiating the NRC licensing process and because it included a formal process by which the DOE was mandated to conduct public hearings to inform the public about the project and gather public comments. The NWPA mandates that the DOE consider and respond to the public comments before making a decision. This dissertation explored the rhetorical dimensions of this moment in the controversy by closely reading the arguments of the federal government, Nevadans, and American Indians in a set of texts including the federal government's five official site authorization documents and the public comments and hearing statements received by the DOE during the 2001 site authorization public comment period. American Indians, Nevadans, and the federal government are three important groups

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[346] Global Security Newswire; Rogers, "Western Shoshones File Yucca Lawsuit;" Steve Tetreault, "Yucca Mountain: Nuclear Waste Lawsuits Grow," *Las Vegas Review Journal*, Wednesday, January 26, 2004 http://www.reviewjournal.com/lvrj_home/2004/Jan-26-Mon-2004/news/23067502.html (accessed February 27, 2004). Erica Werner, "Lawmakers Seek Plan B for Nuclear Waste," *Guardian Unlimited* March 25, 2005 http://www.guardian.co.uk/uslatest/story/0,1282,-4892413,00.html (accessed March 28, 2005).

that hold a stake in the Yucca Mountain siting decision, and this set of texts allowed for identification and evaluation of the main arguments of these groups. Moreover, the choice of official documents enabled scrutinizing the official process of public and American Indian participation in the Yucca Mountain siting decision.

This dissertation includes descriptive, evaluative, and prescriptive arguments about public argumentation in the controversy over the Yucca Mountain siting decision. A close reading of these texts described the main argument themes of American Indians, Nevadans, and the federal government. In addition to description, this dissertation evaluated the arguments and argument themes, examining the rhetorical strategies at play and made judgments as to whether an argument is "valid or invalid, sound or unsound, good or bad, strong or weak, ethical or unethical."[347] Evaluation of the interaction of arguments by different stakeholders increases our understanding of the controversy and the role of arguments by each of the stakeholders in the decision-making process. This description and evaluation is complemented by prescriptive arguments about how each group can improve upon its arguments and how the process of public participation in environmental decision-making can be made better. Though grounded in my description and evaluation, these arguments are founded upon an assumption that public and American Indian participation in environmental decision-making is not only valuable but in need of improvement.

This chapter begins with a summary of findings, then a discussion of those findings through four lenses. First, it considers what the findings say about the process of public participation in environmental decision-making. Then, it discusses the concept of radioactive colonization and how this dissertation adds to the scholarly conversation about this phenomenon. Then, it explores the contributions of this dissertation to rhetorical theory. Lastly, drawing from the findings, it constructs suggestions for improving the arguments and the process of participation in the Yucca Mountain controversy.

Summary of Findings

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[347] Shiappa, ix.

Chapter 2 described the main argument themes of American Indian participants in the public comment period who almost unanimously oppose the site and found that the underlying values of these arguments and standards for those values (loci of values) stand in contrast to the values and loci in the DOE's arguments for the site. For example, though both sides value the land, evaluation of the differing loci of the value of land demonstrates that the DOE and American Indians mean different things when they place value on the land. These findings not only increase our understanding of the Yucca Mountain controversy, but also suggest an area for theorizing about how to create environmental policy that takes into account differing values.

Chapter 3 turned to arguments made by Nevadans. Unlike American Indians, there are both opponents and proponents of the project among Nevadans as evidenced in public comments and hearing statements. Though Nevadans raised many argument themes, this chapter focused on the arguments related to science because of the importance of scientific argumentation in the federal government's justification for the site and, more generally, the importance of science in environmental decision-making. Both proponents and opponents raised ethos and logos-based scientific arguments. The evaluation reveals that neither opponents nor proponents were likely to influence the Department of Energy's decision to authorize the site, however, the DOE is just one of the potential audiences of these arguments which were likely persuasive with other audiences. This chapter highlights the importance of public science—scientific arguments that emerge from the public that can be used to engage in debate and discussion about such matters as environmental policies. In addition to increasing our understanding of the role of scientific expertise and proof in the Yucca Mountain controversy, this chapter suggests an area for theorizing about the role of public science in environmental decision-making.

While chapters 2 and 3 focused on the arguments of the public through analysis of public comments, chapter 4 examined the federal government's arguments in favor of the site through the official site authorization documents. Because the arguments made in former Secretary of Energy Spencer Abraham's site

recommendation report are the most extensive and clearly articulated, and because the arguments laid out in this report were replicated with little variation in the subsequent documents by President Bush and Congress, the Secretary's report was the primary text under analysis. In this report, Abraham provides three justifications for site authorization: scientific and technical suitability, national interest, and that none of the counterarguments outweigh the case for going forward. Chapter 4 focused on the third justification by describing and evaluating the way that the report rhetorically constructs a selective picture of opposition to the site. Through comparison with the arguments offered by American Indians in the public comment period, I uncovered that this construction excludes American Indian arguments against the site. These findings not only help us to understand the controversy over Yucca Mountain as constructed by the federal government, but also provide a starting point for theorizing potential reasons for this exclusion, such as radioactive colonization, and the implications of this exclusion for tribal participation in environmental decision-making.

The Guise of Deliberation

The NWPA mandates public participation in the Yucca Mountain siting decision. This is consistent with other governmental moves to include the public in environmental decision-making. Environmental communication scholars Steven Depoe and John Delicath argue, "Since the passage of the National Environmental Policy Act (NEPA) in 1969, public participation in environmental decision making in the United States has become gradually institutionalized at federal, state, and local levels."[348] Despite this move, there are numerous flaws in the process of public participation in environmental decision-making, many of which are described by environmental communication scholars. This dissertation contributes to our understanding of the process of public participation in environmental decision-making by identifying several limitations in the Yucca Mountain site authorization process.

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[348] Steven P. Depoe and John W. Delicath, "Introduction," 1-2.

Both the existence of the public comment period and the DOE's claim that they determined that the counterarguments do not outweigh the arguments for site authorization create an image of the federal government, through the DOE, as engaging in a reasonable process of deliberation with the public over the potential costs and benefits of the site. The DOE states that they held numerous public hearings, evaluated over 5,000 public comments, and considered the public's input in making the siting decision. The Secretary of Energy even states that he considered all of the principal arguments against the site. In addition, Abraham's use of a cost benefit analysis appears reasonable because he acknowledged some of the counterarguments and says that the benefits of the site outweigh the costs. However, the site authorization process is actually more justificatory than deliberative. The interaction between arguments by the public, American Indians, and the federal government reveals the limitations in the public participation process in which the comments were constrained in their effectiveness through the process, and the federal government excluded some arguments from consideration. The process of public participation in the Yucca Mountain siting decision is rhetorically constructed to appear reasonable when in fact it excludes many voices of dissent.

Though American Indians spoke at public hearings and submitted public comments, there are at least two limitations in the process of American Indian participation. First, American Indians argue that consultation with American Indian tribes should be different from consultation with the public because of their unique sovereign status. Instead of being grouped into the public participation process, American Indians argue for direct government-to-tribe consultations. As I showed in chapter 2, this flaw in the participation process is likely grounded in differing values and loci of values between the federal government and the tribes. By stating that the DOE considered the comments of tribes along with those of the public, as Abraham does in the site recommendation report, the government rhetorically constructed the process as deliberative and reasonable. To those in the public who are unaware of or apathetic about American Indian sovereignty, this is likely to be viewed as reasonable. However, effective public participation in environmental decision-making has to be

viewed as effective and reasonable by all parties as Waddell advocates with the Social Constructivist model of public participation in environmental decision-making.[349] Public participation in environmental decision-making models should attend to the role, status, and values of American Indian tribes.

Second, chapter 4 revealed that contrary to the reasonable expectation that the Secretary of Energy would construct and respond to an opposition that includes the American Indian arguments, these arguments are excluded. Once again, we have the guise of deliberation rather than the real thing. The Secretary of Energy constructed an argument that the DOE's process was reasonable by stating that they considered all of the arguments in the public comment period and responded to the "principal counterarguments."[350] In justifying the project, the Secretary makes an argument for the inclusiveness of the process by including "the views of members of the public" and yet my findings suggest exclusion of American Indian arguments.[351] This exclusion is a significant limitation in participation in decision-making in the Yucca Mountain case. Though it is true that not all voices can be included in a process, it is nevertheless important not to exclude an entire race or class of participants. This dissertation scrutinized the rhetorical invention of inclusion and exclusion of voices, arguments, and opponents. In this case, exclusion is particularly troubling because of the rhetorical construction that implies that the DOE has considered the principal arguments against the site suggesting an openness that did not exist and/or implying that American Indian arguments were unimportant. These findings suggest two ways in which the public comment period in the Yucca Mountain site authorization decision was limited in the participation and consideration of American Indian opponents to the project. Beyond just exposing limitations in the process, I also examined the rhetorical means through which these limitations were glossed over.

Another limitation of the public participation process in environmental decision-making in this case is that scientific and technical suitability is posited as the

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[349] Waddell, "Saving the Great" 57.

[350] Abraham, *Recommendation,* 32.

[351] Abraham, *Recommendation,* 8.

number one criterion for making a decision about the Yucca Mountain site. This finding is consistent with previous research that argues that in public policy decisions, science is often valued by scientists and decision-makers as the most important form of proof.[352] Recall that both the NWPA and the Secretary's report state that the ultimate determinant is the scientific and technical suitability. This not only demotes non-scientific argumentation to a lower status, but also places a demand that the public provide scientific and technical arguments against the site, which the public is ill equipped to do. The Department of Energy articulates that part of the goal of the public comment process is to educate the public about the site in addition to hearing their comments.[353] In her study of the EIS public hearings for the Yucca Mountain site, Jeanne Ratliff demonstrates that the goal to educate the public is also present in those hearings.[354] Taken together, these put the public in a difficult argumentative and rhetorical position. Scientific and technical arguments are the only ones that really have the potential to challenge the site, however, because of the one-way educational model of communication adopted by the government, in which the public must be "educated" about the scientific suitability of the site, the idea that the public might make their own scientific arguments is not considered. This suggests that the Yucca Mountain public comment period, instead of being an opportunity for open deliberation about the site (both scientific and non-scientific), is a public relations mechanism.

Public participation in environmental decision-making is an issue of environmental justice. Environmental decisions have far-reaching effects on the citizens of the United States, American Indian tribes, and sometimes individuals from other countries. A crucial element of environmental justice is that the public should have a say, beyond voting, in environmental decisions that affect them. The environmental movement has done valuable work in increasing the amount of public

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[352] Reeves; Waddell, "The Role of Pathos;" Weaver.

[353] Department of Energy Office of Civilian Radioactive Waste Management, "Executive Summary," *Site Recommendation Comment Summary Document.*

[354] Ratliff, "The Politics of Nuclear Waste," 372.

participation in environmental decision-making, which has resulted in the National Environmental Policy Act (NEPA) that mandates Environmental Impact Statements (EIS), and other policies aimed at involving the public in review of and participation in decision-making. Environmental communication scholar Susan Senecah argues "most governing systems attempted to develop, and are now mandated by a litany of federal and state laws and executive orders to provide a minimum of formal opportunities for public participation."[355] She continues that although many administrators and decision makers might be able to "talk the talk" of participation in environmental decision-making, they are still limited in "walking the walk," fearing antagonistic responses, costs, time, and implications of fostering an open process of public participation. Though the DOE is subject to laws that mandate public participation and though the DOE is able to rhetorically "talk the talk," they do not "walk the walk," resulting in an unjust process that limits voices of dissent and true public participation in decisions that affect them.

The Rhetoric of Radioactive Colonization

Radioactive colonization describes the relationship between nuclear technologies and American Indians in which the process of nuclear production is linked to American Indian lands and peoples. This linkage is associated with colonization because of the relationship between the federal government (who is heavily involved with the nuclear production process as producer and subsidizer of commercial producers) and American Indian nations.[356] Recall that this relationship between American Indians and nuclear production is supported in both empirical and theoretical studies as well as in the parlance of American Indian environmental justice activists. While the concept of radioactive colonization is discussed in scholarly conversations, the discursive features of the relationship and process have not received sufficient attention. Radioactive colonization has been described with geographical

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[355] Susan L. Senecah, "The Trinity of Voice: The Role of Practical Theory in Planning and Evaluating the Effectiveness of Environmental Participatory Processes," in *Communication and Public Participation in Environmental Decision Making,* ed., Stephen P. Depoe, John W. Delicath, and Marie-France Aepli Elsenbeer (Albany, SUNY Press, 2004), 16.

[356] Churchill; Churchill and LaDuke; Grindle and Johansen; Hooks and Smith, Kuletz; LaDuke; Thorpe.

mapping of American Indian lands in relation to sites of nuclear production and waste, it has been described through historical narrative, and it has been used as a way to theorize about processes of internal colonization of American Indians. This dissertation's contribution to this conversation is to describe radioactive colonization through the rhetorical and argumentative practices that maintain and challenge this process.

Chapter 4 argues that radioactive colonization may serve as an explanation for the Secretary of Energy's exclusion of American Indian arguments in the site recommendation report. The history of radioactive colonization is potentially significant enough to provide a substantial counterargument to the site and should have been included in the arguments to which Abraham responded. Arguments about land ownership and the relationship between the federal government and Indian tribes are significant challenges to the Yucca Mountain site. Moreover, the recent lawsuit filed by the Western Shoshone stating that the site violates the Ruby Valley Treaty demonstrates the importance of these challenges. These arguments intimate that siting the high-level waste repository at Yucca Mountain is another instance of radioactive colonization. Radioactive colonization and violating treaty rights are serious challenges to the Yucca Mountain site. In addition to not being addressed by Abraham, these arguments are also not common in media coverage and general public knowledge about the site. Abraham's exclusion of American Indian arguments is one way in which radioactive colonization is perpetuated because it is ignored. Another way that radioactive colonization may be perpetuated is through a lack of understanding and critical discussion about the concept among the public.

There are at least two ways in which rhetorical theory and criticism can inform discussion of radioactive colonization. First, it can point out that one of the ways that radioactive colonization may be perpetuated is through exclusion of voices. Philip Wander's concept of the third persona, linked with ideological criticism, is a crucial tool in analyzing vested interests and audiences negated in texts. Radioactive colonization is related to a lack of voice for American Indians in formal processes of participation and in the larger public forum. It is not true that if the wider public knew

about the history of radioactive colonization (an environmental injustice), then they would automatically challenge it. However, if a rhetorical critic attending to the third persona in the text can point out the neglect of American Indian concerns and connect it to a history of radioactive colonization, it is more likely that the public will question the inclusiveness of the process.

Second, rhetorical criticism can uncover competing values in the discourse surrounding radioactive colonization. The exclusion of voices might be intentional or unintentional. If it is the latter, it might partially be the result of different values on the part of the federal government and American Indians. My close rhetorical reading of the American Indian arguments against the site in chapter 2 reveals significant value differences that may play an important role in radioactive colonization. Underlying value orientations that are implicit in arguments about the site may limit the ability of arguers to see the values of the other side. Radioactive colonization is linked to a view of land in which it is valued for its use in the national interest and in providing the greatest good for the greatest number of people. When one does not consider particular places as having unique spiritual and cultural value and as having people who are inherently linked to that place, it may be difficult to see placement of nuclear waste, or some other aspect of the nuclear production process, on American Indian land as an act of damage or colonization. In exploring radioactive colonization and the disproportionate location of parts of the nuclear production process on American Indian land, it is useful to understand the underlying values of American Indians, the federal government, and the public. Unlike much of the scholarly literature about radioactive colonization that documents the existence of radioactive colonization as a phenomenon, this analysis demonstrates *how* this phenomenon is perpetuated through discourse and arguments.

In addition to exploring the nature of radioactive colonization in relation to American Indians, this dissertation also expands the notion of radioactive colonization to show that the concept may be applied to the citizens of Nevada as well. There are two significant differences between Nevadans and American Indians. First, the extent to which Nevadans have been connected to nuclear technology in the United States is

significant, but not as extensive as that of the American Indians. Second, Nevada's status as a state of the union is distinct from American Indian sovereignty. However, in this case Nevadans may be considered victims of radioactive colonization, a peripheral region that is made to sacrifice for the needs of the core region, or to sacrifice for, as articulated by the Secretary of Energy, "the national interest."

Internal colonialism, according to Michael Hechter, is a relationship between core and peripheral groups in which "the core is seen to dominate the periphery politically and to exploit it materially."[357] Valerie Kuletz, drawing on Antonio Gramsci's discussion of Italian fascism,[358] states "Internal colonialism is characterized by one region—usually a metropolis that is closely associated with state power—exploiting a colony-like peripheral region."[359]

The study of internal colonialism is aligned with postcolonial studies which "examines the global impact of European colonialism...it aims to describe the mechanisms of colonial power, to recover excluded or marginalized 'subaltern' voices, and to theorize the complexities of colonial and postcolonial identities."[360] In the study of postcolonialism, critics and theorists emphasize postcolonial cultures in Africa, Asia, and the Caribbean.[361] The study of internal colonialism seeks to apply the same sensibilities to situations in which one region or segment of a nation-state is colonized by those in power. The study of internal colonialism also overlaps with race and ethnic studies in the United States, where critics explore relationships of power over and cultural domination of ethnic and racial minorities such as African

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[357] Michael Hechter, *Internal Colonialism: The Celtic Fringe in British National Development* (London: Transaction Publishers, 1999), 9.

[358] Antonio Gramsci, "The Southern Question," in *The Modern Prince and Other Writings* (New York, 1959).

[359] Kuletz, 7-8.

[360] Vincent B. Leitch, ed. "Introduction to Theory and Criticism," in *The Norton Anthology of Theory and Criticism,* ed., Vincent B. Leitch (New York: W. W. Norton & Company, 2001), 25.

[361] Chinua Achebe, "An Image of Africa: Racism in Conrad's *Heart of Darkness,*" in Introduction to Theory and Criticism," in *The Norton Anthology of Theory and Criticism,* ed., Vincent B. Leitch (New York: W. W. Norton & Company, 2001), 1783-1794; Homi K, Bhabha, *The Location of Culture* (London, Routledge, 1994); Frantz Fannon, *The Wretched of the Earth* (Grove Press, 1965); Edward Said, *Orientalism*, (New York: Vintage Books, 1979).

Americans, Latino-Americans, and American Indians.[362] In the study of internal colonialism, American Indian lands and peoples are considered the peripheral groups that are still within the boundaries of the United States but are separated from the core geographically and politically. The degree to which Nevada is considered a peripheral state, used and abused by the federal government for the testing of nuclear weapons and storage of nuclear waste, would determine the degree to which it is considered a subject of internal colonization.

In the study of internal colonialism, the colonized are not necessarily racial or ethnic minority. Indeed Gramsci uses the term to describe how fascists were able to maintain power in Italy.[363] He describes a relationship of power, including power over resources and capital, between the core state and peripheral regions within the country. Nevadans are being asked to sacrifice for the greater good of the nation. Kuletz identifies the regions in the southwest where aspects of the nuclear production process have taken place as national sacrifice zones.[364] The Yucca Mountain site is justified in some arguments because it is in the "national interest." As I discussed in chapter 2, the DOE describes Yucca Mountain as a remote and sparsely populated region, or a peripheral region. Indeed, the Great Plains in which Nevada lies are part of the southwest, which is wide and expansive, yet less populated than the core region in the east coast that holds power and produces the nuclear waste.

Considering Nevadans as a part of the process of radioactive colonization affords new opportunities for theorizing and understanding the dynamics of nuclear waste storage decisions. First, it complicates and problematizes current conceptions of postcolonialism by recognizing that colonial relationships can occur on many levels, including race, ethnicity, economic status, political power, geographic proximity, and national versus local interest. Envisioning radioactive colonization to include other

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[362] Gloria Anzaldua, *Borderlands/La Frontiera: The New Mestiza* (San Francisco, Spinsters/Aunt Lute, 1987); Gerald Vizenor, "From Manifest Manners: Postidian Warriors of Survivance," in *The Norton Anthology of Theory and Criticism,* ed., Vincent B. Leitch (New York: W. W. Norton & Company, 2001), 1977-1986.

[363] Gramsci, "The Southern Question."

[364] Kuletz, 7.

groups in addition to American Indians can begin to expose the interconnection of colonization and oppression. It is not just one's status as an American Indian that makes one colonized; it could also be one's economic status, geographical location, political position, or any combination of the above. Chapter 1 introduced radioactive colonization as an issue of environmental justice because of the unequal treatment of American Indians in relation to the nuclear production process in the United States. Recognizing that radioactive colonization is happening in many ways with many populations in the United States is in line with the principles of environmental justice. As Richard Hofrichter suggests "environmental injustices result, in part, from a lack of political power, and they affect the entire fabric of social life."[365]

Second, an expanded notion of radioactive colonization affords the opportunity to examine and create ties between groups in opposition to the Yucca Mountain site. While the chapters of this dissertation are presented in a way that separates the argument themes of American Indians and Nevadans, we do see some similarities in the arguments of these two groups. Both American Indians and Nevadans argue that the process of public participation in environmental decision-making is limited, make challenges to the predominance of science in the site authorization decision, and raise issues of fairness in taking on the burden of storing waste produced by another region of the country (Nevada and American Indian tribes in the state of Nevada do not produce nuclear waste). These similarities can and should be explored more. Recognizing connections in the struggle may lead to important strategic coalitions between opponents of the site. A principle of environmental justice is to build local coalitions around particular issues based on the interconnectedness of oppressions. Glass shows that an unlikely coalition between Mormons and American Indians was successful in averting MX missile deployment in Utah in the 1970's.[366] The same may be true for the Yucca Mountain site. An analysis of the arguments and underlying values is an important first step in seeing potential starting points and constraints for

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[365] Richard Hofrichter, "Introduction."

[366] Glass, *Citizens Against the MX.*

coalition building. For example, a constraint may be that Nevadan values of land may be more in line with the federal government's values than with those of American Indians.

In this case, evidence of radioactive colonization comes from the rhetorical and argumentative choices made by the federal government in its justification of the site and through comparison with the federal government's justifications with the voices of the opposition. Rhetorical criticism and argument evaluation have an important role to play in understanding the complexity of the concept of radioactive colonization and its discursive manifestations better.

Rhetorical Theory and Criticism

Thus far, this chapter has discussed how this dissertation, a rhetorical criticism of arguments in the Yucca Mountain site authorization controversy, can add to our understanding of two topical areas of inquiry—public participation in environmental decision-making and radioactive colonization. This section focuses attention on the ways that this dissertation contributes to the field of rhetorical theory and criticism. I focus on two contributions concerning American Indian argumentation, and public rhetoric of science.

American Indian Argumentation

Perelman and Olbrechts-Tyteca comment on the role of values in argumentation: "It is thus by virtue of their being vague that these [abstract] values appear as universal values and lay claim to a status similar to that of facts. To the extent that they are precisely formulated, they are simply seen to conform to the aspirations of particular groups."[367] In the abstract, most values are desirable things with which most people would agree. Values of justice, human life, or land, in the abstract, would likely gain the adherence of the universal audience. Yet, when these abstract values are applied to particular situations, we see disagreement. Is the value of justice best upheld through the presence or the absence of the death penalty? Is the value of human life best upheld by legalizing or prohibiting abortions? Is value of the

[367] Perelman and Olbrechts-Tyteca, 76.

land best upheld by recognizing its unique and irreparable qualities or by using it as a resource for the greatest good for the greatest number of people? American society does not have answers to these questions and they continue to be debated.

Controversy implies the presence of a diversity of arguments and counterarguments by various participants in the controversy. Because argumentation is inherently connected to values, controversy is also likely to include a diversity of values. However, unlike arguments which may appear to be very different, the abstract values that underlie the arguments of various participants in a public controversy may be the same or very similar. Chapter 2 compared the arguments of American Indians and the federal government and found that in the major argument themes presented by American Indians and the responses by the federal government both sides purported to adhere to the same abstract values of land, justice, and life and yet came to different conclusions. This is most prominent in the case of the value of land. Through an analysis of the loci of the preferable invoked in the arguments of either side, I found that the implicit standards for arguments, such as a locus of quality that assumes the greater good for the greater number of people, reveal sources of fundamental value disagreement between the two sides.

Rhetorical theorizing and criticism that reveals the role of values in argumentation is not new. Perelman and Olbrechts-Tyteca's seminal work, *The New Rhetoric,* offers an invaluable starting point for understanding argumentation as innately value-laden and many scholars have attended to this work. In rhetorical criticism of a controversy, attending to the value-differences between participants is an essential way to understand the controversy and to explore potential starting points for argumentation. Some controversies, such as gay marriage, involve debate over value hierarchies—that is, should we value the sanctity of traditional marriage over the rights of lesbian, gay and transgender individuals? However, in some controversies, it is not enough to uncover and evaluate the abstract values that participants in a controversy offer because these abstract values may be the same. Multiple opposing participants in a controversy may ostensibly adhere to the same value. We see this phenomenon in many contemporary political controversies. Controversy over

euthanasia, the death penalty, abortion, and stem cell research may all be based in the value of human life. Both the religious right and atheist leftists may believe in the value of freedom of religion and use that value to argue for contrasting policies. Critics of political controversy must attend to values in controversy, not only conflicting values arranged in different hierarchies but also identical values that are really very different in their specific applications. Perelman and Olbrechts-Tyteca's loci of the preferable can be used as a critical tool to parse those different particular values and thus understand controversy and identify starting points for argumentation better. Though Perelman and Olbrechts-Tyteca present the loci of the preferable as an inventional resource through which arguers can find starting points for argumentation, the loci of values are also an important critical tool for rhetoricians.[368]

Values are important in evaluating the arguments of American Indians, because, as discussed in chapter 2, the underlying loci of values invoked by American Indians are different from those of the federal government. Analysis of the loci of values used by American Indians in constructing arguments about land reveal not only differences in values, but also differences in the way that American Indians make arguments in contrast to the federal government and Nevadans. Just as values differ cross-culturally, so do styles and practices of argument construction.[369] This demonstration adds to our understanding of American Indian argumentation in three ways.

First, the loci of values also suggest a metaphor for the land that is employed by the American Indian tribes that is different from the metaphor of land that is employed by the federal government and other members of the public. Metaphor, from classical rhetorical theory to present theory, is a comparison made by referring to one thing as another. In addition to being an inventional tool that is identifiable in particular texts, metaphor, Lakoff argues, also has a broader implication on the way

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[368] Cox, 1-16; Walker and Sillars, 144-145; Warnick, "Rehabilitating AI," 149-170.

[369] Danielle Endres, "Responding to Multiculturalism in the Real World: Re-envisioning Argumentation Pedagogy to Include Culturally Diverse Methods of Argumentation." *Proceedings of the Fifth Conference of the International Society for the Study of Argumentation,* eds., F. H. van Emerson, J. A. Blair, C. Willard, & A. F. S. Henkemans. (Amsterdam, Sic Sat, 2002).

we reason through the world. "What metaphor does is limit what we notice, highlight what we do see, and provide part of the inferential structure that we reason with."[370] Lakoff and Johnson add that "metaphor is pervasive in everyday life, not just in language but in thought and action. Our ordinary conceptual system, in terms of which we both think and act, is fundamentally metaphorical in nature."[371] The loci of values, underlying values that often remain implicit but help to order the way we argue about values, can be used to help identify the metaphor that guides reason. Loci of values and metaphorical systems of thought are connected.

American Indian arguments, in this case, assume a metaphor of earth as living being, often personified as the mother. Jessica Bacoch states, "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."[372] Others who spoke at the hearings or submitted comments frequently referred to the spirits dwelling in the area and spoke of mother earth. This creates a vision of the world as that in which all beings are living and all beings are interconnected. This metaphor, which is shared by many American Indian tribes,[373] informs the ways in which American Indians engage in argumentation. From this understanding of the earth, an emphasis on the loci of quality in American Indian argumentation follows.

Second, the findings of this dissertation suggest that American Indians employ more prosopopoeia and metaphor in their arguments than Nevadans, other members of the public and the federal government. Previous research has shown that American Indian arguments employ non-linear forms of reasoning as well as differing temporal

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[370] George Lakoff, "Metaphor and War: The Metaphor System Used to Justify War in the Gulf," paper presented at the Alumni House, University of California at Berkeley, June 30, 1991, reprinted in *Viet Nam Generation Journal & Newsletter* 3, no. 3 (November 1991) http://lists.village.virginia.edu/sixties/HTML_docs/Texts/Scholarly/Lakoff_Gulf_Metaphor_1.html (accessed May 10, 2005).

[371] George Lakoff and Mark Johnson, *Metaphors We Live By* (Chicago: University of Chicago Press, 1980).

[372] Jessica Bacoch, *Letter to the Department of Energy*. Received October 3, 2001, public comment #551914, http://www.ocrwm.doe.gov/documents/sr_comm/sr_pdf/330076.pdf (accessed January 20, 2005).

[373] Wilkinson, *Indian Tribes*. See also specific examples in: Basso; Carbaugh; and Harney.

perspectives, are focused on maintaining harmony and community, often involve engaging in ritual enactment, which becomes embodied argument, and assume that American Indian elders are the experts.[374] This suggests that the forms, functions, and evaluations of argument may differ between American Indians and those adhering to a Western view of argument.

Recall the statement in chapter 2 by Edward Smith that said that the mountain and spirits living in the area would become unhappy and move away if waste is stored at Yucca Mountain.[375] This, along with other arguments made by American Indian commenters, attributes human characteristics to the land and Yucca Mountain. Despite the prevalence in American Indian arguments, prosopopoeia was not used in the arguments of the other stakeholders. The prevalence of metaphor and prosopopoeia in American Indian arguments may be related to the importance of storytelling in American Indian cultures. Moreover, the personification of the mountain, plants, and spirits is clearly related to the American Indian perspective of land and the general metaphor of earth as living being. Though these arguments can be identified as prosopopeia and metaphor, it is important to consider that that these arguments may not be considered as such by those making the arguments. If you do not believe that a mountain is living and has a spirit, this argument seems metaphorical. However, if you have experienced and believe in these spirits, the argument may no longer be metaphorical.

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[374] G. Arnold, "Living in Harmony: Makah," in *Stories of the People: Native American Voices,* ed., National Museum of the American Indian, (New York: Universe Publishing, 1997), 48; Randall A. Lake, "Between Myth and History: Enacting Time in Native American Protest Rhetoric," *Quarterly Journal of Speech* 77 (1990): 123-151; Randall A. Lake, "The Rhetor as Dialectician in 'Last Chance for Survival,'" *Communication Monographs* 53 (1986): 201-220; Randall A. Lake, "Enacting Red Power: The Consummatory Function in Native American Protest Rhetoric," *Quarterly Journal of Speech* 69 (1983): 127-142; Richard Morris and Philip Wander, "Native American Rhetoric: Dancing in the Shadows of the Ghost Dance," *Quarterly Journal of Speech* 76, 164-191; Gerry Philipsen, "Navajo Worldview and Culture Patterns of Speech: A case study in Ethnorhetoric," *Speech Monographs* 39 (1972):132-139; Nancy V. Woods, *Perspectives on argument, 3rd ed.* (Upper Saddle River, NJ: Prentice Hall, 2001), 41.

[375] U.S. Department of Energy, *Yucca Mountain Project Comments,* reporter's transcript of proceedings taken on Friday, October 5, 2001 at 2:20 p.m. at Fiesta Hotel, Las Vegas, Nevada, reported by Christine I. Phelps, CCR #683.

Third, American Indian evaluation and use of scientific argumentation differs. As discussed in chapter 2, American Indians speakers often rejected the use and authority of scientific argument and instead offered arguments from different authorities such as medicine men and elders. American Indians, as Vine Deloria Jr. argues, also argue that traditional American Indian knowledge is an alternative to Western Science.[376] Edward Smith, chair of the Chemehuevi Southern Paiute Tribe, provides an example of a differing perspective on how to evaluate scientific argumentation, "I look forward to the day when scientists, engineers, agencies, policy makers give serious consideration to, rather than simply acknowledge, the cultural value and importance of lands and resources taken for such projects to living Indian people on an equal basis with the nationwide scientific, technological, commercial and economic value currently accorded to them."[377] This example contrasts culture with science. In a letter by Barbara Durham and Bill Helmer of the Timbisha Shoshone, we see a challenge to scientific evaluation of site suitability and advocacy of listening to the American Indians who know the land. They write, "The unresolved dangers of the Yucca Mountain project demand that the DOE **listen** and respond to the concerns of tribes and others who may know much more than the DOE about 'site suitability.' If the ancestors of the Timbisha Shoshones had left such a poison for future generations, we probably would be dead or not able to live here anymore. The ancestors would never do this, and the Timbisha Shoshone Tribe of today will never approve the desecration of this land for future generations."[378] These two examples show a distinctly different way of evaluating arguments that considers and places value on cultural narratives, wisdom of elders, and non-scientific evidence.

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[376] Deloria, Jr., *Red Earth, White Lies.*

[377] U.S. Department of Energy, *Yucca Mountain Project Comments*, reporter's transcript of proceedings taken on Friday, October 5, 2001 at 2:20 p.m. at Fiesta Hotel, Las Vegas, NV, reported by Christine I. Phelps, CCR #683, n.p.

[378] Barbara Durham and Bill Helmer, *Letter to the Department of Energy*. Received October 10, 2001, public comment #330036, http://www.ocrwm.doe.gov/documents/sr_comm/sr_pdf/330036.pdf (accessed January 20, 2005).

All three of these relate back to the value of and connection to the land that American Indians experience. This informs the ways that they argue, not only by providing an underlying value and metaphor for land but also by implying particular forms, functions, and evaluations of arguments. Argument then, as argued by Perelman and Olbrechts-Tyteca, is inherently value laden. However, these three points show that values may play an even more important function in argumentation. In addition to their implicit presence in all particular arguments, values and loci of values influence the abstract forms, functions, and ways of evaluating arguments in particular cultures. Values, and the forms, functions, and evaluations of argument that they suggests, are integral parts of a cultural metaphor for the way people reason.

Uncovering underlying value differences and types of arguments employed by American Indians can also tell us something very important about public participation in environmental decision-making and environmental justice. Improvements in public participation in environmental decision-making may quantitatively improve opportunities for involvement, or foster sincere and earlier incorporation of public arguments in the decision-making process,[379] yet these improvements that are advocated by scholars of environmental communication will be limited if we do not take into account different ways of arguing by various groups. In her analysis of public participation in Canada regarding the bison, Tarla Rai Peterson explains that Canadian First Nation speakers and decision-makers failed to communicate to each other because each was drawing from a different value of evidence and experience.[380] These are different ways of evaluating and presenting arguments that must be considered in creating venues for American Indian participation in environmental decision-making.

Public Rhetoric of Science

A second contribution of my study to rhetorical theory and criticism is in my examination of public science in the Yucca Mountain site authorization decision.

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[379] Both of these are limitations are addressed in Depoe and Delicath, "Introduction."

[380] Tarla Rai Peterson, "Subverting the Culture of Expertise: Community Participation in Development Decisions," in *Sharing the Earth: The Rhetoric of Sustainable Development* (University of South Carolina Press, 1997), 86-118.

Recall from chapter 3 that much work in the area of rhetoric of science is focused on the inventional and persuasive tactics of scientists. In this body of work, scientists are generally assumed to be individuals who have been trained to be scientists and continue to research and work in the area, such as an individual with a Ph.D. in bio-physics who works in a lab at a major research university or an individual with a degree in nuclear physics who works for the Department of Energy. Because of the importance of science in many current controversies, especially environmental ones, scientists are increasingly meeting with the public and their work is circulating within public argumentation. Much of the work that has been done in the rhetoric of public science focuses on the public's understanding of science as communicated to them.[381] There have been calls by scholars like Charles Alan Taylor, Philip Wander, and Celeste Condit to explore the role of science in public controversy, however, empirical critical explorations into the way that members of the public employ scientific proof or assert scientific expertise (or lack thereof) are lacking. Public science should be defined not as the role of scientific proof and expertise from above in public deliberation but rather as the scientific proof and expertise that is rhetorically constructed by members of the public in deliberation from below. This involves a different demarcation of science and scientific expertise than that which is currently in practice.[382]

Chapter 3 answered the question: how does the public employ science as they participate in the Yucca Mountain site authorization public comment period? This leads to a larger question about other forms of participation in environmental decision-making. In the context of environmental decision-making, the public is faced with multiple constraints to being public scientists such as a system that trusts the "experts" involved in the project, demands that the public comment on scientific matters and yet views the public comment period as a way to educate the public and justify their scientific findings, based on twenty years of scientific investigation. Yet, the public is

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[381] Reeves; Waddell, "Saving the Great Lakes;" Weaver.

[382] Taylor, *Defining Science*, 14.

able to engage in criticism and scrutiny of scientific proof (though this can always be improved with more scientific literacy). Recently hundreds of government-employed scientists have revealed that they have been pressured to produce certain results.[383] The Yucca Mountain project faces a scandal over falsified documents produced by USGS employees about ground water; an e-mail message sent by a USGS states "Science by peer pressure is dangerous but sometime (sic) it is necessary."[384] The presence of these controversies reveals that science linked with the government may be biased. If the public is given the opportunity to comment on environmental decisions, they must find a way to scrutinize the science. Public science is a way to hold government science accountable.

There are specific rhetorical tactics that public scientists can adopt in making scientific arguments, which are discussed in chapter 3, such as offering arguments instead of raising questions or uncertainties. In addition, public science should not fall prey to one of the flaws of much scientific discourse in public policy. That is, they should not assume the predominance of scientific forms of proof, or the elevation of scientific logos over other forms of logos or pathos. Craig Waddell demonstrates that this is a common occurrence in deliberation and scientific policy-making.[385] Instead, public science should also recognize the complexity of public policy decisions that should involve scientific, political, social, economic, emotional, and many other considerations. Public science can recognize the interconnections between scientific claims and other considerations, and can become a valuable part of public participation in environmental decision-making.

Argument Evaluation and Prescription

In addition to the contributions that this dissertation makes to our understanding of public participation in environmental decision-making, radioactive

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[383] Julie Cart, "U.S. Scientists Say They Are Told to Alter Findings," *Los Angeles Times*, February 10, 2005, sec. Main News, A13.

[384] "Yucca Probe Focuses on Possibly Faked Data" *The Associated Press*, 01 April 2005, http://www.truthout.org/docs_2005/040205Y.shtml (accessed April 5, 2005).

[385] Waddell, "The Role of Pathos."

colonization and rhetorical theory, it also has implications for those actually engaged in the debate over Yucca Mountain. This dissertation is an act of argument evaluation. In addition to evaluating arguments as good, bad, strong, or weak, in the interest of promoting better public participation in environmental decision-making, this dissertation make prescriptions about how to improve the arguments and argument strategies of the tribes and Nevada public.

American Indian Opposition

American Indian arguments were not successful in persuading the Secretary of Energy to abandon the site. Former Secretary Abraham recommended site authorization. The DOE is not the only audience that the American Indian arguments reached and their arguments may have been successful with other members of the public. However, the textual evidence in chapter 2 clearly indicates that one of the goals of American Indian arguments was to stop the site. My findings show that American Indian arguments may not have reached the DOE or other members of the public because of the underlying value differences between American Indians and these audiences. In the future American Indians may need to explicitly argue for their values and interpretations and demand that these be considered. Instead of being implicit, these values embedded in the arguments could be made explicit and contrasted with the values driving the other side. When the two are compared, the legitimacy of each can be better appreciated.

In addition, if the goal of American Indian opponents is to stop the Yucca Mountain project, their arguments against the site need to reach a wider audience. American Indian opponents to the site are a relatively small group and it can be argued that American Indian issues and concerns are usually not widely recognized, understood, and discussed among the American public.[386] With the exception of the recent lawsuit filed by the Western Shoshone against the government for violating the 1863 Treaty of Ruby Valley, which was publicized in local Nevada newspapers, a

[386] Indian gaming is a notable exception, but can be explained because casinos are directly affecting non-Indian populations. Moreover, in states like California, tribes have reached out to a wider audience to support their right to gaming with ballot initiatives and ad campaigns.

majority of the media coverage of the Yucca Mountain site does not mention American Indian opposition.[387] This makes it less likely that American Indian concerns about the project are circulating in public discourse. One potential explanation is that it is not the main goal of American Indian opponents to gain widespread support. American Indian Movement protest rhetoric is often viewed as unsuccessful because the movement did not succeed in wide scale change or in persuading a mass of non-Indians to join the movement. Rhetorical scholar Randall Lake argues that although the Red Power movement (American Indian Movement) in the 1970s has been criticized for its lack of success with non-Indian audiences, the movement rhetoric was actually consummatory, or meant to persuade those within the movement.[388] This is not the case with the movement to stop Yucca Mountain, in which the movement has a strong web-presence and has already reached out to non-Indian audiences.[389]

The problem in reaching wider audiences may be a result of a lack of resources. However, if American Indian opponents to the project can build coalitions with other opponents, their arguments may reach a wider audience and the coalition may have the ability to be more effective in stopping the project. Mathew Glass' study of the MX missile controversy demonstrates that the Western Shoshone allied with Mormons and public citizen organizations were successful in stopping the project.[390] Though the MX case is different from the Yucca Mountain site, the MX case shows the potential for overlap and coalitions between stakeholders. Returning to the concept of environmental justice movements that stress the interconnections between people in

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[387] For an example of local coverage of the Western Shoshone lawsuit, see: Rogers, "Western Shoshone File Yucca Lawsuit. A search of the Lexis Nexis newspaper database reveals that the stories about Yucca Mountain in the last six months concern issues such as the USGS scientist controversy, the resignation of the head of the project and delays in waste acceptance, but no coverage of Western Shoshone opposition.

[388] Lake, "Enacting Red Power," 127-142. See also Lake, "Between Myth and History," 123-151.

[389] The Western Shoshone Defense Project and the Shundahai organization are actively struggling to protect Western Shoshone land rights and to fight nuclear testing and nuclear waste storage and are reaching wider audiences.

[390] Glass, *Citizens Against the MX.*

struggles against unjust environmental policies, aligning with a larger movement may allow American Indian opponents to reach a wider audience, create important ties in a wider struggle for environmental justice, and insert crucial issues of the oppression of American Indians into the public sphere.

Scientific Argument

The case of Nevadan scientific arguments is also a case in which the arguments were not successful with the DOE, but may have been successful with other audiences. If opponents want to stop the project, arguments may need to be more scientifically based and may need to express the complexity of the role of science in policy decisions. In addition to engaging in scientific critique and offering scientific arguments, public opposition should also continue to raise other social, emotional, or political arguments and show how these interact with the scientific arguments. Environmental and activist groups have an important role to play by helping to disperse scientific information. Charles Bazerman highlights the importance of access to information in nuclear policy decisions and demonstrates the positive role that public activist groups and environmental organizations can have in dispersing scientific information.[391] These groups can also play a role in creating more scientific literacy among the public, and creating more coordination of public science efforts in opposition to the site. A project as big as the Yucca Mountain project will require mass mobilization to stop it. Again, there may be a problem with access to resources, especially because the government funds the scientific research that supports its findings and opponents may not be able to fund competing studies. However, a large movement to increase the public's ability to engage in scientific debate and to use of resources of activist organizations and the environmental movement toward this end may have the potential to challenge the resource-base of the federal government. While there are large numbers of opponents, their arguments are not consistent and they are not necessarily part of a movement.

Conclusion

[391] Charles Bazerman, "Nuclear Information: One Rhetorical Moment in the Construction of the Information Age," *Written Communication* 18:3 (2001).

The controversy over Yucca Mountain is part of a larger controversy over nuclear waste siting decisions. As long as we continue to develop and use nuclear technologies, the United States will have to make decisions about what to do with nuclear waste. The Yucca Mountain High Level Nuclear Waste Repository is located in what is considered by the DOE to be a low populous and remote peripheral region.[392] As Valerie Kuletz reveals, the American Southwest is home to many of the locations of nuclear research, development, and waste storage.[393] Kuletz geographically maps the phenomenon of nuclear colonialism in the American southwest and argues for continued moves in mapping the loci of nuclear technology. This dissertation makes a move to map the discursive terrain of the connection between nuclear technology and this region through a case study in the arguments in the controversy over Yucca Mountain.

In addition to decisions about nuclear waste, there are other forms of toxic waste and pollution. Therefore, from this perspective, this dissertation is a study in the rhetoric of toxic colonization, exploring rhetorical strategies used to justify or contest various dimensions of the relationship between toxic waste and pollution and marginalized communities. Though Yucca Mountain has been considered an issue of environmental justice because of its location on contested American Indian treaty land, it is also an issue of environmental justice because Nevadans are marginalized from the core "national interest." While the underlying issues and situations of each side are not equivalent, the environmental justice movement is premised on creating connections between people and processes, and a connection between these two groups seems appropriate. This analysis of the rhetorical dimensions of toxic colonization reveals ways in which the relationship is justified and contested through argument. In addition to improving the process of public and tribal participation in environmental decision-making with better recognition of values, this dissertation

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[392] See U.S. Department of Energy Office of Civilian Radioactive Waste Management, *Yucca Mountain Project* [Web site] http://www.ocrwm.doe.gov/ymp/index.shtml (accessed March 28, 2005).

[393] Kuletz.

creates a starting point for a coalition between Nevadans and American Indians in challenging the site.

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