

University of Nevada, Reno

**The Rhetoric of Forest Health and the Circulation of *Ethos* in Environmental
Discourse**

A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Philosophy in
English

by

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Abstract

The Rhetoric of Forest Health the Circulation of *Ethos* in Environmental Discourse

examines the conflict that is created, mediated, and sometimes resolved between technical and public sphere arguments. In addition, how technical claims and technical *ethos* move into the public sphere, and how the circulation of technical claims and *ethos* affects public discourse, is explained. Initially using Thomas Goodnight's sphere theory as a lens for analysis, the discourse in each case study is examined to determine whether or not the kinds of claims being presented, the forum in which they are being presented, and the *ethos* of the rhetor all invoke the same sphere. If there is any disagreement between claims, forum, and *ethos*, an asymmetry is present that must be resolved. In order to examine how and why these asymmetries occur, Bruno Latour's Actor-Network-Theory is used. Instead of viewing the discourse present as static as Goodnight's does, Latour's ANT examines discourse as interconnected to human and non-human actors, both present and absent in a forum, through time. Also, while Goodnight's theory identifies a division between public and technical arguments, Latour argues that any such divisions are artificial and should be examined in order to expose their political nature. Latour's methodology is used to read against apparent divisions between the technical and public spheres in three different case studies, each involving forest management and policy in the United States. The first case study examines the rhetoric and discourse of "forest health" surrounding President George W. Bush's August 22nd, 2002 speech where he unveiled his "Healthy Forests Initiative." The second case study looks at the discourse around the publication, and subsequent controversy, of Donato et al.'s Science article

“Post-Wildfire Logging Hinders Regeneration and Increases Fire Risk.” The last case study examines how “riparian reserves” are defined in the 2016 revision to the Northwest Forest Management Plan. In each of these cases, the ANT analysis shows how asymmetries are constructed in order to facilitate the movement of claims and *ethos* from one rhetorical situation to another.

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Chapter 1: Introduction

When Lloyd Bitzer first proposed his model of the rhetorical situation, he made the claim that scientific discourse is not rhetorical because it does not motivate an audience to action. However, according to Phillip Wander, this conception of rhetoricless science ignores two things: that science's role in "deliberation of public policy ... obliges the critic to concern him or herself with science: how it is used in debate; how it relates to other sources of information; what occurs when there is conflicting scientific evidence" (226–27); and since scientists work with language to persuade others to publish their work, financially support their research, and grant them positions and salary, it is reasonable to assume that scientists rely on rhetorical conventions to strengthen their arguments (Wander 227). Decades later, Gaonkar would worry that deconstructing scientific rhetoric and arguments could be used to undermine the validity of scientific findings, but Prelli's A Rhetoric of Science, Gross's The Rhetoric of Science, Myer's Writing Biology, and Fahnestock's Rhetorical Figures in Science demonstrated that scientists not only compose their articles and arguments to meet disciplinary and genre conventions, but scientists also recognized the need to approach their work rhetorically. This rich base led rhetorical critics to examine not only how scientific texts are composed, but also how scientific texts can affect public policy.

To understand how public deliberation of policy functions in a democracy, Thomas Goodnight proposed sphere theory. Recognizing that there are recurring "routine, discursive paradigms" he calls spheres ("Public Discourse" 428), Goodnight

differentiates the kinds of controversies and the discourse they invoke: they can be personal in nature, a matter of public concern, or require technical expertise to resolve. Each sphere – personal, public, and technical – requires that claims be supported by warrants appropriate to the situation and made by someone with an *ethos* appropriate to the discourse.

However, in real-world situations the spheres are not static and can be invoked and dissolved within a forum quickly. In addition, claims can move between spheres and forums. When technical claims enter public debates, or experts with technical *ethos* participate in public forums, the constraints of situation change and so does the discourse. In the end, the conflict between technical claims and public discourse often alienates participants and disrupts attempts to address or solve an exigence.

To understand how conflicts between the technical and public sphere occur, this dissertation will trace how technical claims and technical *ethos* can move between forums and situations. While Jenny Rice's (née Edbauer) conception of rhetorical ecologies accounts for the movement of rhetoric between situations, this dissertation will examine how rhetoric enables this movement. In addition, it will examine how technical *ethos* is able to move between spheres. Although much work has been done on the construction of technical *ethos*, previous work presented a static conception of *ethos* confined to a particular rhetorical situation. The movement of technical *ethos* between rhetorical situations and forums, and the causes and effects of this movement, have only just begun to be studied and explained. This dissertation assembles one explanation of the mechanics of rhetorical circulation by examining how and why technical *ethos* moves

between situations and forums. By answering these questions, the mechanics of conflict and resolution in public and technical discourses will also be illuminated.

Debates over forest-management policy will serve as case studies. Forest policy and management is one of the most visible sites of technical/public interaction in the United States. Conflicts have led technical experts, as shown by Predmore and others, to treat public comment as the product of private interests and ill-informed citizens (408), and the public to distrust expert opinion as in the pocket of private interests and disregarding community interests. A secondary goal of this dissertation is to create a rhetorical framework through which to view these controversies to suggest strategies to improve forest-policy discourse.

Science is Rhetorical

Rhetoric, according to Lloyd Bitzer, is situational: it occurs in response to an exigence, or problem, to persuade an audience capable of mediating change to take action (3). While the exigence is material in Bitzer's theory of the rhetorical situation, the speaker and their rhetoric alter "reality by bringing into existence a discourse of such a character that the audience, in thought and action, is so engaged that it becomes mediator of change" (4). Like Aristotle, Bitzer sees rhetoric as persuasion, but adds that it requires an audience capable of action. It is not enough in this view to persuade an audience that you are right: rather, the audience must be capable of taking action to solve the problem.

Expanding on this definition, Bitzer gives examples of what is and is not a rhetorical situation. To this point, he argues that poetry and scientific discourse are not rhetorical because they either do not address an exigence or do not motivate an audience

who can take action to address the exigence: “The scientist can produce a discourse expressive or generative of knowledge without engaging another mind ... their audiences are not necessarily rhetorical. The scientific audience consists of persons capable of receiving knowledge” (Bitzer 8). Alan Gross and others find this limited view of scientific discourse lacking an understanding of the function of discourse within scientific and public forums. Bitzer’s arguments ignore the persuasive function of scientific texts within the scientific community, while Gross argues that “no feature of scientific texts is exempt from rhetorical explanation” (“On the Shoulders of Giants” 21). To prove this point, Gross contrasts Isaac Newton’s earlier published works on optics, which were not well received, with his later, which were well received. While the publications vary little in their conclusions, Gross shows that Newton’s claims were not widely accepted by the scientific community until the rhetorical structure of his findings was persuasive. To view the contemporary scientific report or article as un-rhetorical is to ignore genre as rhetorical: ignoring the genre conventions of the scientific article – or to write a scientific report in the first person, without clear cause and effect claims, and devoid of a methods and findings section – would render the conclusions “unscientific.”

Furthermore, as Wander argues, since the work of scientists is used in public-policy deliberation, rhetorical criticism of scientific work is necessary to protect against abuses of power. While scientists may claim that their findings are devoid of value judgements, many scholars of rhetoric have found the opposite to be true: Carolyn Miller has found that objective scientific claims can be informed by the values of the scientists crafting them (“The Presumption of Expertise” 197); Fahnestock has shown that scientific claims can be transformed into policy recommendations when they are

accommodated, or translated, for public consumption and circulation (“Accommodating Science” 291); and Gross has shown that scientific discourse can impose moral order on public debate (“The Roles of Rhetoric” 15). These situations suggest that technical claims, even when supported with appropriate warrants and *ethos*, can be composed, either consciously or not, to motivate an audience to action. Analyzing technical claims through rhetorical lenses can show how and why an audience is motivated, as well as possibly understanding how scientists influence policy through the construction of technical claims.

Scientific Discourse and Public Deliberation

It is clear that scientific, or technical, discourse is rhetorical, but this does not mean it should be viewed the same way as public discourse. The differentiation is explained by Thomas Goodnight, who expands Bitzer’s rhetorical situation model by viewing discourse about controversies, or exigences, as occurring in one of three different spheres – the personal, public, and technical – which “may be described in terms of [their] routine, discursive paradigms” (428). That is to say, each sphere has a set of rhetorical and communicative practices, such as the kinds of claims that can be made, how they are supported, and the *ethos* that is necessary to make such claims. For Goodnight, the personal, public, and technical all invoke their own spheres, each requiring a corresponding *ethos* and complementary claims. In his model, certain controversies are best resolved by invoking the technical sphere and others should be public or personal.

However, controversies and their ensuing debates are often messy, mixing claims and *ethos* regardless of the forum they are presented in; Goodnight foresaw this, as well as other scholars of rhetoric and communication. The rhetoric of science as a discipline is interested in the interdependent relationship between science and its publics –the scientific community requires the public trust to support its work, and public discourse relies on scientific claims to inform policy. Scholars like Myers have shown that scientists, when drafting grants and writing articles, recognize the need to construct their arguments to suit an audience, not just to report the facts (98). The concept of an objective account of an experiment ignores the social factors that frame research questions and agendas and make the experiment possible (Woolgar and Latour; Gieryn). At the same time, informed decision-making relies on technical claims but engages them within a public forum, not a technical one. When technical claims enter public debates, or experts with technical *ethos* participate in public forums, the constraints of the public forum and rhetorical situation change accordingly: the claims that become appropriate are not necessarily supported by public warrants, and a technical *ethos* may be required to speak.

As scholars have shown, the conflict between technical claims and public discourse often alienates participants and disrupts attempts to address or solve an exigence (Miller, “The Presumption of Expertise”; Waddell “Defining Sustainable Development”; Beck). In addition, if “our increased recognition of the subjective side of science ... has legitimized the subjective aspects of public participation in environmental and science policy disputes” (Waddell, “Saving the Great Lakes” 144), then claims of objectivity in science that alienate the public obstruct constructive discourse. Carolyn

Miller's response to Goodnight expands on this, pointing out a "strategic instability of the distinction between epistemic and policy issues, between expert and public forums, between scientific and science-based controversy" ("Response to Goodnight" 36). To suggest that a policy debate, informed by science, requires technical debate at the expense of public discourse is to conflate policy debate, which is a call for action, with the knowledge confirming function of scientific discourse.

While a criticism of sphere theory is that the inherent instability of the division between the spheres can be difficult to discern, I view this as an opportunity for productive analysis. Even though Edward Schiappa argues, in his justification of sphere theory, that "a commitment to democratic governance entails that it is important to resist rule by technocratic elites and to recognize that the deployment of certain framings, including 'public' versus 'technical,' enacts specific power relationships," he still believes the sphere model has merit because "the gap between technical and public sphere argument can be enormous" (227). In his view, Goodnight's model is about the competence of the audience, and it cannot be ignored that "on a case-by-case basis, certain controversies that are better or worse suited for the argumentative practices of the public sphere" (Schiappa 227). So, while the differentiation is a useful tool for framing discourse analysis, it is also true that challenges to the demarcation of the spheres are necessary to keep a functioning democracy accountable to its citizens.

The untangling of conflicts that engage both the technical and public spheres is not a simple task because the very act of labeling one claim as public and another as technical can be deeply political. To suggest that the public should not be debating technical merits, or that scientists should not tell the public what they should do, can

silence one group of people while elevating the discourse of another. Examining the warrants supporting a claim and the *ethos* of the speaker can expose what discourse a speaker is hoping to invoke, but when the critic labels one discourse as technical and another as public they also impose assumptions on what is and is not appropriate. Steve Fuller's critique of Ceccarelli's model of manufactured controversy shows how political these forms of critique can be. Ceccarelli examined public debate on technical issues – such as climate change, the relation between HIV and AIDS, and evolution – to show how democratic norms of public discourse can be used rhetorically to create a controversy where there is none. For Ceccarelli, a “controversy is ‘manufactured’ in the public sphere when an arguer announces that there is an ongoing scientific debate in the technical sphere about a matter for which there is actually an overwhelming scientific consensus” (196). While Ceccarelli's work shows the development and utilization of specific *topoi* in these debates, the labeling of some debate as “manufactured” implies that other is natural.

To label some debate as natural and others as manufactured is again to ignore the social aspect of scientific work. For Fuller, a sociologist of science, “there is no reason to presume either that consensus is normal in science or that whatever consensus exists in science is anything more than an institutionally sanctioned opinion about theories whose ultimate prospects are still up for grabs” (754). To assume that science must speak with one voice, and that disagreement is not welcome, is to ignore the social rationale for such consensus. To put it another way, “current scientific practitioners – either in their elite or their mass – do not own science” (Fuller 756). Science is always open to public debate, and that debate can be fruitful. Labeling certain technical debates as “manufactured” and

others as genuine puts the critic in a position of determining what can and cannot be discussed based on a speaker's intent. Rhetorical criticism does not deal with the intent of a speaker.

To conduct rhetorical analysis of conflicts between the public and technical sphere, a truly rhetorical framework is needed. Instead of labeling discourse as invoking this kind of sphere or that kind, this dissertation is interested in situations where the sphere being invoked is unclear. Sphere theory enables the kinds of claims made, the *ethos* of the speaker, and the forum in which the sphere is being invoked to be compared to each other. It should be expected that, due to the "routine, discursive paradigms" associated with each sphere (Goodnight 428), all should be aligned with each other. When a sphere is invoked but is not supported by the *ethos* of the speaker, the warrants of the claims made, or the forum where it occurs, the discourse must somehow resolve the asymmetry. Understanding how technical *ethos* and the technical claims it warrants circulate between forums and situations will also enable the critic to understand why and how technical/public conflicts are occurring without resorting to presumptions on speaker intentionality.

Ethos

The definition of scientific *ethos* is not a new field of study. Beginning with R. K. Merton's sociological studies of science, which suggested there is a scientific *ethos* constructed by the cultural norms and the "institutional structure of science" (268), rhetoric and history of science scholars not only have mapped the genealogy of scientific *ethos*, as in the work of Steven Shapin, but also have mapped how *ethos* is rhetorically

constructed in texts, as in the work of John Campbell. By exhibiting the values of disinterest, universalism, community, and skepticism, as both Merton and Shapin have shown with historical examples, and utilizing genre specific *topoi* and warrants, as Charles Bazerman and Lawrence Prelli have illustrated, a speaker may perform and inhabit the scientific *ethos*. In this way, the scientific speaker is defined as, and viewed as, separate from public discourse; even at the time of Merton's initial studies, he recognized that the scientific *ethos* is in part defined by its conflict with public discourse (278). The claims of a scientist are neither personal nor political – they are scientific.

This differentiation of different kinds of *ethos* ignores, as with sphere theory, the messiness of the division. Fahnestock and Secor have shown that “arguments such as those in science, which seem to concern nothing but getting arcane facts . . . can be seen as having implications of value and action for their intended reader” (441). The upward pull (from lower levels of stasis to higher) of claims does not necessarily have to be the intent of the writer, but the rhetorical circulation of claims and the *ethos* supporting them affect public debate. In addition, Carolyn Miller has shown how “risk analysis became a discourse of experts, in which the assumptions, interests, values, and beliefs of experts are deployed to answer public questions about new technologies, government policies, and human behavior” (“Presumption of Expertise” 167). Instead of public discussion, the values of the experts are presented as technical claims and invoke the technical sphere. So while the construction of scientific/technical *ethos* has been well explained, the instability of the division between situationally appropriate forms of *ethos* has complicated the role of technical *ethos* in public debate.

All of these studies, however, employ a static conception of *ethos*. In each, technical *ethos* is constructed within and confined to a particular rhetorical situation – whether it be a scientific paper using the appropriate *topoi* to convey the *ethos* of the author or the use of technical warrants to support a speaker's claims in a government report. Since the division between the technical and public sphere is often fluid, claims and *ethos* are able to move back and forth and in between situations and forums. The movement of technical *ethos* between rhetorical situations and forums, and the causes and effects of this movement, have only begun to be studied and explained.

Claims

The movement of claims between rhetorical situations has received scholarly attention over the past decade. Jenny Rice (née Edbauer) proposed a model of rhetorical ecologies to critique Bitzer's model and conceptualize the movement of rhetoric between situations: instead of viewing rhetorical situations as static and singularly constructed, and the rhetoric used within them as exceptional to that moment, Rice suggests that exigencies are not static but instead are “an amalgamation of processes and encounters: concerns about safe neighborhoods, media images, encounters of everyday life in certain places, concerns about re-election, articulations of problems and the circulation of those articulations, and so forth” (8). This suggests, then, that situations are fluid and the claims and rhetoric move between them, propelled by the social fields and structures that brought them into being. This model has been used by many theorists, but a technical understanding of the mechanics of this movement occurs has yet to be articulated. It is

clear that some claims circulate more widely than others, but the rhetorical reasons why this occurs still need study.

This dissertation assembles one account of the mechanics of rhetorical circulation by examining how and why technical *ethos* moves between situations and forums. By answering these questions, the mechanics of conflict and resolution in public and technical discourses will also be illuminated.

Actor-Network- Theory

In addition to utilizing Thomas Goodnight's sphere theory, an expansion of the rhetorical situation, this dissertation will also examine case studies using the Science, Technology, and Society (STS) Studies methodology of Actor-Network-Theory (ANT). Scholars of STS studies are interested in the interaction between science and society. While Goodnight's model identifies specific rhetorical situations that require special discourses, STS scholars find these kinds of divisions problematic. Bruno Latour argues that any division between the social and natural worlds is artificial and political in nature – to say that one controversy is technical and another is public is to ignore the social construction of the scientific discourse. This stands in direct contrast to Goodnight's sphere theory, which identifies the discourse in a given forum as invoking a specific kind of sphere. The invocation of the technical sphere, and the resulting exclusion of non-experts from discourse, ignores the social construction of the technical sphere and its political consequences.

In addition to the contradicting views of technical sphere discourse, another key difference between Goodnight's theory and Latour's methodology is how they account

for time and space. Goodnight's sphere model is static, focusing on analyzing the discourse of a specific moment in a specific place. Identifying who is speaking, the kinds of claims they are making, and the forum in which they are making them become the focus of the theoretical lens. While Goodnight admits that the differentiation between the spheres is not always easy to decipher, as will be shown, there are clear material effects of these discursive differentiations. In contrast, Latour views a controversy, which he defines as a trial of strength, as a historically constructed moment where a network of human and non-human, present and absent, actors and actants are mobilized to defeat an opposition.

The work of the critic, or sociologist or anthropologist, who chooses to use ANT as a methodology is the tracing of these networks. A network is an assemblage of actors, humans capable of action, and actants, non-humans capable of action (Latour, Pandora's Hope 303). These actors and actants are recruited into a network, where they then become allies with other actors and actants. Recruitment is anything that can be done to form an alliance; though Latour does not use the language of rhetoric when he argues that translating a situation or actor or actant to align with the interests of another actor or actant is one way to recruit allies, his definition of translation sounds like rhetoric at work: "translation refer[s] to the work through which actors modify, displace, and translate their various contradictory interests" (Pandora's Hope 311).

As an example of a network and a trial of strength from his work on Pasteur's work on the microbe, Latour describes how Pasteur defined the microbe as an agent of disease that would appeal to the hygienist movement (The Pasteurization of France 58). By showing that microbes caused disease, he presented the hygienists – a movement

working to stop the spread of disease – with a foe they could fight, making their claims for city planning more relevant. Prior to Pasteur and his microbes, the lack of knowledge of how illnesses arose and spread left the hygienists with no central argument: “If anything can cause illness, nothing can be ignored; it is necessary to act everywhere and on everything at once” (Latour, The Pasteurization of France 20). It was not until the hygienists aligned themselves with Latour, who could explain how microbes worked, that they were able to formulate arguments that could recruit others to their network. While it can be debated about whether or not microbes have agency or are simply passive objects circulating through environments, Pasteur translated the microbe into the agent of illness, always ready to attack, which fit the political needs of the hygienists. The animation of microbes in order to recruit hygienists, and the hygienist’s description of the microbe as an enemy to be fought and eradicated, are moments of rhetorical invention designed to strengthen an argument through the formation of alliances. The natural, the microbe, is translated in order to meet the social needs of the human actors – power for the hygienists, and fame and financial support for Pasteur. To examine debates between hygienists and doctors over how best to care for their patients as purely technical discourse ignores how the microbe is being presented and translated, and ignores the political struggles of all parties involved.

To be put another way, while a rhetorical situation is enacted by those present, a trial strength is between networks of actors and actants. These networks are composed of both humans and non-humans, agencies and objects, and material and discursive objects, all of whom have been recruited prior to the network prior to the trial of strength. For Latour, “it is through trials that actors are defined” (Pandora’s Hope 311), or it is through

trials of strength that the networks become visible. The fact that these networks are composed by both natural/scientific actors and objects and social/political actors and objects suggest that any moment of controversy can be both scientific and political, or technical and public. This also suggests that a trial of strength is not a static event, but rather is a dynamic assemblage. At the end of a trial of strength, one network will remain intact and the other will be dissolved – this is not to say that it cannot reform, but that re-formation will occur over time the future, not in that moment.

One of the focuses of this dissertation is to understand why some discourse is seen as technical and others as public. Goodnight's model gives a critical lens that can identify technical and public controversies. Latour's method offers a way to examine and challenge the divisions between the spheres. Furthermore, the act of tracing a network, which requires the researchers to find physical evidence of alliances that are reaffirmed and realized during a trial of strength, creates a corpus of texts and discourses that can be examined in order to understand where and how do Goodnight's division appear. Granted, it is possible to examine a situation using Goodnight's model and then examine the history of the arguments, speakers, forum, and audience, but it is then up to the discretion of the researcher as to what is and is not fitting to their work. It is too easy for the critic to inadvertently find what they are looking for, researching until they confirm their hypothesis. Latour avoids the limitations of the critic's gaze by requiring the researcher to go where the actors and actants tell them to go. In ANT, the researcher must avoid applying *a priori* assumptions about power and motivation, something implicit in Goodnight's distinctions between the spheres.

Forest Policy as a Site of Study

To explore these movements and conflicts, debates over forest-management policy will be used as case studies. In 1905, under the direction of then-President Theodore Roosevelt and Secretary of Agriculture James Wilson, all forest reserves held by the US government were transferred from the Department of the Interior to the Department of Agriculture. Behind this move was Gifford Pinchot, the first director of the United States Forest Service (USFS), who said – in a letter he penned for Wilson –

“In the administration of the forest reserves it must be clearly borne in mind that all land is to be devoted to its most productive use for the permanent good of the whole people, and not for the temporary benefit of individuals or companies. All the resources of forest reserves are for use, and this use must be brought about in a thoroughly prompt and businesslike manner, under such restrictions only as will insure the permanence of these resources” (4).

While Pinchot envisioned reserves managed by learned foresters who lived and worked in the environments they managed, the trust that must be given to such an individual can be viewed as politically unsettling. In order, in part, to protect from abuses of power and catering to one interest group at the expense of another, the mission statements of the USFS and the Bureau of Land Management (BLM) have become more and more defined by federal laws and statutes.

1. Today, Forest Service management is tightly constrained and the agency is legally required to meet multiple, often conflicting, objectives.

Beginning with the Organic Administration Act of 1897, government agents were instructed to “improve and protect the forest within the reservation, or for the purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber for the use and necessities of citizens of the United

States” (Organic Administration Act of 1897, “16 U.S.C. § 475”). The favorable flow of water is often adversely affected by the harvesting of timber, and the harvesting of timber is limited by the flow of water – even in its simplest form, agents in the USFS and BLM were forced to balance competing objectives.

Revisions to the Organic Administration Act, such as the National Environmental Protection Act of 1969 and the Federal Land Policy and Management Act (FLMPA) of 1976 continued to expand the commitments of land managers. For example, the FLPMA requires that

the public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values; that, where appropriate, will preserve and protect certain public lands in their natural condition; that will provide food and habitat for fish and wildlife and domestic animals; and that will provide for outdoor recreation and human occupancy and use. (FLPMA 1)

To manage all of these conflicting priorities, federal land-holding agencies are obligated to enable public involvement, defined as

the opportunity for participation by affected citizens in rule-making, decision-making, and planning with respect to the public lands, including public meetings or hearings held at locations near the affected lands, or advisory mechanisms, or such other procedures as may be necessary to provide public comment in a particular instance. (FLPMA 2)

In addition, they are also required to “use a systematic interdisciplinary approach to achieve integrated consideration of physical, biological, economic, and other sciences” (FLPMA 4). The balancing of multiple objectives for multiple interests requires discourse that both incorporates the views and values of stakeholders and clearly communicates the agency’s rationale for management decisions. The very nature of the situation requires

that multiple publics, technical disciplines, and private interests become engaged, convergently, in the decision-making process.

The complicated role of land managers is not lost on the agencies in which they serve. While the USFS states that its mission “is to sustain the health, diversity, and productivity of the Nation’s forests and grasslands to meet the needs of present and future generations,” they recognize they must

“use the best scientific knowledge in making decisions and select the most appropriate technologies in the management of resources ... strive to meet the needs of our customers in fair, friendly, and open ways ... form partnerships to achieve shared goals ... [and] recognize and accept that some conflict is natural and we strive to deal with it professionally” (USFS “What We Believe”).

At the same time, the BLM, whose mission statement is nearly identical, recognizes they must balance multiple objectives, like “provid[ing] a sustained yield of timber ... Provid[ing] clean water in watersheds ... [and] Provid[ing] recreation opportunities” (Bureau of Land Management). Both agencies must balance recreation, ecosystem functions, hydrology, and the sustained production of natural resources; this is a not by choice or altruistic vision but is legally mandated through a series of laws, including the Clean Air, Clean Water, and Endangered Species acts in addition to those previously mentioned. These laws preclude other management objectives and restrict the professional discretion in management of federal agents or, as the Society of American Foresters argue, “Congress gradually retracted [discretionary] authority from the executive agencies: with each new piece of legislation, the activities of the agencies have been incrementally constrained” (Floyd 24). Each additional piece of legislation has further complicated the near impossible job of each agency, which are now required to create forums for discourse, engage with public claims and values, and solicit and create

scientific data, as well as consider the values of local communities and meet the requirements of state and federal regulations. The evaluation and assessment of public claims against technical claims, and vice versa, becomes one of the key functions of federal land managers – and a perfect place to examine how different kinds of claims are created, circulated, and valued.

Forest policy and management has long been a point of contention where publics interact with technical experts. Often these interactive situations are created by claims moving between multiple forums and *ethos* being invoked separate from the rhetorical constraints of an original situation. When technical discourse enters public forums, or when public discourse challenges technical expertise, conflict ensues and each side blames the other: technical experts, as has been shown by Predmore and others (Predmore et al., 411; Killingsworth and Palmer 165), view public comments as the product of private interests and ill-informed citizens, and the public feels like it does not have a voice in the decision making process. A secondary goal of this dissertation is to create a rhetorical framework through which to view these controversies in order to suggest strategies to improve policy discourse.

Chapter Summaries

Chapter 2: Methodology – This chapter engages with the theoretical frames that will be used to analyze case studies. Bruno Latour’s Actor-Network-Theory will be explained and adapted for this dissertation, and Thomas Goodnight’s sphere theory will be further critiqued in order to explain its value as a generative lens for rhetorical criticism.

Chapter 3: Forest Health – This chapter will be the first case study and will focus on the rhetoric of “forest health.” Using President George W. Bush’s 22 August 2002 speech in Central Point, Oregon as the *kairos*, this chapter analyzes how the term “forest health” is used by Bush and then circulates through various forums.

Chapter 4: The Donato Paper – This chapter is a case study of the discourse created by the publication of “Post-Wildfire Logging Hinders Regeneration and Increases Fire Risk” by Donato et al. in the January 20th, 2006 issue of the journal Science. Claims made by Donato will be traced through a variety of situations in order to map a network of actors.

Chapter 5: Riparian Reserves – This chapter examines how “riparian reserves” are discussed in the 2016 revised Northwest Forest Management Plan. The corpus for this chapter includes the BLM’s draft Environmental Impact Study, final decision report, and all associated paperwork.

Chapter 6: Conclusion – This section will summarize the findings of this dissertation and suggest their significance to rhetorical scholarship and natural resource management.

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Chapter 2: Methodologies

What do we talk about when we talk about trees – or forest policy? This is not an easy question to answer because, as a rhetorical situation, the audience, constraints, and even the exigence are not easily or clearly identifiable. A discussion on forest management plans can be viewed as stemming from the exigence of human need for timber, human conflicts with nature, or a problem with the functioning of ecosystems within a forest. The audience, a group of people who are both able to address an exigence and can be motivated through rhetoric, can be the technical officers charged with best managing the forest, a public and its need to help support management practices, or timber industry representatives. The rhetor could also be any of the above – a forester, a citizen, a representative from Georgia-Pacific – as well. The debate over appropriate policy or action occurs in many different forums, addresses many different audiences, and is called into being by many different rhetors. It occurs in congressional subcommittee chambers, private offices in business buildings, and in school cafeterias. There are a multitude of forums where environmental controversies are discussed.

Forums

This is not to say that all of these forums are equal – as we will see, a discussion of riparian reserves that takes place in public forum in a town hall meeting will be valued less in the decision-making process than a technical article published in a scientific journal. A forum, broadly defined, is a place – which includes the speakers, audiences,

physical location, social structures, and cultural norms within and surrounding it – supporting a discourse. The discourse within a given forum and its relation to the policies in question is dependent on many factors, including the *ethos* of the rhetor and the kinds of claims that are circulated. Certain people may lack an appropriate *ethos* for their arguments to be taken seriously in the decision-making process, and certain claims may be inadequately supported or incommensurate with the parameters of debate. As Killingsworth and Steffens have shown in their work on Environmental Impact Statement (EIS) discourse, only claims supported by scientific evidence and made by a person with credibility are given merit in the decision making process (170); the public often lacks the appropriate *ethos* for their claims to be given merit in technical debates on resource management. Furthermore, sociologists studying technicians within the field of natural resource have found a prejudice against the inclusion of public comment during the policy and planning process (Predmore et al. 409). Certain discourse is granted salience while others are given little merit, and the valuation of discourse can be both dependent on, or independent from, the forum in which it occurs. What matters then is the *ethos* of the rhetor and the kinds of claims they are making.

Ethos

Ethos is not static within a forum or individual, but instead is constructed in response to the audience, the rhetor, the exigence, and the historical and cultural context of a given forum. I do not view *ethos* as a thing to be possessed, but instead as a dwelling. As Craig Smith argues in his essay on *ethos*, instead of viewing *ethos* as solely pertaining to the speaker, it should be viewed as containing three interconnected and interdependent

divisions: “The first, *ethos* in the speaker, includes the three components: practical wisdom, virtue, and goodwill; the second dwells in the character of the audience; and the third dwells in the speaker’s style” (3). That is to say, the speaker brings with them a character that dwells within them, the audience has a conception of an appropriate speaker that dwells within it, and the prose of the speaker must match both those conceptions. This model suggests that the rhetor can use language to change the audience’s conception or re-present their own character in a new way. *Ethos* can shift within a forum, within a speech, and within an individual.

The shifting of *ethos* within a forum is important because *ethos* defines the kind of discourse that will occur and who can participate: if the audience’s conception of appropriate *ethos* changes, then who can speak and what they can say will also change. Smith argues that a speaker can change the constraints and structure of the discourse: “Since audience adaptation is based on choice and speakers make choices within the speech, the entire speech conveys character when speakers choose a style that is either well – or ill – suited to the content and situation” (15). We must view *ethos* not as “some category to be filled at a set point in a speech; [but as something that] permeates the speech as it is mingled with other proofs, most notably word choice, enthymemes and narration” (Smith 14). These proofs, words, and enthymemes must re-enforce the virtue, knowledge, and goodwill of the speaker, but they can also reframe which of the three is most important. The delineation of appropriate *ethos* often happens in discussions of expertise.

Expertise and Technical *Ethos*

When scientists or technical experts are asked to participate in public policy deliberation, they are often granted their expertise as a form of technical *ethos*. Expertise can be viewed as a kind of *ethos*, but is specific to a technical field or specialty and not necessarily compatible with public deliberation. One of the reasons that Goodnight first proposed sphere theory “was that a culture of expertise was displacing citizen determination of risks and concealing these maneuvers by inventing media products to draw attention” (Goodnight, “The Personal, Technical, and Public Spheres: A Note on 21st Century” 261). During public deliberation, technical experts are often asked to make claims on uncertainty and assess risk, but this can require experts to include their own values when they determine which risks are acceptable and which are not. Goodnight warned against such encroachments of the technical sphere, suggesting that “As forms of decisionmaking proliferate, questions of public significance themselves become increasingly difficult to recognize, much less address, because of the intricate rules, procedures, and terminologies of the specialized forums” (“The Personal, Technical, and Public Spheres of Argument: A Speculative Inquiry” 206). The weighing of acceptable risks is traditionally the task of public deliberation, not experts. For Ulrich Beck, when the role of capitalism changed from a distribution of wealth to a distribution of risk, allowing the technocrat and scientific expert to usurp public’s agency (31). Once risk is able to be quantified and calibrated by scientists, it is no longer up to the public to decide whether or not a risk is acceptable: a risk that is minimal is acceptable, technically. The public no longer gets a say in how risk should be distributed, instead it is a calculation done by experts who are often removed from the community that will be most affected. Hidden in these calculations, as Carolyn Miller has shown in her work on nuclear power,

the values and assumptions of the expert can become embedded and transformed into fact (197). While inscribing values into statements of fact is not a rhetorical move unique to scientists, the ability of the public to challenge such statements is limited because they do not have the technical *ethos* to participate in risk assessment discourse.

The problem with a system that relies on expert opinion to create policy is that technical *ethos* is based on the credibility of a speaker in relation to their discipline and not necessarily their virtue or goodwill. In her work on nuclear power risk discourse, Carolyn Miller found that: “in a technical discourse like risk assessment *expertise stands in for ethos*” (201). Expertise then is a kind of *ethos*, but not *ethos* in the way it is traditionally thought of: “An ethos of expertise—that is, an *ethos* grounded not in moral values or goodwill, or even in practical judgment, but rather in a narrow technical knowledge—addresses its audience only in terms of what it knows or does not know” (Miller 201). This is not to say that expertise is passively constructed by the rhetor and granted by the audience, but instead it is an active and aggressive position in discourse. As Jasanoff states in her work, “expertise is not so much *found* as *made* in the process of litigation,” or, in other words, “expertise does not preexist the dispute the expert is summoned to settle, but is contingently produced the very context of the disputation” (159). Collins and Evans use Jasanoff to help expand their notion of multiple kinds of expertise, but recognize that all are contextual: when summarizing Jasanoff, they argue that, in legal discourse, “the selection of the witnesses and experts who testify, and their ability to demonstrate their expertise under cross-examination, is crucial” (276). An expert does not only have knowledge that is pertinent to the situation and beyond the general public’s understanding, but they are able to justify their position as an expert.

Regulatory, policy, or any political decision based on expert testimony, “cannot be made without attributing credibility to one set of experts and denying it to the other” (Collins and Evans 276). Not only do experts defend themselves, but they must – or have proxies do it for them – also argue against the credibility of others. As Jasanoff says, “What lies within the perimeter of expert competence tends to be labeled ‘science’ or ‘objective’ knowledge; what lies outside is variously designated as values, policy or politics” (160).

As an example, imagine a water treatment specialist who works for the city and is looking at new sites to build a sewage treatment plant. Ideally, they will examine the technical merits of each site. It is naïve to think that they will not attempt to discount sites, either actively or unconsciously, that may be close to their house. It is also probable that they will avoid examining sites that will affect local schools. While the report that they create will contain charts, graphs, and a myriad of technical data to justify which site is the most appropriate, there will also be the personal welfare of the specialist and the welfare of the public school system imbedded in the data, but unseen by the audience. Yet, when the report is released to the public, the public will not be able to comment on the technical aspects of the report. In this brief scenario, we see both the validity of Goodnight’s model, that technical claims are not open to public debate, and the problem inherent, the inability of individuals to compartmentalize their lives. The expectation that people will differentiate their motives and only match them to appropriate claims seems counterproductive and dangerous on two levels: it could dissuade people from participating in the public sphere because their own interests would be excluded; and if we are required to falsely assume that people compartmentalize their arguments, then the public is blind to the rhetorical maneuvering that can take place. While Goodnight admits

that “deciding which events fit into which spheres [is] sometimes ambiguous and shifting” (“The Personal, Technical, and Public Spheres of Argument: A Speculative Inquiry” 200), critics and scholars should examine the claims being made to determine their appropriateness to a sphere in order to understand the social reality that is being promoted within a discourse.

Technical Ethos in Public Discourse

The construction, or appearance, of technical *ethos* inside a given forum often requires that the rhetor must defend their position within the discourse by denying others the right to speak. The rhetor has to prove that their arguments, claims, and *ethos* are superior to others. If we think of *ethos* as a dwelling place constructed by the audience and rhetor, framed by historical context and cultural values, and we recognize that expertise is not interested in values *per se* nor the social history of a situation, then the expert becomes the sole gatekeeper of *ethos* and the audience is effectively denied access – not just to *ethos*, but also to the evaluative process that constructs *ethos* itself. In other words, since expertise must defend its *ethos* to justify its claims, the expert is required to deny the public an opportunity to participate.

This is not to argue against the need for experts in the public decision making process, but it is to point out that the appearance of an expert or expert opinions in a public forum must be examined, at least in part, skeptically. Even if an expert frames the discourse as dealing with factual claims supported by their discipline, two contradictions exist: first, that scientists, as Fahnestock and Secor have shown, can state claims as technical facts in order to suggest appropriate policies or actions (431); and two, while it

is not necessary for an expert to possess or present themselves as having goodwill and virtue, they decide what is relevant and what is not, or which arguments are permissible and which should be denied. As an example, in an article on a possible AIDS treatment, the authors may only make arguments about the cause of AIDS and the effects of the treatment, but their claims are also rhetorically constructed to make appeals for funding in order to produce a cure for the disease; at the same time, any popularized accommodations of the above article would remind readers of the death toll of AIDS, refocusing the audience's attention on the need for cure and reminding them that AIDS is a topic worthy of attention (Fahnestock and Secor 434). An expert can foreshadow policy and constrict discourse while appearing objective.

Reframing a forum by introducing expertise changes the public's role in policy debate. If expertise requires the exclusion of non-experts from a discourse, then statements made by experts, or quoting expert testimony in public forums, changes the constraints of the situation and excludes a public from participating in the discourse. If a forum is created for public comment on natural resource policy, the inclusion of expert opinion or the requirement of scientific evidence to support claims is antithetical to the forum's purpose: technical claims transform a public forum from a place of public deliberation to one of negotiations between technocrats. There are many examples of this: in a case study presented by Collins and Evans, scientists silenced sheep herders, who had personal knowledge of a situation, by not granting them standing (until an intermediary intervened). In Carolyn Miller's work on risk and nuclear power, the public perception of nuclear power was deemed irrelevant by scientific accounts of risk. In environmental rhetoric, Killingsworth and Steffens show how EISs account for public

discourse, but ignore public claims because they lack credibility. In each situation, expertise is a gatekeeper to participation, redefining the *ethos* that is necessary to participate in discourse.

Asymmetry

In order to understand how experts are able to change the kinds of discourse that are appropriate within a forum, I will identify moments where asymmetry occurs. By asymmetry, I am referring to a disconnect between the *ethos* invoked by the speaker, the kind of claims that are being made, the *ethos* that is expected by the audience, and the *ethos* that is appropriate to the forum. After identifying the asymmetry, understanding why and how the asymmetry is resolved will show when and how discourse can be changed.

This new terminology enables rhetorical critics to explain how experts are able to change the constraints of discourse and limit participation within a forum. By comparing the *ethos* of the rhetor, the kind of claims being made and how they are supported, and the expectation of an audience determined by not just the validity of the discourse in a controversy but the relation between a forum and an exigence, changes to the discourse become visible. More clearly stated: if the discourse is occurring in a forum within a discipline, then claims and rhetors should originate from that discipline; if the discourse is on a public good and presented in a public forum, then claims are appropriate if they are supported by agreed-upon public values and made by someone whom a public regards as having good character. When the claims made or the *ethos* of the rhetor do not match the forum or the discourse, then an asymmetry is created that must be resolved.

The ability of a forum to resist asymmetry is a signal of strength that a forum has with-in a larger debate. For example, a public forum can resist the intrusion of technical claims and technical sphere discourse can resist public critique. Thomas Gieryn's work on cultural boundaries and science offers the example of John Tyndall's call for a separation of religion from science. In the later 19th century, many argued that religious doctrine could be considered empirical and appropriate for scientific studied. Tyndall disagreed with the religious inclusionists and argued that their discourse was not technical in nature and thus not suitable for scientific forums (Gieryn 51). In this situation, a scientific forum and its audience was able to resist the inclusion of speakers with non-scientific *ethos*. Evaluating the strength of a forum's discourse requires an examination of the interaction and interplay of *ethos* and claims in relation to an audience's expectation.

It should be noted that, in this dissertation, the term "asymmetry" will only refer to the above definition. It will not refer to the Latourian, or sociological, definition of asymmetry. For Latour, Law, and Callon, asymmetry is something very different, acting to explain the disconnection that occurs when "nature" and the "social" are viewed as disconnected from one another (Latour, We Have Never Been Modern 94). Given that many sociologists often rely on a symmetrical relationship where the natural world exists and the social world explains nature's "truths", Latour and others view this arrangement as asymmetrical because it hides the interaction between the social and natural worlds and rejects the idea that "society is unequal and hierarchical; that it weighs disproportionately on some parts; and that it has all the character of inertia" (Latour, Reassembling the Social 64). This symmetrical model suggests that the natural world be made subservient

to the social – since the social explains the natural – and grants disproportionate “power” to the social. The description of that power becomes the work of the sociologist, whom, according to Latour, hide the asymmetry ascribing action and motivation to “some sort of summary for all the entities already mobilized” (Reassembling the Social 68). Terms like the economy, community, eco-consciousness, freedom, and liberty do not describe the motivating forces for the social to re-conceptualize and utilize nature, but instead hide the asymmetrical relationship between the two.

As an example, from his book Pandora’s Hope, Latour describes how soil scientists study the interaction between savannas and forests in Brazil. The scientists want to understand if the forest is encroaching or retreating in relation to the savanna (Latour, Pandora’s Hope 26-27). By examining the soil, the researchers believe they can determine which way the movement is occurring and why. What is lost is how the forest, the savanna, and the soil are being presented as actors with agency: the forest, nor the savanna, encroach or recede in relation to each other, and the soil is translated into a meaningful indicator of these actions by the researchers themselves. Latour shows how soil measurements are given meaning when combined with maps and other data, and that this meaning is as much about the scientists who say it is meaningful as the soil itself (Latour, Pandora’s Hope 29-30). The soil does not mean anything, it is the social that gives it meaning – soil scientists are paid to study soil, so they must argue that soil is important to study. The forest does not move, nor does the savanna, but imposing such animation on two hybrid actors enables social networks to pick an enemy to be fought – the savanna must not encroach on the forest because the forest, the Amazon forest, protects animals and undiscovered plants, as well as we humans from climate change. To

assume that the relationship is symmetrical is to ignore how the scientists have used the soil to justify the social structures that support and value their work. Asymmetry, for Latour, is the recognition that our relation to nature is socially constructed.

Latour, in part, developed ANT to resist such tautological thinking and bring the natural world back in to equal footing with the social. While I will not use Latour's terminology of asymmetry, this line of criticism supports my rationale for using ANT in order to understand the interaction between the social and nature in environmental policy discourse.

Spheres

As stated above, a forum's ability to resist asymmetries suggests that not all forums are created equal within a policy debate, nor are all discourses of equal significance. The merit of a forum can be measured in two ways: first, in relation to the exigence; and second, by who can participate. Thomas Goodnight recognized this distinction when he proposed his sphere model of communication, distinguishing the technical from the public from the private. The division is dependent on the *ethos* of the person speaking and the warrants supporting the claims they are making. Unlike a forum, however, a sphere is not physically bound to a space or a group of people; instead, a sphere is invoked through discourse inside a pre-existing forum: while there may be overlap between a forum and a specific sphere – at a scientific conference, for example, a forum on plant metabolism invokes the technical sphere – the sphere is independent from the forum. A sphere then is not a space to be inhabited by people, but instead is a recognized and ritualized set of discursive practices that frame discourse within a forum.

A sphere does not have rigid boundaries that explicitly define the situation in which it occurs, but instead is fluid and independent of the forum in which it is invoked. While not adhering to the discursive practices of a sphere does not necessarily silence a speaker, it does create an asymmetry that must be resolved. The resolution of the asymmetry would either be the invoking of a different sphere – responding to a public debate with a technical claim may invoke the technical sphere – or the silencing of the speaker. In this way, the sphere is not material or rigid, but it can create a boundary that excludes certain kinds of discourse and thus creating an asymmetry can have material consequences.

As stated above, forums do not necessarily produce static, stable forms of discourse: if it is possible for a new sphere to be invoked within a specific forum, then the discourse of the forum can be changed. These changes can occur when claims from a different sphere are circulated, when a different *ethos* is invoked by a speaker, and when the audience reframes the exigence and the appropriateness of the discourse. In this way, spheres are created and recreated within forums. Asymmetries can occur, for example, when the forum and its audience do not support the sphere being invoked, when the *ethos* of the rhetor does not support the sphere invoked, and when the claims being made are supported by warrants unsuitable to the sphere invoked. The strength of a forum is partially measured by its ability to resist these asymmetries.

Circulation of Claims and Ethos

The circulation of claims and *ethos* between forums and situations to create and recreate spheres is one way the technical sphere can displace public discourse. Leah Ceccarelli, in

her work on manufactured controversy, saw how pseudo-scientific claims can alter the discourse of a situation by either challenging a technical claim with public debate or excluding public policy debate by reframing a controversy as technical in nature (“Manufactured Scientific Controversy” 196). In contrast, Lynda Walsh has shown how scientists are able to transcend the technical sphere and become prophetic, suggesting courses of action in the public sphere based on their technical *ethos* (Walsh 6-7; Walker and Walsh 26-27). These are two ways that the discourse of a forum can be changed by the introduction of a new speaker or new claims. And while these situations show two specific ways discourse can be reframed, this dissertation examines how scientific discourse and claims are able to move between spheres, sometimes taking their *ethos* with them. When this *ethos* is a form of expertise, the exclusion of non-experts, or those lacking technical *ethos*, is done to further justify the expert opinion. This suggests that an exigence can be reframed as technical in nature by a rhetor appealing to their expertise, thus restricting the ability of the public to participate in the discourse. Furthermore, a public forum that is invoking the public sphere can be, as previously explained, superfluous because the discourse may have little bearing on an exigency that is actually technical. Lastly, and most troublingly, if a public forum does invoke the public sphere and cultivates a discourse that enables public participation, the technical sphere can be invoked and displace the public sphere: this happens either through a speaker demanding recognition of the expert *ethos* or a technical claim used to undermine the validity and strength of public comments. Divisions between spheres create restrictions on participation, both within the forum itself and the controversy more broadly.

While there are many examples of the divisions between spheres existing, and the rhetorical structuring of discourse clearly has real-world material ramifications, it is possible to default to the illusion of a critical gaze that always finds what it wants. The critic can look for the invocation of a sphere within a forum in order to examine discourse, but the critic must also turn their gaze towards preconceived divisions between science and culture. One possible explanation for how claims and *ethos* move between forums, creating and recreating spheres in different situations, is that the division between the spheres is illusionary. If the spheres do not exist, then *ethos* can move freely between forums because the assumed constraints on the situation are not materially re-enforced. A methodology is needed to examine a given discourse and its material constraints, but free from the assumptions inherent to Goodnight's sphere theory. By challenging Goodnight's model, not only will the rhetorical mechanisms that re-enforce the divisions between the spheres become more clear, but it may be possible to explain why asymmetries appear and how they are resolved.

Science, Technology, and Society Studies

A convenient method to test Goodnight's theory has been put forward by scholars of Science, Technology, and Society studies (STS studies). The works of Bruno Latour, Michel Callon, and John Law argue that there is no separation between the social and the natural, or between the political/cultural and science; instead, they argue that everything is hybrid, a mix of both the thing itself and the social networks that bring the thing into being. Any attempt, they argue, to divide the natural from the social or the technical from the public, as technical experts are apt to do, is a political act. In order to examine the

interplay of exigence, audience, claims, and a rhetor, Latour's methodology works to map networks of affiliation and examines controversies not as rhetorical situations but as "trials of strength" (Latour, Science in Action 79). Unconcerned with the rhetoric of a situation, STS scholars examine controversies as competitions between networks, which are developed by tracing allegiances between human and non-human actors and actants. Instead of examining the discourse meant to motivate an audience to action, these scholars examine the institutional and material structures that support actors challenging an opposition. Questions of appropriate *ethos*, claims, and audience expectations are subsumed under the simple question of whether or not a network is strong enough to recruit a given actor as an ally; as an example, the Forest Service does not have to convince people that their forest management plan is correct with rhetorical appeals, they simply need a stronger network – which could include laws, other organizations, institutions, people, and non-human actors – than their opposition. This is not to say that rhetoric is not a factor in the building of the networks (the Forest Service would still make appropriate appeals to recruit actors and actants to their network), but it shifts the focus of examination from language and discourse to material relations that may or may not be constituted by rhetoric.

By treating rhetorical concepts as lines of force connecting an actor to a network, the idea of a forum also changes. While Bitzer's view of a rhetorical situation relies on exigence to bring it into being, the ANT of Latour focuses on how the material world is "translated" by actors to form alliances and recruit other actors and actants. This can mean reframing the discourse, introducing new hybrids or claiming an actant is something new or different, or creating new exigences that will align the interests of

different actors with a network. As an example, in his book The Pasteurization of France, Latour explains how Pasteur translated the microbe, a speck visible under his microscope, into an active agent causing disease in order to recruit hygienists that were interested in rearranging city environments to decrease the prevalence of disease. Pasteur did not simply show that the microbe caused disease, he translated the microbe into an agent that met the needs and goals of the hygienists in order to convince them to support his work (Latour, The Pasteurization of France 35-40). While translation may or may not be a rhetorical activity, something this dissertation examines, the constraints of a given situation only matter in that they affect the act of translation – constructing an argument to match the cultural constraints of a given audience is a necessary, and rhetorical, activity for recruitment. In ANT, the value of a forum is dependent on how it relates to and/or can strengthen the network.

Both the rhetorical sphere model and the sociological ANT analysis examine how controversies are resolved. While sphere theory examines a situation through the lens or pre-determined differentiations, ANT is a method that traces networks based on material connections without regard to a prescribed separation between the social and the natural. The critical frame of sphere theory enables critics to view discourse in relation to the constraints around it and identify asymmetries and how they are, or are not, resolved. In contrast, for ANT, it is a trial of strength where the larger/stronger network prevails. However, within both models there is persuasion, there is credibility, and there is rhetoric.

For this dissertation, each case study will be surveyed using the ANT methodology and then examined through the lens of sphere theory. While sphere theory

can examine the appropriateness of *ethos* and claims circulating a re-circulating in various forums, ANT can trace the movement of *ethos* and claims between situations and forums. In addition, using ANT as a means for building and/or navigating the corpus of a case study avoids picking and choosing situations that meet the political objectives of the critic – the tracing of rhetoric, actors, and actants cause the critic to examine situations they may not have found otherwise. Lastly, understanding the rhetorical conventions and material forces that enable and cause the movement of claims and *ethos* to occur in environmental public policy discourse is at the intersection of these two methods.

Critique of Sphere Theory

While there has been a cursory explanation of sphere theory with an emphasis on *ethos*, this section will explain how sphere theory can work as a critical lens for examining discourse. Controversies that require communication and discourse to resolve can occur, according to Thomas Goodnight, in three different kinds of situations, or spheres: the personal, the public, and the technical (“Public Discourse” 428-429). In this theory, when a claim is made by a rhetor, it creates a sphere around it that invites discourse – to participate in the discourse, one must make a claim supported by appropriate warrants to the sphere and inhabit an appropriate *ethos* for the sphere. A sphere, in Goodnight’s model, is not a physical, geometrically defined space whose volume can be computed using calculus, nor does it have defined boundaries. It is instead a bubble of sorts, where each claim made and counter claim presented creates a kind of discourse that must match. The question becomes, how do people, *ethos*, and claims create, recreate, and circulate between these different spheres.

Personal, Technical, and Public Spheres

Goodnight's sphere model is a convenient and constructive way to critique rhetorical situations, especially as a means for understanding the inclusion and exclusion of specific audiences. Each sphere emphasizes some kinds of communication while discounting others ("Public Discourse" 428). For the personal sphere, this often means communication focusing on individual beliefs and claims supported by self-interest made to an audience that has a private knowledge of the speaker. In contrast, the technical sphere is based around communication between experts, requiring claims supported by subject dependent warrants presented in a form that is appropriate to the discipline. Lastly, the public sphere is where public debate occurs and requires that speakers have an *ethos* that is acceptable to the addressed public and claims are supported by agreed upon community norms or presented as "in" the community's best interest. Each sphere recognizes that communication in these situations is guided by persistent routines, tradition, and socially constructed norms that are designed to facilitate communication between different parties.

Two critiques of this model focus on the ability of individuals to recognize their position within a given forum or discourse. First, it should be noted, that while the division between the technical, public, and private spheres may be present in social institutions, individuals are rarely able to separate their individual opinions into these different categories. To expect a person to discount their personal opinions when making a technical argument is an age-old narrative conundrum – is it right to sacrifice the one, or the family, for the public good? While philosopher of bioethics Peter Singer may find

comfort in the logic of his utilitarian arguments for human experimentation (219-220), it is fair assumption that even if a person does sacrifice themselves for the greater good, they do so recognizing the complexity of their actions. Recognizing the interconnectedness of these spheres within an individual's discourse is not to admit that people maliciously mislead an audience by presenting a claim as technical or public when in fact it is personal as well, it is simply necessary to recognize that it is naïve to think that a person can argue for the public good while ignoring their own self-interest.

This blending of priorities does not necessarily have negative impacts on public debate and decision-making, however. Personal interests can motivate a person to benefit the public at large. As an example my grandfather, John Ludden, reframed his personal desire, to protect his backyard garden from an expanding city road, into a ten-year project to build bike trails for the good of the public in Lincoln, Nebraska (J. Walker 11). While his work should not be diminished, nor are his arguments – both technical, based on years of research and meetings and tours of other cities, and public for the good of an increasingly congested city – invalidated by his personal interests in the controversy, his personal interest was none-the-less present in all the claims he made. This both affirms and challenges Goodnight's model: there is a division between the kinds of discourse that are appropriate in a given situation and a speaker must make appropriate claims, but that does not mean that the speaker has to necessarily separate themselves from their other interests. The repackaging of claims to fit the public's conception of an argument reinforces the need for individuals to translate their motives into appropriate claims. This is not to suggest a form of deceit by the rhetor, only that the blending of the spheres in the individual is unavoidable.

It is also noted that not all claims can be easily classified as belonging to a specific sphere, nor does Goodnight claim that the construction of claims is dependent on the sphere that they are circulating within. Instead, this is a model that suggests we can view claims and audience engagement with those claims as appropriate or not – not in a political sense, but in a rhetorical ideal. In an ideal world, technical experts would debate the technical merits of a plan, would then translate their findings to the public, and the public would then debate these plans on the merits of public good. These spheres are meant to aid discourse by creating a series of constraints that enable for constructive deliberation (Goodnight, “Personal, Technical, and Public Spheres: A Note on 21st Century” 200). The spheres are meant to re-affirm pre-existing norms and practices within a community and its discourse, not direct and limit the discourse itself.

The second critique of the differentiation of spheres is that by limiting inclusion and the kinds of claims that can be made, clearly the spheres constrain the ideology of the discourse in order to reinforce pre-existing beliefs, epistemologies, and ontologies. Goodnight recognizes this consequence but believes it to be more acceptable than the alternative – outsiders challenging community norms for political reasons beyond the scope of the discourse itself (Goodnight, “The Personal, Technical, and Public Spheres of Argument: A Speculative Inquiry” 204). An example of this is from Thomas Gieryn’s work on boundaries, where he shows how political debate over cold-fusion research funding attempted to settle a scientific controversy that, in fact, was not a controversy (the technical experts had concluded that data supporting the claims was wrong) (218). Usurping the communicative practices of one group, scientists, with a forum of another, political debate, can ignore the disciplinary traditions that are present in the constraints on

the discourse. The reason scientists would not take up the cold-fusion debate is that the claims could not be supported with discipline appropriate warrants. The political seizing of the discourse was also an undermining of science specific disciplinary warrants and conventions. Having a strong division between kinds of discourse protects disciplines.

Identifying Asymmetries using Sphere Theory

There are three possible ways to examine whether or not a claim matches the speaker's motives: first, the motives of the speaker can be examined through a form of interview and/or psychological analysis, or the finding of a contradictory evidence presented by the speaker elsewhere; secondly, the *ethos* of the speaker can be examined in order to see if they are presenting a claim that coincides with the appropriate *ethos* to function in a given sphere; and lastly, the warrants of the claim itself can be examined to see if they are supported appropriately for the given sphere.

The first option is beyond the realm of rhetoric and instead requires an understanding of a rhetor's rationalization of their presented intentions. While it is possible to show how a claim or piece of rhetoric is manipulating to redirecting a given rhetorical situation, the intentions of the speaker are usually hidden from sight and criticism become based on conjecture. Without a direct declaration of meaningful manipulation using rhetoric, it is difficult to identify the relationship between a rhetor's beliefs and thoughts and the claims they are making. This is beyond the scope of rhetoric and is left for the biographer and profiler to sort out.

What is possible for a rhetorician to identify is how *ethos* functions in a given situation. For Goodnight, the relationship between the rhetor and their audience (or

work/occupation) is the foundation to communication. Relying on Burke's theory of "consubstantiality," Goodnight does not explicitly use the lexicon of *ethos* to describe his sphere model. This makes sense since consubstantiality is dependent on identification and a rhetor's ability to make themselves acceptable to their audience: as an example, Goodnight suggests that, in his explanation of why Burke is useful in thinking about the role of the rhetor in invoking a sphere for a given audience, "A partisan movement can grow by having its participants uncover consubstantial interests" ("The Personal, Technical, and Public Spheres of Argument: A Speculative Inquiry" 208, note 8). Creating and recognizing shared interests builds on Burke's notion of identification, where "two persons may be identified in terms of some principle they share in common, an 'identification' that does not deny their distinctness" (21). In the spheres, this can mean a personal identification with another person, an identification with the public's interests, or a recognition that a person has technical expertise that relates to a field. This also suggests that a claim made by a rhetor is entwined with their relationship with the audience. While worded differentially, this is Aristotelian in many ways: Aristotle posits that "for it makes much difference in regard to persuasion (especially in deliberation but also in trials) that the speaker seems to be a certain kind of person and that his hearers suppose him to be disposed toward them in a certain way and in addition if they, too, happen to be disposed in a certain way" (II.i.3). While Burke argues that there is a substance that is shared between the hearers and a speaker, Aristotle suggests that it is a disposition that is situated between the audience and the speaker – or an expectation created by one side and fulfilled by the other. Or, as Carolyn Miller summarizes, "the character of the persuader understood against the character and conventions of the

culture” (167). *Ethos* is not static, it is changing between situations and can change within a given exigence to match the expectations of the rhetor or the audience.

According to Goodnight, each sphere requires claims to be made with appropriate warrants from a rhetor who presents from an appropriate *ethos*: for the private sphere, claims are made based on self-interest and require a personal relationship between interlocutors; public sphere claims require an appeal to the public good and rely on agreed upon interests or values; and lastly, for the technical sphere, claims should be supported with technical warrants, such as scientific findings and theories, and require a form of acceptance or accreditation from a technical field (Goodnight, “Public Discourse” 428-29). As previously stated, to make a technical argument one must have a technical/expert *ethos*, while to speak in the public sphere the rhetor must exhibit character (*aretê*) and goodwill (*eunoia*) towards the community. The *ethos* of each sphere is constructed differently, is enacted by the rhetor to confirm the conventions of the sphere they are speaking from, and must align with the claims being made. These differentiations between the technical sphere and public sphere should make the movement of rhetors between the spheres problematic.

Examining the construction of the *ethos* of a rhetor in relation to the kind of claims they are making, and which sphere they are attempting to enact, allows the critic to examine a given situation for inconsistencies and critique the arguments made. In each case study in this dissertation, the guiding questions are: Does the *ethos* match the claim? Does the rhetor have the appropriate *ethos* for the sphere that they are attempting participate? What kind of *ethos* is being presented by the rhetor? Is the audience accepting of the *ethos*? By answering these questions and comparing the rhetor to the

ethos they inhabit and the claims they make, disconnects occurring within the discourse may reveal asymmetries in the situation.

Understanding how these disconnects are constructed and mediated is the first step in describing how and why *ethos* can move between spheres and rhetorical situations. Since *ethos* is mediated between the audience and the rhetor, the parameters of the discourse are established when an *ethos* is agreed upon. If a speaker inhabits the *ethos* of a technical expert, then those who wish to participate in the discourse must also present this *ethos*. While spheres are not fixed (constantly bubbling up and forming and reforming) and a challenge to a claim can move discourse from one sphere, say the technical, to another, say the public, a rhetor can resist such changes: an expert can turn down a challenge of a claim if they deem it “non-technical.” The question becomes, how and why this happens? Also, in regards to the public sphere, what happens when a non-expert uses a technical claim in the public sphere? By examining the *ethos* of rhetors in a variety of different situations and tracing how *ethos* moves and is constructed between situations, answering these questions will show how and why *ethos* circulates.

Lastly, the warrants of claims being presented within a sphere will be examined. Each sphere uses claims supported appropriately: for the private sphere, personal interest and stories are sufficient; for the public sphere, claims should be supported by facts and future expectations that are aligned with a public’s traditions and interests; the technical sphere requires “formally coded” discourse that is supported by the traditions and norms of the discipline (Goodnight, “Public Discourse” 429). Each claim must also match an *ethos* that is appropriate according to the audience. Examining how claims are constructed and supported in relation to the sphere in which they are circulating is a place

for critical work to be done. Asymmetry occurs when the *ethos* entailed in a claim does not match the *ethos* of the speaker.

The Circulation of Rhetoric and Ethos

Much work has been done on the circulation of rhetoric, but little has been done to explain how and why it occurs. Jenny Rice's [née Edbauer] work on rhetorical ecologies shows how rhetoric can move from one rhetorical situation to another, even changing its syntax while retaining some of its original meaning. In her work on the catch phrase "Keep Austin Weird," she found that it became a slogan for different communities with different aspiration and identities. Building on Lloyd Bitzer's model of the rhetorical situation, and accounting for Vatz's critique, Rice argues that neither scholar had considered "the amalgamations and transformations—the spread—of a given rhetoric in its wider ecologies" (Edbauer 20). For Bitzer's rhetor-less model, the community and audience create a need for rhetorical intervention and focuses on a mediation of ideals and values to solve a dilemma. For Rice, since Bitzer makes clear that the rhetoric and claims in a situation are the product of a community, it is most probable that adjacent communities and audiences would adopt similar rhetoric once it has been made visible. While Vatz's critique of this – that Bitzer's model suggests that rhetoric comes into being due to a material exigence and not personal/political/ideological reasons that need examination – troubles Bitzer's model, Rice does not have to resolve Vatz's critique in order for her model to work. In Rice's model, just like Bitzer's, the movement of rhetoric is driven by the rhetoric and the communities in which it circulates. If a rhetor takes up a rhetoric from another situation, it is because it conforms to a disposition already made

available by an audience. Rhetoric becomes “distributed through ecologies that expand beyond audience/rhetor/exigence, we begin to see more about its public operation by bracketing these terms for a moment” (Edbauer 17). The rhetoric is no longer bound by Bitzer’s original model, nor the rhetor’s desires, but instead moves like a virus through different communities and publics, creating and circulating within new situations.

Edbauer goes on to say that “The original rhetoric has been expanded in the course of new calls, which adopt the phrase and transform it to fit other purposes” (17). A piece of rhetoric, or claim, now becomes free to circulate and recirculate in and between different ecologies.

One way the movement of claims has been explained as through the language of potentiality. In Rice’s book Distant Publics, she engages with Actor-Network-Theory to examine how networks connect public subjects to the worlds they inhabit. Using Latour, she explains that networks of actors and non-human actants can “generate potential for certain narrative frames” (171). The network creates potential sites of circulation, where claims can either settle to make new rhetorical situations or be re-made to fit a new exigence. To be put another way, by Stormer and McGreavy in their article “Thinking Ecologically About Rhetoric’s Ontology: Capacity, Vulnerability, and Resilience,” the authors challenge the assumption that the rhetor has agency over the situation because “If materials deployed rhetorically are thus only because a rhetor so chooses, then the human becomes a homogenizing agency of agencies that masks rhetoric’s ecological, emergent capacitation” (5). Instead of focusing on agency, the authors suggest that capacity should be the site on inquiry: “Rhetorical capacities emerge not from the litany of participants but from the specific relations that Karen Barad would say ‘enfold matter’” (Stormer and

McGreavy 7). The capacity of a situation, not the rhetor necessarily, enable rhetoric to occur, circulate, and work. These explanations focus on the interaction of the social/human world with nature, suggesting that networks of relations enable the circulation of rhetoric.

While this is instructive and helpful in thinking about the ability of rhetoric to circulate in the contemporary moment, it does not explain how or why certain claims, such as technical claims, can be crafted by rhetors to enable circulation and what effects those claims have on different situations. Understanding how claims are used in different rhetorical situations to create different spheres is one way to examine how and why rhetoric circulates. By tracing the movement of the claims, comparing the claims to the *ethos* of the rhetor, and comparing the warrants of the claim to the forum that it is functioning within, should expose the rhetorical maneuvers that enable and accelerate circulation.

Using Goodnight's model as a frame to critique public deliberation is one way to better understand the role of expert opinion and the construction of *ethos*, but understanding the movement of claims and *ethos* is difficult with such a static method. Using the above described research methodology alone cannot account for movement, and any attempt to find movement would require the assumption of *a priori* forces at work. One fear of this methodology is that the critic may pick rhetorical situations either haphazardly or, worse, that fit their research hypothesis, leading to a biased corpus and/or conclusion based on the random juxtapositions and proximities of different forums. In order to avoid creating a fractured or prejudiced archive, a method is needed to trace claims as they move through space and time.

Critique of Actor-Network-Theory

Bruno Latour's Actor-Network-Theory (ANT) methodology requires the researcher to trace the movement and connections of actors and actants through space and time. Instead of examining the rhetoric and *ethos* of a situation, ANT relies on the careful tracing of material relations between human and non-human actors in a controversy. Instead of examining a claim critically, Latour focuses on the circulation of credibility and the translation of claims that construct networks of actors. These networks – which contain nodes made up of human actors, non-human actants, objects, and quasi-object hybrids – are assemblages created by an actor who attempts to overcome a trial of strength against another network. The network that prevails is deemed the strongest. In the world of Latour and the methodology of Actor-Network-Theory, appeals and rhetorical framings of discourse have little value though. Instead, it is about the network that has been created and its ability to win conflicts over other networks. Like the lesson learned by the Andrians at the hands of Themistocles (Herodotus 8.112.1-2), persuasion is often only the precursor to force – or might makes right, more directly. The use of rhetoric is not to persuade the opposition, but instead to strengthen one's group with allies that can overpower those who would argue in opposition. If the opposition fails to recognize the full nature of a network, then they will find it difficult to win a trial of strength.

There are many key differences between Latour's ANT methodology and models of publics and controversies. Latour, unlike Goodnight, does not believe in the separation of the social/political from the natural/scientific. In his first work on science with Woolgar, when they examined a grant funded molecular biology laboratory in order to

understand how science relates to facts and nature, they concluded that science constructs knowledge:

[C]onstruction refers to the slow, practical craftwork by which inscriptions are superimposed and accounts backed up were dismissed. It thus underscores our contention that the difference between object and subject with the difference between facts and artifacts should not be the starting point of the study of scientific activity; rather, it is through practical operations that a statement can be transformed into an object or a fact into an artifact. (Latour and Woolgar 236)

Science is about a human, with social relations and culture, examining an object, often separated from its environment and natural relations, in order for humans, as a social group, to better understand their relation to the object. What becomes apparent is that the object is mediated through the social.

Recruitment: Translation and Purification

Although critiques of the subjectivity of scientists is not new to rhetorical scholarship, Myer and Campbell and others have shown how scientists craft their discourse to be socially acceptable (Myers 98; Campbell 3), Latour argues that it is the object itself that becomes constructed through the mediation, or translation. Furthermore, any act that attempts to separate the social construction of an object from its natural properties, an act of purification, ignores the assumptions and beliefs that were necessary to bring the object into being in the first place: “scientific facts are indeed constructed, but they cannot be reduced to the social dimension because this dimension is populated by objects mobilized to construct it ... objects are real but they look so much like social actors that they cannot be reduced to the reality ‘out there’ invented by the philosophers of science” (Latour, We Have Never Been Modern 6). In ANT, there is no distinction between the

social/political/public sphere and nature/science/technical sphere. The recruitment of allies to a network often occurs by actors and actants translating a claim to fit the interests of an audience, or they attempt to deny people access to a network by purifying the discourse, separating the social from the natural.

In order to avoid the imposing of order on a situation by the researcher/critic, ANT requires the researcher to trace claims as they construct and move through networks, examine how claims and actants are translated for the purposes of recruitment of allies, and show how networks help spokespeople overcome conflict with other groups. Latour's ANT does not search to confirm that underlying forces or ideologies drive the actions of actors or actants, but instead the methodology examines how and why networks form and recruitment occurs in the hope of finding relationships that reconstitute nature to serve the interests of the social, and vice versa. ANT requires that all connections be mapped out, not implied: the researcher cannot attribute the actions of a timber company to economic/market forces, they must map out the connections between the timber company and other actors to explain why they did what they did.

ANT is well situated to critique Goodnight's sphere theory. Comparing the structuring of claims according to Goodnight's model with the acts of translation from Latour's will show how and why claims and *ethos* can move between spheres and networks (Kenneth Walker shows, in his essay "Mapping the Contours of Translation: Visualized Un/certainties in the Ozone Hole Controversy," how translation sites are opportunities for technical experts to change discourse in a public forum). At the end of every case study in this dissertation, the conclusions drawn from the ANT account will be compared with the critique enabled by Goodnight's theory. This comparison should offer

and explanation for the movement of claims, how they change to meet the needs of a forum, and how *ethos* is constructed in different situations.

Credibility in ANT

Ethos, in Latour's work, is not without mention, however. For Latour and Woolgar, credibility is not an abstract concept but instead is a concrete commodity that is circulated and exchanged for goods and service. In their work Laboratory Life, the authors traced how credibility is accumulated through affiliations with different labs and scientists, the publication of research, and presenting a professional conference only to be used or traded in for funding through grants, new and better positions and salaries, and more power on deciding the direction of research through article and grant review opportunities (201). For Latour and Woolgar, even the act of citing another study is an attempt to create an affiliation in order to be granted credibility. The development of technical *ethos* or expertise is not a simple matter of excluding outsiders, but is also dependent on a speaker's accumulated credibility within their own technical field. When an expert enters a public forum, they must possess an appropriate amount of credibility so that their colleagues will support the *ethos* that they invoke.

Constructing a Network: Hybrids, Actors, and Actants

Another advantage to ANT as a methodology, for the purposes of this dissertation, is its complex view of agency. While Bitzer and Vatz debated the agency of the rhetor in the construction of rhetorical situations, Latour is not willing to grant or deny agency to any

actor or object in a network. In ANT, only material observable connections matter and the direction or force behind an action is ignored. An object, like a rock, or a hybrid quasi-object, like soil which has a socially constructed meaning in addition to its natural material referent, has the same ability to recruit allies as a politician or any human or animal.

A network is made up of actor and actant nodes, both human and non-human, and while the connections need to be visible, the rationale for such connections is only given when the actors themselves offer explanation. Even then, those explanations may only be used to increase the network and add nodes, not to explain what is happening within the network from higher generating causes or motivations; i.e., it is not enough to say that an actor is doing something because it appears that way or a certain sociological theory predicts it, it is only true if there is evidence of action. This works both ways: a non-human actant can be aligned with a human actor if there is evidence that the human is aligned with the actant, so long as a network of other actors and actants supports the relationship; a human actor cannot be aligned with another actor or actant simply because a theory predicts that they are – there must be evidence of the connection and not *a priori* conjecture. By resisting an explanation of how and why claims and *ethos* are moving through networks, ANT keeps the critic from totalizing the discourse to meet their presuppositions about agency – in this case, it requires me to resist my desire to explain these movements as caused by a speaker.

In addition, the act of mapping these networks will create the archives/corpus for each case study. Instead of examining hand-picked situations where rhetoric of interest occurs, ANT requires that the researcher start at a selected moment and then map

out, forwards and backwards in time and space, according to the connections made – in text or other material means – among actors and actants. The mapping of these connections to form networks of nodes creates an archive of material that comes from multiple different interconnected situations where multiple different kinds of discourse are being produced. This archive gives the rhetorical critic a series of situations, forums, and discourses that are interconnected by actors and actants. This narrative, because Latour claims that all good ANT accounts are narrative, can then be viewed through the lens of rhetorical theories and models, such as sphere theory. Instead of a circulation of claims and *ethos* in various ecologies, the critic is able to use the narrative to inform theory.

But what does rhetoric give back to ANT, and by extension STS? While ANT accounts for the networks created by nodes working together to support a common spokesperson, object, or claim, what is not explained is the act of translation that is necessary to recruit nodes to a network. Rhetoric is the study of how communication can mobilize humans to collective action, which is perfectly situated to account for how communication is used to recruit nodes to a network. Furthermore, while the ANT created networks can show which claims move through different situations, rhetoric can explain why and how movement is occurring. Understanding how claims and actors, devoid of *a priori* labels such as “fact” and “science” and “expert,” create a network removes the temptation of the critic to view situations to match their own hypothesis. In contrast, once appropriate situations for study have been identified using ANT, examining them through the rhetorical lens of sphere theory can create constructive conflict between the material networks that have created the situation and the sphere that

given claims and actors are invoking. Latour's method creates a map with labels but no values, and Goodnight's sphere theory picks apart the map and assigns values in order to find moments of friction between the material realities being presented.

For each case study, a *kairotic* moment will be selected and the alliances that grow out of that moment will then be mapped. The chosen moment must be one where a speaker is attempting to draw a distinction in a controversy, a recognition of conflict, in order to create a trail of strength. In STS studies, these moments are chosen as starting points because a trail of strength draws upon previously constructed actor generated assemblages built through multiple moments of translation. Similarly, moments of conflict in science have been productive for rhetorical critics to examine the discourse within and between scientists and the public: Leah Ceccarelli in Frontiers of Science, Evelyn Fox Keller in Refiguring Life, and many of the chapters edited by Randy Allen Harris in his book Rhetoric and Incommensurability are examples of this. The goal, after identifying a trail of strength, becomes mapping the groups involved. Each group, according to Latour's criteria, appears as follows: there will be a spokesperson; that spokesperson will draw boundaries in order to designate other opposing groups; the group will then recruit allies from the social sphere, like politicians, and the technical/science/natural sphere; spokespeople for groups will form and reform the group in order to increase its strength (Reassembling the Social 31-33). By demarcating the groups as the spokesperson defines them, and then looking to groups to find their network, new alliances and actants will be found. While the networks will not be bound by space (to where the *kairotic* event occurred) or time (when the *kairotic* event occurred), a limit must be drawn for the ANT account. The limit will be dependent on

when there is replication in the kinds of actors or actants being recruited – this would be when articles make no new claims and only circulate previous statements and speakers appeal to their assemblages and not actors and actants outside of their networks.

Once the networks have been mapped, they will be examined for trends in translation and recruitment prior to examining individual situations through the lens of Goodnight's sphere theory. Once the examination using both methodologies has been completed, a comparison will be made in order to draw conclusions about how and why circulation occurs.

For the case study of George W. Bush's speech announcing his "Healthy Forests Initiative" (Chapter 3), the claim of "forest health" will be traced outward from the *kairotic* moment from George W. Bush's speech from August 22nd, 2002 when he announced his new Forest Health Initiative. In the following chapter on the Biscuit Fire, the *kairotic* moment is the publication of Daniel Donato's research on forest recovery and the claims the article made will be traced and examined as carriers of *ethos*. In the last case study, the publication of the new Oregon & California lands riparian management policies will be the *kairotic* moment and the assemblages that argue over the value of the policies will be traced. While the first two case studies focus on either the circulation of claims (Chap. 3) or *ethos* (Chap. 4), the last case study examines the interaction between the two.

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Chapter 3: Forest Health

While publics are generally given an opportunity to participate in the planning process, technical sphere arguments often undermine their ability to participate. As Goodnight suggests, claims in a technical sphere require both a technical warrant and must be made by someone with an appropriate technical *ethos*. In contrast, a claim that creates a public sphere debate must be made with warrants appealing to the public good and by a person whose *ethos* is accepted by the public they are speaking to – this is a more Aristotelian form of *ethos*, dependent on the speaker’s knowledge, goodwill, and virtue. In forestry debates, it would appear that public participation becomes subservient to technical arguments. This, it has often been suggested, is a purposeful displacement of a public sphere by a technical sphere, or an encroachment of technocrats into community politics (Schiappa; Miller, “Response to Goodnight”; Waddell).

The focus on technical claims in policy debate has led to a situation where a public feels alienated from the process, distrustful of the institutions responsible for managing our resources, and bewildered and angry at the management actions taken. In order to regain the trust of publics, or to challenge the technocrat’s role in a functioning democracy, how the technical sphere displaces public discourse needs to be understood.

One place where the public and technical spheres collide is the rhetoric of “forest health” in forest management discourse. Environmentalists want to protect forest health by keeping human intrusion to a minimum, while timber production sees the maintenance and harvesting of timber stands as necessary for maintaining a forest’s health. The

rhetoric of forest health is not used by only one side in these debates, it is engaged by both sides. Examining the recent revival of this metaphor and how it has interacted with the translation of technical *ethos* in forestry debates is the goal of this chapter.

In order to do this, I will examine the rhetoric of forest health as used by President George W. Bush in his role out of his 2002 Healthy Forests Initiative. Using Actor-Network-Theory, I will trace the networks that are engaged in a trial of strength over defining forest health. In each network, I will examine how forest health is translated and redefined in order to recruit allies, and also examine how networks resist these translations. I will then use sphere theory to examine the discourse, paying specific attention to how forest health is defined and redefined in each rhetorical situation in order to invoke appropriate spheres. By the end of this chapter I will have shown how the term “forest health” operates as an organizing metaphor and, due to its unfixed definition, can be used by rhetors to invoke spheres independent of the forum where the discourse is taking place.

Case Study

This chapter will look at how forest health is discussed following President Bush’s August 22nd, 2002 speech in Oregon after the Biscuit Fire, which was started by a lightning strike on a tree in the Siskiyou mountains of Southern Oregon in mid-July. After President George W. Bush toured the devastation of the Biscuit Fire, he announced that it was time to address forest health. Bush said, “We need to thin. We need to make our forests healthy by using some common sense ... We need to understand, if you let kindling build up and there's a lightning strike, you're going to get yourself a big fire”

(qtd. in Maben 1A). In contrast, the President argues, the area affected by the fires was unhealthy, damaged, and in need of technical attention. At the same time, the President's Healthy Forests: An Initiative for Wildfire Prevention and Stronger Communities was presented to congress. The document proposed how the Bush administration could work with the legislative branch to refine policy and laws in order to better manage forests into the future. The lightning strike that started the fire created a *kairos* for rhetorical action. While the speech was directed at the people of Oregon and the communities affected by the Biscuit fire, it was a call for action by technical experts.

The focus of this chapter is not on the reforms proposed, but instead is on how the metaphor of “forest health” situated the audience and directed discourse via the translation of technical *ethos*. In order to examine this process, public and technical reactions to Bush's “forest health” speech will be analyzed first using ANT to trace the circulation of the metaphor and next using sphere theory with a focus on how “forest health” constituted a private, public, or technical sphere discourse in the forums it entered.

Organizing Metaphors

I. A. Richards' tenor-vehicle model of metaphor would label the term “forest” as the tenor and “health” as the vehicle in the “forest health” metaphor. For Richards, a metaphor is “two thoughts of different thing active together and supported by a single word or phrase, who's meaning a resultant of their interaction” (93). The tenor Richards describes as “‘the original idea’ ... [or] ‘principles subject,’” and the vehicle he defines as “‘the borrowed one’ ...[or] ‘the imagined nature’” (96). Metaphors are not mere semantic

juxtapositions but instead are a “borrowing between the intercourse of *thoughts*, a transaction between contexts” (emphasis original 94). In our example, Bush recreates and reimagines the “forest” within the framework and language of public “health,” creating something new.

There are situations in which the vehicle begins to replace the original tenor and organize the discourse around it to match. This is the case with forest health, where the forest is no longer the topic of discussion but instead discourse focuses on the health of a forest – health as a noun, as a kind of abstract energy or substance that inhabits the physical space of the forest but is not actually present. While thinking of the forest as having health suggests a move towards an ecological view of interconnected physical and biological objects and networks in a given area, it also displaces a holistic view of a natural ecosystem with a compartmentalized model. As will be shown later, if the forest has health it follows that, like a doctor diagnosing and treating a patient, we can measure the inputs and outputs of a system and maintain the forest in a healthy, or static, state. Furthermore, like a doctor to a patient, the forest has little understanding of its own processes, and non-experts have little understanding of the processes of the forest, and thus only the technical expert is capable of maintaining the wellbeing of the forest. “Forest health” as a term is not simply functioning as a metaphor enabling a new way of viewing a pre-existing concept or object, but is functioning as an “organizing metaphor.”

I argue that an organizing metaphor changes and arranges the discourse around the object in new ways. It is not just the object that changes, but the audience’s relation to the object is framed through the metaphor instead of through past lived experiences with the object. The alteration of the discourse alters the audience, replacing a previous

ideology with a new one coded within the organizing metaphor and thus altering the audience's relation to the material world. This occurs because an organizing metaphor does three things that alter the discourse: it creates a set of terms and vocabulary that support the metaphor either directly or indirectly; it suggests a narrative with a defined *telos* agreed upon by those using a metaphor; and its circulation has material consequences that are predictable and discernable. The circulation of an organizing metaphor, or the terminology entailed to the metaphor, creates and recreates the ideology which produced and supports the metaphor.

A convenient and well researched example of an organizing metaphor would be "genetic code." As it has been shown by scholars like Celeste Condit, Evelyn Fox Keller, and to a certain extent Leah Ceccarelli, "genetic code" enables a set of vocabulary (edit DNA, insert genes, delete sections, "crack" the code), it suggests an end goal in genetics research (to write and revise DNA), and it has created material networks of money and researchers while restructuring medical institutions based on the circulation of this metaphor. It is difficult, in the current western political-economy, to think of DNA as anything but, as the characters in Jurassic Park like to repeat, the code of life.

Organizing Metaphors and Audience

In contrast to a simple metaphor which enables an audience to view an object in a new way, an organizing metaphor constructs a new frame for discourse that dictates a new relationship between an object and an audience. To be put another way, it is not just that an organizing metaphor changes the way an audience views a tenor, it also demands different language be used when discussing the tenor, and that new language changes

how the audience relates to the tenor. Every time an organizing metaphor is used in a discussion, the discourse must then shift to accommodate the terminology while the audience must change their subjectivity. Recent work by Jenny Rice on the rhetoric of city development has shown that the language used to frame a discourse limits what is and is not acceptable in an argument. In Rice's book Distant Publics, she explains how new housing developments are presented as socially just and an economic necessity (94). This ignores, however, individual experiences and memories, or aesthetic considerations, that an individual might have with the land that is to be developed. Whether the use of "development" as a key term in the discussion of city expansion is deliberate or not is irrelevant – the term's use frames the audience's relation with the land.

Tracing how forest health is translated to recruit different groups will show the plasticity of the term and how it can be manipulated by a rhetor. Examining how the metaphor is used to invoke different spheres in different forums will show how quickly technical claims can subvert public debate.

Actor-Network-Theory

Overview

While the speech Bush made on August 22nd, 2002 was not the first time he had mentioned his "healthy forest initiative," it was a key moment in constructing his network and recruit his allies. Even before he spoke, his allies had been pre-arranged around him. On the stage, there were governors from Western states with logging interests, senators and congressman from both state and federal houses, families affected by the fire, cabinet

secretaries, as well as police officers and firefighters. These people sat in risers behind the President offering their support.

After the speech, a division was drawn between those who were for forest health and those who were against it. Those for it supported Bush and wrote in their encouragement from the “forest health” initiative. In the local Klamath newspaper, citizens and professional forest workers rallied behind the new plan (Ziegelmeier; McGonigle). In local communities around the affected area, people turned towards the President as the one to help rebuild their houses and economy (Harper). The timber industry also saw Bush’s plan as one that would be beneficial to them, and they too rallied to his network (Maben).

A few days after Bush’s speech, Secretary of the Interior Norton and Secretary of Agriculture Veneman went before a congressional subcommittee to present and defend Bush’s call for forest policy reform to benefit the health of forests. Their goal was thus to recruit congress to pass Bush’s agenda. Testifying in front of the House Committee on Resources, Norton and Veneman’s presentations and the subsequent questioning were televised on cable and widely reported (United States Congress House Committee on Resources). Shortly afterward, Secretary Norton went to Wisconsin where she toured the Forest Products Lab run by the USFS and chatted with the press. There again she defended the President’s plan and explained why and how it would be beneficial to the people of Wisconsin (Hall B1).

Bush’s support was not only the product of speeches, but also a plan that was published and distributed on the same day. The plan, titled Healthy Forests: An Initiative for Wildfire Prevention and Stronger Communities, cited data comparing the current

occurrence and severity of wildfires with previous records to conclude that something needs to be done (United States Congress House Committee on Agriculture 4). Citing firefighters as technical experts, the plan argues that thinning is a necessary action to bring the current fire-prone forests safer and healthier (United States Congress House Committee on Agriculture 2). In so doing, the report begins to recruit firefighters along with forestry professionals, who provided much of the data, into Bush's network around the organizing metaphor of "forest health."

Articles and demonstration against the proposals were immediate. Newspapers in more liberal Oregon cities, such as Eugene and Portland, argued that Bush's plan would in fact endanger the health of the forest (Keene; "Bush, Honesty and Forest Health"). The Sierra Club, Wildlife Society, and various regional and local NGOs and special interest groups argued that the new rules would enable short-term goals to undermine the long-term health of forests. These arguments often cited Bush's close ties to timber companies and claimed that he was interested in deregulation at the expense of the environment (Hummingbird 6). Whether these accusations were true or not, they all used the organizing metaphor of "forest health," and they re-enforced the division between Bush's network and the opposition.

Much more troubling were challenges to the technical understanding Bush claimed to have on forest health. Journals, such as Trends in Ecology & Evolution, pointed out that science had little understanding of the role of fire in forest ecosystems in the long term (Kareiva 500). While Bush's proposal claims that federal land managers are unable to react to environmental changes on the lands they have been entrusted in a timely manner, Kareiva suggests that those reactions may not be informed by a complete

understanding of the systems in which they meddle. A line was being drawn between practitioners and researchers, with Bush claiming to speak for those in the field and Karieva suggesting that those in the academy could not be ignored.

This brief overview of the networks and Bush's alliances shows that each side claims to speak in the forest's best interest, or on the forest's behalf, and each side promises to defend the forest from the other. While the battle is played out in newspaper articles, public forums, and congressional meeting rooms, the forest and its health becomes a hybrid, or quasi-object. Instead of being a material referent, forest health became a quasi-object existing as a natural object framed by social structure, an object that is "so powerful that [it] shape[s] the human society," while it also "count[s] as nothing ... just there to be used as the white screen on to which society projects its cinema" (Latour, We Have Never Been Modern 53). The forest and its health have real material effects on the social human world, but at the same time the "forest" exists to meet social human needs. It is not one thing or the other, but both simultaneously. It is both a river and trees while also being drinking water and timber. It is the soil and mycorrhiza and the trails and vistas. It is both part of and apart from a human community.

Forest Health Gets Some Technocratic Help

While Bush is the chief spokesperson for his network, after his initial press conference other actors in the network reaffirm their alliance with the forest. When oppositional groups attack the validity of Bush's claimed alliance with the health of the forest, Bush's allies respond. In an interview with Maben, Secretary Norton admits that

some larger, commercially desirable trees could be harvested under the new regulations, but also states that “The main emphasis is not on old growth forests” (aqd 1A).

When the Sierra Club and scientific journals challenge the legality of streamlining the planning process, they are answered with data from Secretaries Norton and Veneman, who testified in front of the House Resources Committee in defense of President Bush’s forest health initiative. Veneman begins by echoing Bush’s claim that “Land managers continue to face burdensome procedural requirements. Appeals and litigation that threaten to delay critical projects” (United States Congress, House Resources Committee 33:45). In addition, she says that it costs millions of dollars to follow current regulations. She suggests that, while steps have been made to increase the responsiveness of forest managers to meet individual forest problems and community issues, these appeals make it impossible for timely implementation.

These claims clearly place those who attempt to obstruct forest thinning operations, which are designed to protect forest health by minimizing the risk of fire, against good forest policy and the health of the forest. This echoes Bush’s claims, but also recruits the United States Forest Service and United States Department of Agriculture as allies of the plan. Institutions are now being brought into the network of actors that align with Bush. Those who work against those institutions are now seen as not only against the policies and actions of the institutions, but can also be construed as against the other actors and actants within the network.

Continuing, Secretary Gale Norton presents a narrative of human action changing the dynamics of forests and its relationship to fire. In order to bring the forest into the committee chamber, Norton uses enlarged photographs mounted on foam board to craft

her argument. Norton states that, since, “I've found that there's some misunderstandings and failure to grasp what the reality of the situation is and I think looking at some of the photos is most helpful” (United States Congress, House Resources Committee 39:35). While Veneman creates a network of institutions and statutes, Norton again turns to the forest and attempts to incorporate it into the network of which she is a part. While the forest may not be able to speak for itself, others will attempt to speak for it in order to move the forest into their network.

Beginning with a photo from the 1890's of a cabin in Idaho, Norton explains that the ponderosa pine forest with grass showing in the spaces between trees is indicative of a natural western forest – or, “That is what forests usually looked like” (United States Congress, House Resources Committee 39:57). Norton then shows a photo of the same cabin in the 1980's – there are now more trees and they are more densely packed. She labels this an “overly dense forest,” implying that there is an appropriate density for the forest, and explains that in the 2000's a fire went through the forest and killed many of the trees. The crux of the argument becomes “The difference between the dense forests and what we see with fire behavior there and a natural forest is illustrated here. Fire is truly a natural part of our ecosystem and we don't want to guard against fire entirely. What we want to guard against is the catastrophic fire that occurs in overly dense forests” (41:31). Again, we have the positioning of the forest as something that must be protected – from catastrophic fires, as defined by Norton, and from human action that would increase the probability of those catastrophic fires. This suggests that Norton, and the administration, are on the side of the forest and those who are against thinning – which Norton claims leads to these catastrophic fires – are against the forest. A catastrophic fire

hits the crowns of the trees, killing the larger old growth trees. To be against thinning, which the administration is calling for, is to be against the survival of old growth forests. She goes on to claim that a forest had been “devastated by fire” because it had not been thinned (43:40).

Experts with No Place to Go

The response from citizens in Wisconsin, where Secretary Norton traveled after testifying, was varied and cautious. While members of the Sierra Club protested outside of Secretary Norton’s visit to a federal research facility, one of the newspapers in Madison published an editorial arguing “Environmentalists are right that our public lands have been mismanaged for the past century. But letting them go up in smoke is not the answer. The public-private ‘stewardship contracts’ proposed in the Healthy Forests Initiative may hold the key to better forest management” (“We Must Log” B3). The article, from the Wisconsin State Journal, supported many of its arguments using the claims made by Norton during her hearing. Others in the state were not impressed, such as The Milwaukee Journal Sentinel, who ran articles claiming, “The Bush administration's timber-cutting prescription for the West's wildfire epidemic runs counter to the record of the last half-century, when large forest fires erupted on the heels of the heaviest logging ever conducted by the U.S. Forest Service” (Boxall 27). For many in Wisconsin, increasing logging seemed less desirable than the threat of fire – which is much rarer in Wisconsin than in Western state ecosystems.

Trial of Strength

The recruitment of members to join Bush's network appears to have less to do with the specifics of his plan and more to do with how he defined and redefined the forest. An op-ed piece written by a forestry consultant claimed that "The old thoughts and ways regarding reducing forest fires are ripe for change" (Keene), echoing Bush's claims that we need to protect forests from fire, and the framing of fire as an enemy of the forest. In Klamath, when Bush defined the forest as not just the trees but the communities with in it, the locals heard their resentment over federal intervention – which had "kicked our loggers who were thinning trees were kicked out of the woods because of the spotted owl" only to prepare the forest for the Biscuit Fire (Young). By retranslating forest health to match his audience, Bush was able to grow and strengthen his network.

While Bush consistently translated and create multiple boundaries between his network and the opposition, the environmental groups relied on rhetoric that ironically re-enforced what Bush had already claimed: Bush claimed that there was too much red-tape and regulations needed to be changed, positing that the current situation was harmful to forests, and the environmentalists argued that if they took out the regulations there could be more unchecked logging – the very point that Bush was making.

Attempts to call Bush out on this point were difficult. In the Milwaukee Journal Sentential, Mike Dombeck, a retired US Forest Service Chief and professor of forestry at the University of Wisconsin – Stevens Point, "called the move an attempt by the Bush administration to relax environmental regulations," adding "My hope is that this is not used as an excuse to open up new areas to log old growth and move into roadless areas. If this is the case, this will surely backfire" (Jehl). While Dombeck clearly has the *ethos* to engage a technical argument and the experience to navigate

complex public policy debate, his arguments were challenged in the same paper a few months later by Mark E. Rey, the U.S. Department of Agriculture's undersecretary for natural resources and environment. The newspaper interviewed him about the Healthy Forests Initiative, which he explained this way:

The key components are a set of recommendations to Congress to provide us with some additional legislative authority to reduce fire hazards on public lands and a set of administrative initiatives that we're taking for the same purposes ... Our view is that while fire has always been a natural component to these systems at some frequency, depending on what elevation and ecosystem type we're talking about, none of the fires we're seeing this summer are natural fires in the way that they behave, in their rate of spread in the ecological effects that occur after they're finally extinguished. Our conclusion is it's not a problem we can ignore any longer. ("Getting a handle on wildfire conditions")

Adding that critiques of the policy offered by environmental groups ignore the basic realities of the situation:

If incidentally to achieving (the) objective we are going to have to remove some larger trees, I guess our view is, and I think we're relatively unapologetic about it, if that material is incidental to our goal but nevertheless has commercial value, we probably ought to use it. It's probably not a good idea to pile it up and burn it. The key question is: Can we get people to believe that's our goal? ("Getting a handle on wildfire conditions")

So, while Dombeck states that this is about money and will hurt forest health, suggesting that technical arguments are being used to conceal what should be a public debate, Rey is able to counter that this is clearly a matter of technical expertise: more wood means bigger fires.

What the opposition was late to understand was that Bush had taken a public debate and turned it into a technically sound program – it is not a question of what is forest health and how should we protect it anymore, but instead he has shown what needs to be done. This frames the opposition's argument as against the very science of forest

health. At the same time, while the scientific community can debate the merits of the plan in its journals, they are not able to comment on the balancing of community values, like economic growth and community sustainability. While authors in Science claim that Bush's plan is "light on science" (Service), the final translation of forest health is from the technical to the social – pre-empting all expert rebuttal.

Sphere Theory

A Term with a History, But No Definition

The term forest health was used in multiple forums by multiple different speakers. This section examines these forums for asymmetries. When President George W. Bush said that we need to protect the health of our forests, what did he mean? Was this an appeal to a public to actively engage in practices that protect the health of the forest, or was it a technical claim about the measurable health of a forest and a call for experts to better manage it?

When Bush made an appeal using "forest health," those responding to him had to explain how his proposal would decrease or increase the health of the forest. Because the metaphor lacks a clear, singular definition, it is easy for the term to move between forums, take on the dominant definition in that forum, and include/exclude actors according to the ethical norms in that forum: i.e., if "forest health" is discussed in technical forums, such as in journals in relation to fire severity or erosion, then public comment may not be permissible; if "forest health" is discussed publicly in relation to recreation and local economics, then technical arguments about animal habitat might not

be appropriate. But the metaphor does not move by itself. The metaphor's ability to move between forums and invoke different argument spheres is dependent on not only the warrants supporting the claim, but also the *ethos*, either mediated or adopted, of the speaker.

Foresters as Public Health Officials

By claiming that we must manage for forest health, the discourse of ecology and ecosystems and the imbrication of humans within and outside of natural areas is replaced with the language of public health: the forest is given a "prescription" with calls for "treatments;" diseases are to be eradicated and viewed as opposing the well-being and health of the forest; and the forester takes on the role of the public health official. While the lay public might be the group most at risk from a public health crisis, their lack of understanding makes it difficult for them to engage in policy debate; public health officials are then responsible for not only creating action plans to prevent crises, but they also must explain the crisis to a public and tell a public what to do. While a group of people may live in an area and have a long history and understanding of their environs, they may be unaware of the dangers around them until a technical expert explains the risks.

In a similar way, the forester becomes the one to decipher and explain what is going on in a forest and suggest a possible course of action to protect against disease and increase forest health. A public, especially one within and effected by the forest, may have embodied experiences and knowledge of the forest, but they are outside the decision-making processes (like a spouse or partner who sits in the examination room and

offers comments but the doctor decides what is valuable and what is not). Similarly, the forester decides what public input is valuable and what is not – and the value is determined by how well it supports a pre-determined *telos*. The language that is used in policy and management discussions (on such topics as the risk of disease and the costs of treatments like thinnings or prescribed burns) only re-enforces the patient-doctor relationship that is the forester-forest health relationship. When Secretary Norton presents her information to the house committee, her discussion on thinning based on the comparative images is an example of the forester-forest health relationship.

The forester-forest health relationship suggests that a specific *ethos* is needed to discuss forest health, and it excludes those lacking the expertise from participating in the discourse. Secretary Norton uses this technique effectively in her presentation to the House Resources Committee. After showing a few photos of the same cabin in Idaho taken decades apart, Secretary Norton says:

“That cabin was moved in early in the year 2000, and during the summer of 2000 a fire came through and destroyed the entire forest behind the cabin. It was an overly dense area ... had [the cabin] not been moved it undoubtedly would have been destroyed,” and then showing another image, “This is a catastrophic fire, hitting the crowns of the trees. It’s destroying old trees that would have survived the much smaller natural fires that we see going through in ... We’re talking about thinning the forests” (39:57).

At first, she makes technical claims supported by her understanding of forest science and fuel loads – the fire occurred due to the forest being overly dense. In addition, the density of the forest increased the severity of the fire, destroying the forest. This creates a situation where the health of the forest must be mediated by those with technical expertise. This invokes a technical sphere within a forum that is intended for public debate. Norton then makes claims that suggest these fires are threats to public safety by

suggesting that the cabin, or any house, that is adjacent to overly dense forests is at a fire risk. This now conflates forest health with the health and safety on the human communities adjacent and within. Norton now not only inhabits the *ethos* of a forestry expert, but also that of a public safety advocate, which invokes a public sphere within the forum.

As has just been shown, the lack of a clear definition of the terminology makes it possible for the metaphor to be used in multiple different situations for multiple different effects: to say that a forest is unhealthy because it is overgrown can either be a statement of aesthetic and personal interest, of public good due to an increased risk of fire, of technical expertise noticing that it is adversely effecting ecosystem functions, or simply a private claim because the forest's rate of growth, and thus economic return, is slowing. Each claim can be made using the terminology of forest health, and each claim can be presented as a public, private, or technical issue. The slipperiness of the metaphor enables speakers to exclude and/or include commentary that denies or supports their own arguments on the grounds that outside claims lack the appropriate *ethos*: be it technical and its focus on *phronesis* or public and its reliance on *aretê* and *eunoia*.

No One Can Fight Back: The Asymmetries of Bush's Rhetoric

As shown above, responses to Bush's plan in Oregon newspapers recognized this new paradigm of forest health management. While agreeing that fires are bad and something needs to be done, they also believe that the economics of such a policy must be balanced. There appears to be a trap door built in to the definition of forest health: if you agree that fires are bad, then you must agree that we should thin to stop them, and

that thinning must be profitable – no matter the ecological cost. What began as a technical debate over the role of fire in forests has morphed into one where economics precludes ecological considerations. A speaker – whether it be Bush addressing the public on the radio and in person in Oregon, or Secretary Norton showing photos of forests she deems unhealthy in front of a congressional committee – not only gets to define what forest health is, but also what arguments are acceptable and which ones are not.

By creating multiple definitions of a technical term, and having the ability to shift between them to invoke a sphere inappropriate for a given forum and audience, Bush and his surrogates are able to silence the opposition by creating asymmetries between the *ethos* of the rhetor, the audience's expectations, the forum's constraints, and the sphere the claims invoked. In order to silence a public debate about the economic merits of his plan, Bush simply needs to redefine forest health as a technical term, inhabit a quasi-technocratic *ethos*, and invoke a technical sphere using appropriate claims, forcing the audience to match the sphere. Similarly, technical forums can be silenced by utilizing Bush's expanded notion of community economic gains and forest fire protection to define forest health, creating a discourse of action and not scientific deliberation. The looseness of the terminology enables statements made by politicians on public policy to reshape and constrain technical discourse.

Conclusion

While policy debates, through the legal framework set forth by the National Environmental Protection Act, are presented as instances of technical debate, this

analysis shows something rather different can happen in reality. To change policy on how management decisions are made, the argument is not purely technical based on scientifically agreed upon best practices. Instead, the ANT analysis shows the use of imagery to justify changing current practices – imagery that is divorced from the science that initially had created the practices. Debates over what should be done with a forest can be reframed as discussions on local economies, downstream ecosystem, human health and wellbeing, and environmental systems.

This change in definition is not inconsequential. As Michael Osborn says in his reflections on metaphors, an ideograph is a “noble abstractions that bind people into a community of political values. Ideographs and *archetypal metaphor* can sometimes combine their power, such as artful elaborations on the theme that democracy brings light and fire to humanity” (84, italics original). Similar to an ideograph, the utterance of an organizing metaphor in a given discourse not only dictates the audience’s relation to the tenor, but also positions the audience within a given ideology. To listen to someone discussing forest health is to situate yourself within that ideology. To respond to Bush’s claims about “forest health” is to rearticulate the ideology that created the term. By critiquing the term, the ideology that created it is exposed and can be engaged.

This is all to argue that by critiquing the rhetoric around an organizing metaphor exposes the *telos* of both the metaphor and the critic. Charland, in his work on constitutive rhetoric, has shown that using specific rhetoric and narrative can both bring and audience into being and move it towards action. While his work focused on narrative, an organizing metaphor similarly drives the audience towards action by changing discourse towards a specific end goal, or *telos*. An organizing metaphor frames the

discourse to steer the audience into a narrative that will call for a specific kind of action. By critiquing the metaphor and how it circulates, we have seen not only the ideology at work but also the end goal, or *telos*, of the rhetoric. Reflexively, as Sloop and Ono argue, the critic is also able to examine their own criticism in order to identify what *telos* and ideology they are working from and within. As this case study has shown, the political ramifications of an organizing metaphor are rhetorical in nature and it is up to the critic to examine and expose the underlying ideologies at work to create a more meaningful discussion on the nature of the object in question, not the metaphor that is framing it.

As the sphere theory analysis affirms, the malleability of the term “forest health” enables a speaker to advantageously invoke spheres within a forum in order to change the constraints of the discourse while never directly engaging the underlying ideology. The metaphor creates a lexicon of appropriate response and enables the speaker to dictate what the appropriate *ethos* is to participate in the discourse. By redefining forest health, the speaker creates a new *telos* for both the forest and the communities adjacent to it, and rearranges the material relation of the audience to the forest in order to meet their own political aspirations. By referring to an abstract object, “health,” inside a quasi-object, “forest,” the object in question serves the interests of those discussing it. Speaking for the trees is in fact a silencing of the forest.

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Chapter 4: The Donato Paper

This chapter will investigate the Biscuit Fire as a *kairos* that created two pathways for the translation of technical *ethos* that generated contradictory results. While Bush's speech was the beginning of a battle over the health of the forest, it was far from the end of the discussion. The last case study examined a situation where the rhetor used the discourse of science and inhabited the *ethos* of a proxy technical expert in order to recruit allies and also position their opposition as uninformed. The result was a non-expert was able to displace technical sphere debate with public sphere discourse. In this situation, the opposite is occurring. Since a scientist is not supposed to take a political stance, how can they craft their findings in order to support a political position without undermining their *ethos*? This chapter will attempt to answer that question.

The situation to be examined in this case study is the connection between the publication of a scientific paper by a group of forestry professors and graduate students in the journal Science with a contemporaneous political debate over government interference in forest management after a large-scale environmental disturbance, like a fire. The paper, by lead author Daniel Donato, argued that salvage logging¹ was detrimental to a forest's ability to regenerate. The political debate was over House of Representative's Bill 4200, which would enable swifter management decision making by

¹ Salvage logging is the act of removing standing dead trees that still have timber value after a fire. This is usually done using heavy, mechanized equipment like tractors and trailers. If this is not done quickly after the fire, the trees will rot standing and no longer be commercially valuable.

disregarding pre-existing regulations after large-scale environmental disturbances. While HR 4200 authorized salvage logging after a fire, Donato et al.'s research suggested that those actions would hurt the forest. How Donato was able to enter and change public discourse on environmental regulations will be the focus of this chapter.

The ANT account will start with the publication of the paper and then move out to map the networks that are at work. By moving out, I do not only mean from the physical location of publication, Science, and production, Oregon State University and field sites in Southern Oregon, but also in time. To understand how a scientific paper came to be, it is necessary to move back through the drafting process, if possible, and through the field of work from which it sprung. At the heart of the controversy is a trial of strength over the forest – each network is attempting to persuade other actors that the forest is aligned with their network. As Latour argues, “An actant can gain strength by associating with others. Thus it speaks in their name” (The Pasteurization of France 160). By speaking for the forest, an actor claims fidelity and affiliation with the forest, and no differentiation between the actor and the forest should be determinable. Instead, “If the fidelity of the actant is questioned, it can demonstrated that it just repeats what the others wanted it to say” (Latour, The Pasteurization of France 160). The only way to break apart such fidelity, then, is to demonstrate that the actant is not repeating the actor's claims – in this case, the scientific representation of the forest is not supported by the forest. This is the heart of ANT, representing actants in order to recruit other actors – speaking for the trees to convince people to support their side.

In order to show how an actant can be recruited and made to speak, I will make an ANT account of the publication of Donato et al.'s Science article, titled “Post-Wildfire

Logging Hinders Regeneration and Increases Fire Risk.” Tracing out from the initial paper, one network will include those who are recruited and support Donato while the other will be the opposition network with Professors Sessions and Newton acting as their spokespeople. After completing the ANT account, I will examine the discourse using sphere theory in two ways: the first was will be without the background and depth added by the ANT account; the second time will be using the ANT account in order to determine whether or not there are asymmetries. Examining these asymmetries will explain how Donato’s technical *ethos* and claims were able to circulate so widely to multiple forums while the opposition’s claims and *ethos* were not.

ANT Analysis

The Publication of Donato et al.: A Plea For the Forest

The *kairos* where this account begins is the publication of “Post-Wildfire Logging Hinders Regeneration and Increases Fire Risk” in Science on January 20th, 2006. The paper was a technical article published in the issue’s “Brevia” section, which limited articles to 800 words and one figure (Science). In this limited format, the authors reported their findings on the effects of salvage logging in the area burnt by the biscuit fire. The authors compared two sets of plots to measure regeneration, or the number of viable saplings in a given area: set one had been salvage logged two years after the fire, and set two had not. Their conclusion was that:

Our study underscores that, after logging, the mitigation of short-term fire risk is not possible without subsequent fuel reduction treatments. However, implementing these treatments is also problematic. Mechanical removal is

generally precluded by its expense, leaving prescribed burning as the most feasible method. This will result in additional seedling mortality and potentially severe soil impacts caused by long-duration combustion of logging-generated fuel loads. Therefore, the lowest fire risk strategy may be to leave dead trees standing as long as possible (where they are less available to surface flames), allowing for aerial decay and slow, episodic input to surface fuel loads over decades.

Our data show that postfire logging, by removing naturally seeded conifers and increasing surface fuel loads, can be counter-productive to goals of forest regeneration and fuel reduction. In addition, forest regeneration is not necessarily in crisis across all burned forest landscapes. (Donato et al., "Post-Fire" 352)

Postfire logging, according to the authors, hurts forest by increasing the risk of fire in the future due to increased fuel loads/availability and also slows the ability of the forest to regenerate because the logging kills saplings. While the objective language used does not place a value on the findings, the final claim quoted above suggests that salvage logging should not occur if the forest is to regenerate and be healthy. The use of scientific style conventions strengthens the authors argument because, as can be seen in the quote, it is not the authors who argue this but their data. In this way, as Latour predicts, the forest is "speaking" through the scientists, and thus aligned with their network (The Pasteurization of France 229). The goal of Donato's paper is to recruit the forest and its health into his network and frame his opposition as against the forest.

Just as with Bush's speech, the debate that Donato's article is entering is not about policy or scientific discovery, but about what constitutes a healthy forest. At the beginning of their paper, Donato and his colleagues describe their exigence as challenging "The view that postfire (salvage) logging diminishes fire risk via fuel reduction and that forests will not adequately regenerate without intervention, including logging and planting, is widely held and commonly cited" ("Post-Wildfire Logging" 352). By comparing previous assumptions to their conclusion, Donato and his fellow

authors have created two competing groups: the pro-salvage logging group and the anti. For Donato's anti-salvage logging group, the technical question suggests a simple policy action: If salvage logging is bad for the health of the forest, then salvage logging is bad. The paper does not address the social and economic ramifications of stopping salvage logging, they only have to show that they represent the best interest of the forest in order to align the forest, and its health, with their network.

Initial Recruitment: The Network Supporting the Article

At the time of publication, the article already had a network of actors and actants associated with it, including the authors of the paper and the institutions that they represented. The first author was Daniel Donato, a graduate student in the College of Forestry at Oregon State University, who wrote the article under the guidance of his advisor and the paper's last listed author, Beverly Law, a professor at OSU. Three other professors at Oregon State also contributed to the article: Fountain and Robinson were both in the Department of Fisheries and Wildlife Ecology, and Campbell was affiliated with the Department of Forest Science. The remaining author, Kauffman, was a researcher for the United States Forest Service and had worked closely with OSU faculty in the past. In addition to lending their names to the article, they were allies in Donato's network and each author brought with them the credibility of their home institutions – Oregon State University and the USFS.

It should also be noted that the forum in which this article appeared, Science, lends itself as a supporter of the conclusions presented by Donato. The journal, published by the American Association for the Advancement of Science (AAAS), is internationally

recognized as one of the pre-eminent scientific publications, only publishing refereed scientific research that is important to the scientific community at large. While Science and its editors may not endorse the political views of scientists they publish, they do validate the data and claims made within the articles they publish. By publishing Donato's article, the journal and its Editor-in-Chief, Donald Kennedy, are not directly siding with the political implications of Donato's article, but they are endorsing the findings of the paper and the author's conclusions; Science the journal is neither pro- nor anti-salvage logging, but agrees that salvage logging is bad for forest regeneration. By publishing Donato's article, the journal corroborates Donato's recruitment of the forest, which is a hybrid actant that needs, according to Donato, to regenerate.

The assigning of desire to an actant like a forest is not an ontological shift that assigns agency to objects. In contrast, Latour's methodology requires the researcher to recognize and embrace moments where actants are no longer separated from their networks. These are moments when we might want to ask: "But what would the entelechies that have been enrolled in our conflicts say if they could speak for *themselves*?" to which Latour responds, "The 'same' as they are made to say" (The Pasteurization of France 229). The only way to make an actant or entelechy say something else is to pry it from the network that is speaking for it. This becomes the trial of strength: to speak for the forest.

Before Publication: The Setting

It must also be recognized that prior to the development of Donato's network, before he was recruited to research the forest, there was a pre-existing discourse on the

value of salvage logging. While Donato's article was published in a scientific forum, it was entering a larger discussion that was political: President Bush, almost four years earlier, claimed that forest regulations and policy needed to be streamlined to enable more responsive management. Specifically, while traditional harvesting required an Environmental Impact Statement that could take years to write and obligated federal officials to solicit public input, Bush asked congress, in his Forest Health Initiative, to "Expedite implementation of fuels and forest restoration projects, particularly in high priority areas" (United States Congress House Committee 24). The call for expedited forest restoration projects is a direct appeal to facilitate the fast-tracking of salvage logging operations.

While the article by Donato et al. does not directly mention or address President Bush's initiative, the authors are very aware of the political landscape that they are entering and the controversies surrounding the debate. Bush's argument was that forest restoration projects, including salvage logging, are impeded by unrealistic administrative constraints (United States Congress House Committee 24). Since it was widely agreed, in the technical community, that salvage logging helps forest regeneration, the removal of those constraints would increase the effectiveness of forest managers in helping the forest recover.

In the initial draft of Donato's article submitted to and accepted by Science, the authors began their piece by citing pending legislative action that would put Bush's plan into action:

Legislation currently pending in U.S. Congress, HR 4200, would expedite postfire logging projects, citing reforestation and fuel reduction among its goals. To help inform the dialogue, we present data from a study of early conifer regeneration

and fuel loads following the 2002 Biscuit Fire, Oregon, USA, with and without postfire logging. Natural conifer regeneration was abundant after high-severity fire. Postfire logging reduced median regeneration density by 71% and significantly increased downed woody fuel loads and thus short-term fire risk. Postfire logging can be counterproductive to stated goals of ecosystem restoration. (Donato et al., “Supporting Online Material: 5 January 2006”)

After the publication of Donato’s article online on January 9th, “The abstract was edited to remove mention of the pending legislation” at the request of Science (Donato et al., “Supporting Online Material: 10 January 2006”). While neither published version, the online or the print edition a few weeks later, referenced the political landscape in which the article would circulate, the earlier versions shows that the authors understood the political implications of their work. Science’s claim of objectivity is challenged when they erased the political from the drafts.

However, it should be noted that in this situation, President Bush did not define the health of the forest in the same way as Donato and his colleagues. For Bush, as was shown in the previous case study, the health of the forest is both ecological and economic in nature. A healthy forest is part of a vibrant, healthy local economy. If a healthy forest is one that produces economic dividends for its human inhabitants, often through the harvesting of timber, then an unhealthy forest is one that does not generate economic returns. A forest, after a fire, is capable of offering returns if salvage logging is allowed and carried out quickly.

Donato and his network have positioned themselves as anti-salvage logging he is clearly in opposition to Bush’s pro-salvage logging network.

Reaction to announcement of article acceptance

To move forward in time, after the announcement that Donato's article would be published in Science was met with immediate criticism from multiple parties. When the article was accepted, approved for publication, and pre-published online prior to its appearance in the journal, a group of professors wrote to delay, if not cancel, the paper publication of the article (Brainard). Their argument was based around the validity of the findings and how Donato's conclusions could have broader implications. While editor Donald Kennedy refused to halt the article's publication, he did offer the opposition a chance to publish responses to Donato's work.

In August of 2006, Science published two responses to Donato's article. The first was by a group of forest scientists, many of them professors of forestry at Oregon State University. The second response was by Congressman Baird, a representative for the state of Washington. Each response aligned its authors with the pro-salvage logging group.

Mike Newton, a professor of forestry at Oregon State, was the lead author in the first rebuttal to Donato's findings. He was joined by five other Oregon State professors – Fitzgerald, Rose, Adams, Tesch, and Sessions – as well as a private forest management consultant, Atzet, and two employees of the USFS, Powers and Skinner. This is complicated when it is remembered that Donato's original piece listed Oregon State University and the USFS as the home institutions of the authors, which suggested that the institutions supported the work presented in the article, and thus were nodes within Donato's anti-salvage logging network. Newton's response was also crafted by representatives from these institutions, bringing the previous institutional alliances into

doubt. It is no longer clear whether OSU or the USFS supported Donato's findings or sided with either group.

Newton's challenge to Donato's publication constituted a trial of strength. While ostensibly the trial was over the forest, it can also be viewed as an attempt to recruit Science and institutions like OSU and the USFS to either network. Newton et al. did not question the motives of Donato's work, but instead suggested that "their paper lacks adequate context and supporting information to be clearly interpreted by scientists, resource managers, policy-makers, and the public" (615a). They did not challenge the methodology directly, nor the data that had been collected, but instead focused on the lack of context available due to the limited scope of the study. In addition, the authors added that they recognized the format and guidelines of a "Brevia" article may have limited Donato et al.'s ability to properly present their argument, but contend that "we urge them to use alternative mechanisms to disclose details critical to understanding and interpreting their results" (Newton et al. 615a). They thus challenged both the author's interpretation of the data and Science's constraints on how such research is presented.

In this situation, Newton et al. did not engage nor align themselves with either the pro- or anti-salvage logging group. Instead, they challenged how the health of the forest is being represented by suggesting that the study lacked an appropriate understanding of forest health and that the journal was not interested in presenting forest health adequately. In their opening paragraph, Newton claims that they will offer greater context for Donato's piece: "Here, we discuss the paper's methods and conclusions in the context of relevant management objectives and the forestry knowledge base concerning natural regeneration processes, mortality from logging, and fuel accumulations in southwestern

Oregon and northwestern California” (615a). After outlining the context, Newton adds, in his conclusion,

We believe the Donato *et al.* paper could have better informed the discussion of this complex topic for all audiences with a more accurate title, use of standard forestry protocols, more complete disclosures of methods and management objectives, and less speculation beyond the presented data (615a).

This suggests that the arguments presented were not appropriately explained for all audiences, and were simplified in a way that made the conclusions misleading. While Donato presents their data as a representation of the forest, Newton’s article challenges the alliance of Donato’s network with the forest without making pro-salvage logging statements.

In contrast, Representative Baird’s arguments challenged the political motives of Donato and his co-authors. Baird claimed that Donato “offered a quantitative estimate of the effects of salvage logging that is potentially misleading and statistically unsound” (615b). While never directly stating that Donato was making political statements in the guise of science, Baird repeated that Donato’s conclusions were “misleading” multiple times and suggests that “There are also questions about the appropriateness of the statistical tests employed in this study” (615b). Finally, Baird concluded by arguing that their “conclusions [were] based on very small data sets assembled over a short period of time and using methodologies that cannot sustain the sorts of causal statements made by the authors” (615b). Ignoring the journal Science’s high standards for methodology and multiple peer-reviews of claims and finding prior to publication, Baird believed that the study was flawed both in method, analysis, and finally with its conclusions. His disagreement with Donato, unlike Newton et al.’s paper, places him more firmly in the

pro-salvage logging group, which is evident when Baird argues that Donato's findings should not be consulted when constructing policy.

Oddly, in a very specific way, Baird is the person who directly aligns the current argument with governmental debates over policy. While Newton suggested that the study be re-contextualized and expanded, Baird calls for its dismissal as scientific evidence. Baird then positions Donato and his colleagues as oppositional to political forces interested in expanding salvage logging. This is not a debate over the health of the forest for Baird: it is a political debate in which Donato should not have standing.

How did Donato become the Spokesman

While the publication of Donato's paper in January is the *kairotic* moment that creates a new discourse arguing over the health of the forest, the networks and actors and actants had been active preceding January 2006. In order to publish such a study, a network of actors and actants must already be allied together. Tracing the history of the study and the publication of the paper will further explain the groups and networks in opposition.

Donato was not originally an actor in any network, he was recruited. According to reports in Evergreen (a non-profit trade journal that I will return to later), Bureau of Land Management (BLM) researcher Thomas Sensenig initially recruited faculty from OSU to study the effects of the 2002 Biscuit Fire on the forest's health. The faculty, lead by Dr. Boone Kauffman, agreed and received a federal grant for Joint Fire Science from the Department of Energy (Evergreen). While the funding source is not mentioned in Donato et al.'s "Post-Wildfire Logging Hinders Regeneration and Increases Fire Risk," other

articles from the same time-period listing Donato and Law as authors, like “Pyrogenic carbon emission from a large wildfire in Oregon, United States” published in the Journal of Geophysical Research, cited the BLM as a funding source (Campbell et al. 10), and the US Joint Fire Science Program is cited as a funding source for Donato et al.’s article “Vegetation response to a short interval between high-severity wildfires in a mixed-evergreen forest.” The rationale for such studies was opportunistic, involving a situation that lent itself to examining postfire forest dynamics², and was to take place on BLM and United States Forest Service (USFS) land and involved the agencies’ cooperation and support.

Through Sensenig, the BLM recruited multiple actors to examine forest regeneration³ in the Biscuit Fire area. To help conduct the research called for by the grant, Sensenig recruited John Campbell of Oregon State’s Department of Forest Science, W. Douglas Robinson of the Department of Fisheries and Wildlife at Oregon State University, and J. Boone Kauffman of the Institute of Pacific Islands Forestry in the U.S. Department of Agriculture Forest Service to help conduct the study. While Sensenig remained the primary investigator managing the grant, he allowed Robinson and Kaufman to recruit Daniel Donato to conduct the experiments. Donato and the others later recruited Beverly Law, another professor in the Department of Forest Science at

² This can include the composition of the stand (the number and density of different tree species, density of trees, how many different tree cohorts are there by age) and its growth rate, for example

³ “Forest regeneration” is generally the ability of a forest to regenerate itself when an area has been adversely effected and no longer contains desired forest attributes. While many factors can influence a forest’s ability to regenerate and grow – such as soil type, slope, climate, seed availability – to measure a forests regeneration is done by counting the density of tree seedlings and comparing it to previous data.

Oregon State, to advise the study when Sensenig was no longer directly involved. In this situation, it was not Donato who created a network, but the BLM.

Once recruited to the research group, Donato began his research by creating plots in the forest and measuring sapling growth in areas where salvage logging occurred in 2005 and in areas that were left undisturbed (Donato et al., “Post-Wildfire” 352). He and his colleagues then analyzed the data and determined that salvage logging was negatively affecting the ability of the forest and landscape to regenerate⁴. It is important to note that, prior to submitting their report to Science for consideration, they did not share their findings with the BLM or Sensenig (Evergreen). Furthermore, they did not share their findings with others in their institutions or with the USFS more generally. Once received by the journal’s editorial staff, the article underwent peer-review according to the journal’s editor, Donald Kennedy; while some questioned the journal’s system of peer-review, Kennedy claims that “we do careful review (and) the discipline of that process really demands careful consideration of the validity of the data and the coherence of the arguments made from it” (Milstein “OSU Prof”). When the paper was accepted into Science, Donato began to form his own group (previously all recruitment had been done by Sensenig). Donato goes from being a simple node in a network to the spokesman for a group and begins to recruit new allies. The publication of the paper, and its recognition that there is a controversy over the effects of salvage logging, bring about a trial of strength, as has been argued thus far, over forest health and its recruitment.

⁴ Donato’s initial study found that seedling/sapling density was significantly lower in areas that had been salvage logged when compared to areas that had not been disturbed after the fire.

However, this is not quite the case. It needs to be acknowledged that previous drafts of the article, archived on Science's website, have Donato and his colleagues stating that, "Legislation currently pending in U.S. Congress, HR 4200, would expedite postfire logging⁵ projects, citing reforestation and fuel reduction among its goals...Postfire logging can be counterproductive to stated goals of ecosystem restoration" (Donato et al., "Supporting Online Material ... January 5th" 2). In this statement, Donato et al. identify HR 4200 as an actor in a controversy over postfire logging and places ecosystem restoration in opposition to HR 4200, creating a trial of strength between the two. At the time, it appeared to many outside observers that Baird's response was the first location where Donato's findings are linked to the politics of the situation; newspaper articles in Oregon and Washington printed statements from environmental interest groups such as this one from "Emily Platt, executive director of the Gifford Pinchot Task Force, an environmental group. 'It seems Baird has joined the Bush administration strategy of attacking good, respected science that happens to disagree with political objectives'" (Durbin A1). But it is clear that it was Donato et al. who originally recognized the politics of the situation.

Donato's published article appears to present a scientific argument against salvage logging, but the original version suggests an argument against HR 4200; the published article focuses on the health of the forest while the original draft focuses on defeating HR 4200.

HR 4200

⁵ "Postfire logging" is another name for "salvage logging"

Forest Emergency Recovery and Research Act, or HR 4200, was proposed by Oregon representative Greg Walden and called for a streamlining of procedures in order to increase the speed and efficiency of forest management responses to catastrophic events, such as wildfire. The wording of the bill allows for “a list of pre-approved management practices, by forest type or plant association group, that may be immediately implemented as part of recovery projects or research projects” (Forest Emergency Recovery and Research Act Summary Sect 104). While clearly stating that “timber harvesting” may “not be a pre-approved activity,” it also calls for management actions to be taken that have been proven to facilitate forest regeneration and decrease future environmental risks (Forest Emergency Recovery and Research Act Summary Sect 104). It is conceivable, as Donato warns, that salvage, or postfire, logging may be considered one of those pre-approved actions. While the bill required that public comment would be solicited during the approval of these “pre-approved actions,” no public input would be needed to enact a pre-approved action.

The bill echoes many of the same arguments made by President Bush in his initiative and speeches: regulations need to be streamlined, public comment needs to be limited, and the health of the forest is dependent on swift action not expansive debate. This bill, along with Congressman Walden, align themselves with President Bush and attempt to recruit the forest as an ally by suggesting that “Reforestation treatments on forested Federal land after a catastrophic event helps to restore appropriate forest cover ... ensuring the health and resiliency of affected ecosystems for present and future generations” (Forest Emergency Recovery and Research Act Sect 2.6). The bill

differentiates timber harvesting from salvage logging, suggesting that the latter is not driven by economic interests but by ecological concerns.

Those for and against the bill viewed the same language very differently. The Sierra Club, who opposed the bill (at least the Oregon chapter), argued that “the legislation will damage forest ecosystems and is not scientifically credible. It would sweep aside protections for forests and threatened fish and wildlife to rush logging and road building after normal, natural events on national forests” (Vaile 5). They feared that these “pre-approved” actions could be utilized to undermine pre-existing regulations⁶ without the public comment or a legal mechanism to challenge the government. The proposed fast tracking, however, was seen as necessary by others in order to protect the health of forests and their communities. Deputy Secretary of the Interior Lynn Scarlett testified before a House Subcommittee that “The President’s Healthy Forests Initiative of 2002 [which] directed the Department of the Interior agencies and the Forest Service to expedite reductions in hazardous fuels on public lands, restore ecosystems, and protect lives and communities” (Scarlett 1). Both sides argued that this law would enable faster responses to catastrophic events, but they disagreed as to whether this would be good or not.

While the Sierra Club’s opposition to HR 4200 suggest that they will be interested in the findings of Donato, it is Deputy Lynn’s address that complicates the situation. At the same time that Donato was in Southern Oregon gathering his data, Lynn was

⁶ One prominent fear was that, while the building of permanent roads was forbidden in the text of the bill, the building of temporary access roads to facilitate salvage logging could be used to reclaim lands protected under President Bill Clinton’s 2001 Roadless Rule, which prohibited the harvesting of timber in areas that lacked roads.

positioning herself as an ally to HR 4200 and recruited the Department of the Interior along with its Bureau of Land Management, the United States Department of Agriculture along with its Forest Service, and the executive branch of the US government. This occurs while the BLM is funding Donato and the USFS is supporting his study. These institutions are attached to both networks.

The trial of strength is not over the bill, but over which actors have the right to define the health of the forest. If it can be proven that salvage logging negatively affects forest regeneration, as Donato claims, then the premise of HR 4200, that faster responses protect forest health, could be rejected and Representative Walden and President Bush's network would no longer be allied with the health of forests.

Return to Initial Controversy

The initial controversy in the Donato et al. paper was cited as an article published by, amongst others, Mike Newton and John Sessions. When Newton et al. wrote their 2006 response to Donato's paper, they were, in part, expanding on the controversy that Donato referenced. Prior to Donato's paper, before Donato had even been recruited to study, but while the BLM was talking with Sensenig about a grant, Oregon State University professors John Sessions and Mike Newton were drafting a report proposing appropriate forest management practices to the USFS and BLM in order to "addresses three of these considerations: forest regeneration, fire and insect risk reduction, and timber salvage" (Sessions et al., The Biscuit Fire 2). The report, published in 2003 only a few months after the fire, found little traction and very little action was taken. In order to gain a larger audience, Sessions and Newton modeled the effects of the Biscuit Fire and

the associated clean up and published their finding in 2004 in The Journal of Forestry⁷. In their article, titled “The Consequences of Delay,” the authors argue that,

Time is not neutral. If society or land managers choose not to expedite postfire decision making for the roughly 200,000 acres outside the designated wilderness so that restoration action can begin in 2004 and end by 2006 or 2007, then nature alone will determine the future conditions in as much as 400,000 acres of the entire Biscuit area. Regardless of congressional or administrative intent, these forests will likely be dominated by cycles of shrubs, hardwoods, and fires for a long time (Sessions et al., 45).

In their work, they have found that salvage logging is necessary in order to help the forest regenerate. Furthermore, they claim that salvage logging must be done quickly after a fire because: the value of timber decreases dramatically after more than a year after a fire, and competition between bushes and saplings increases and affects future stand structure.

While initially, Donato’s findings appear to contradict Newton and Sessions’ claims, they are actually consistent and interrelated. Newton and Sessions argue that salvage logging and post-wildfire treatments must occur quickly, within a year or two after a fire. Any more than that, they claim, the costs become prohibitive and it might be difficult or impossible to manage regeneration. Their arguments are complimentary to Donato, who studied the effects of salvage logging, and all the heavy equipment associated with it, three years after the fire event. Donato confirms Newton and Sessions’ argument that delaying management action increases the probability that a harvesting operation will have a negative impact on a forest’s ecosystems.

What Newton and Sessions find problematic is that Donato claims his findings prove that they are wrong, that salvage logging should not occur at all. Recruiting

⁷ The Journal of Forestry is published by the Society of American Foresters. The organization is national governing body of forestry professionals and their journal is highly regarded and widely read within the discipline.

Donato's argument into their network appears to be a goal of both Newton and Session: their response calls for a contextualization of Donato's conclusions, not a rejection of them.

Donato as a Public Figure

While published in a scientific journal as a technical paper, Donato's findings were quickly picked up by various press agencies and were reported in local, regional, and national papers. On January 6th, the day after the online publication of Donato's paper, the Eugene Register-Guard ran the front-page headline "Study Strikes Salvage Logging Beliefs" and argued that Donato et al.'s results suggested an increased risk of fire from salvage logging operations and that the findings were "challenged by the timber industry" (Bolt A6). Even with the political framing of Donato's article removed, his conclusions were adopted as a call for action and were being used by the media as a means of recruiting allies to the anti-salvage logging group. Bolt, the author of the Register-Guard article, also choose to focus not on Donato's arguments about forest regeneration, but instead on the increased risks of forest fire caused by salvage logging⁸. Similar stories were picked up in other local and regional newspapers such as The Oregonian – "Then the study by Donato and five other scientists, including his professor, Beverly Law, stepped in the way ... Logging, they found, destroyed or buried most of the

⁸ In addition to climate, the risk and severity of forest fires is dependent on the fuel load on the forest floor. Fuel load is usually measured as the quantity of Fine Wood Debris, Coarse Woody Debris, and duff available to a fire. Logging activities decrease the amount of CWD, but often leave behind an increased amount of FWD, which can increase the probability that a fire will occur

seedlings while carpeting the ground with tinder” (Milstein, “Research Rattles”) – and the Corvallis Gazette Times –

Immediately, the Unified Forest Defense Campaign used the findings in politics: ‘Oregon State University scientists analyzing the Biscuit burn area in southern Oregon found that post-fire logging increased fire risks and hindered forest recovery,’ the campaign said in a statement to the press, claiming that this undermined the premise of the forestry bill by Congressman Greg Walden now pending in the U.S. House. (Editors)

Donato’s article became part of the national news cycle. National Public Radio (NPR) reporter John Nielsen filed a report titled “Study: Salvage Logging Boosts Forest-Fire Threat,” and said that “Three years ago President Bush asked for legal changes aimed at reducing wildfires. But Oregon State University researchers say ‘salvage’ logging slows the rate of forest recovery and raises the threat of new fires.” In this situation, Donato and his network are being placed in opposition to President Bush.

Interest groups opposed to Bush’s legislation and HR 4200 also used Donato’s research to call for a “No” vote in congress. The Sierra Club in Southern Oregon told its members that “As more and more science becomes available citing that the Biscuit project did not help the ecology of the forest, or the economy of the local communities, citizens are left to wonder why the Forest Service moved forward with the project” (Adams 3). The club then goes on to tell its members to contact their representatives, especially Representative Walden, to tell them to stop the weakening of environmental laws.

Donato’s claims were being translated for different audience to recruit new actors to strengthen the anti-salvage logging network.

Rebuttal and Intrigue

Many actors were recruited by both networks and, at the time of publication in January of 2006, it was difficult to see which group they belonged to. Oregon State University had a division in its personal, and the BLM and USFS both claimed to support both sides by funding the research and collaborating with the rebuttal statements. To make the division clearer, through Dr. Sensenig, the BLM ordered Donato and his group to cease and desist their research and its dispersal (Evergreen 11). The BLM claimed that it had not been informed by the team of their findings nor their intention to publish, actions that were in breach of the guidelines and regulations of the grant funding the BLM had provided. The order by the BLM was framed by Donato and others as politically motivated because their findings did not support HR 4200 (Harden). In addition, Oregon State University argued that the researchers had abided by the rules of the grant. The BLM, a week after stopping the grant, restored funding to the researchers.

The politicization of the article created a situation where institutions and actors were forced to take sides. The BLM and USFS choose to work with the pro-salvage logging group while Oregon State claimed to support the integrity of their researchers without necessarily condoning their findings. The Dean of the College of Forestry, Dr. Salwasser, found himself in a difficult position: not only mediating a conflict between his faculty, but also the politics of congress and the budget of his college. It was reported that, in the upcoming years, Dean Salwasser and “the college faces a \$4-million shortfall by 2008 in its \$26- million budget. Possible solutions in the college's budget plan include raising more money from a variety of sources, including industry” (Brainard A29). Supporting a study that calls for a limit on timber harvesting in the state jeopardized the

ability of the college to raise money from the timber industry – which was clearly for HR 4200 and against Donato’s article.

It’s All politics

Donato places himself at the fore-front of a political debate by publishing a scientific paper that shows that salvage logging hurts forest health. The nature/culture hybrid of “forest health” enables multiple accounts of scientific truth to be created, each justifying its own political ends. For President Bush, Representative Baird, and Representative Walden, it is that salvage logging decreases the risk of fire in the future without adversely affecting forest health. For Donato, forest health is affected by salvage logging because the equipment destroys young saplings. Sessions and Newton, in contrast to everyone above, suggest that both sides are right and it is a question of timing to minimize impact while maximizing timber harvesting. In each of these situations the health of the forest is discussed as the thing to be protected, and the viability of that health is measured as “regeneration.”

Yet this goes back to arguments made in the previous chapter: any discussion of health or regeneration is through the lens of an imposed valuation of what a healthy forest is. Bush and his cohort see a healthy forest as intertwined with a healthy economy. Donato’s group appear to view it as a high density of saplings that can out-compete shrubs and brush (Evergreen 10). Sessions and Newton appear to view a healthy forest as an economically productive one.

It is clear that while it at first appears that Donato was recruited as a spokesperson against salvage logging because of his scientific findings, he had in fact positioned

himself to be the spokesperson and translated his findings to recruit other allies to his cause. By eschewing traditional channels of reporting funded work and publishing in Science, a journal with a wide distribution removed from the technical forestry community, by claiming that his findings settled long standing debates, and by presenting himself as spokesperson for forest science, he positioned himself as a political activist against the salvage logging network without publicly stating these intentions.

Sphere Theory

The previous section showed how Donato's paper was able to construct a network of actors in order to win a trial of strength over the definition of forest health. In the process, Donato and his network also worked to defeat HR 4200. In order for this to occur, Donato and the claims presented in his paper had to circulate not only within technical discourse communities, but also in public forums where the value of HR 4200 and salvage logging were discussed. By examining locations where Donato and his claims move between forums, this section will show how claims and *ethos* can be rhetorically constructed to facilitate such movement.

The choice of forum: Scientific Controversy versus Science Informed Controversy

Donato's publication in Science appears to be a technical argument being made in a technical forum. Science and the organization that publishes it, the American Association for the Advancement of Science (AAAS), claim to be

A voice for science and scientists everywhere, AAAS fulfills its mission to 'advance science and serve society' by communicating the value of science to the public, helping governments formulate science policy, promoting advancements

in science education and diversity, and helping scientists develop their careers (Science, “About”).

While their mission does recognize the public role of scientific research, the journal acts a forum for the dissemination of scientific research by scientists. To publish an article, as Donato did, is to participate in that forum with the understanding that the public will also view the claims and conclusions presented. This is a recognition that, while claims will be made within a technical sphere and to technical actors, they will also circulate in public forums. Indeed, the debate over salvage logging is both technical, its effect on the forest and its recovery, and public, what is an appropriate environmental risk for ensured economic growth. While the former informs the latter, they are not the same debate.

It is possible to argue that Donato was not conflating policy with science, but there are two arguments against this. First, there is the original draft sent into Science that acknowledges the political nature of the technical claims by explicitly addressing House Bill 4200. Secondly, there is the choice of forum. If Donato was engaged in a technical conversation about the validity of salvage logging as an environmentally and scientifically sound practice, then the appropriate forum for publication would have been a journal for forest management experts. Instead, he published in a journal that specializes in publicizing scientific claims to the wider scientific community and public. The journal Science expressly states that it publishes science that will inform public opinion and policy.

The Review Process: Core-Set

While it can be argued that the review process, as Editor-in-Chief Kennedy did, protects the journal from publishing false technical claims poised to sway public opinion, the process only works if those reviewing are technical experts within the same field. Not all scientific forums are created equal, nor are all scientists able to participate in and critique all technical sphere discourse. For Collins and Evans, the differentiation between publics, scientists, and technical experts is a somewhat clear: there is “A core-set [that] has been defined as being made up of those scientists deeply involved in experimentation or theorization which is directly relevant to a scientific controversy or debate. A core-set is often quite small - perhaps a dozen scientists, or half-a-dozen groups” (241), outside of this core-set, or surrounding it, are the scientific communities and various publics. This suggests that technical discussions occur amongst a small group of people, undoubtedly reading a very specific journal that is tailored to their interests. Science is not directed at a core-set.

If all scientists recognized the division between a core-set and the general scientific community, then there would be no problem because scientists would recognize that they are participants in some discourse and observers to others. However, as Collins and Evans point out,

These outsider[scientist]s reach certainty more easily than core-scientists because they learn of goings-on in the core of the science only through digested sources, such as conversations with their colleagues, scientific journals, the scientific media, and the broadcast media. Inevitably, such sources condense and simplify - that is their job. Only exposure to the lived history of the core-set can reveal the richness of a dispute and its potential for being re-opened. For those at the heart of matters, scientific disputes are seen to linger on long after the wider community takes matters to be settled. (246)

An oncologist has limited understanding of ecosystem functions and an environmental scientist cannot claim to be an expert on rRNA pathways – this is not to say that one specialty occludes the understanding of another, simply that the understanding of one discipline does not make a person an expert in all scientific fields. When scientists weigh in on controversies outside of their own core-set, false conclusions can be pre-maturely accepted as consensus. In this situation, non-core scientists could interpret Donato's findings as settling a controversy that they know little about.

If Donato's submitted article was reviewed by scientists outside of the core-set that studies forest health in relation to fire recovery and salvage logging, claims that the review process was flawed would be justified. Collins and Evans expand the differentiation between core-scientists and the broader scientific community by differentiating expertise into sub-groupings: "no expertise," are those who have a lack of understanding of the technical claims being made and are unable to analyze claims; "interactional expertise," is possessed by those who understand enough of the concepts being discussed to interact with researchers and offer "sociological analysis;" and "contributory expertise," is possessed by those who are able to contribute to a field of study (254). The core-set of technical experts are those who have contributory expertise, and are able to validate or criticize the findings of others within their narrowly defined discipline: "The wider scientific community should be seen as indistinguishable from the citizenry as a whole; the idea that scientists have special authority purely in virtue of their scientific qualifications and training has often been misleading and damaging" (Collins and Evans 250). Scientists outside of the core-set possess interactional expertise, but this only enables them to comment on the social ramifications of research – not validate it. In

this situation, the readers of Science may be confusing their ability to understand and interact with Donato's findings with the ability to contribute to the field of forest science and ecosystem management.

Many who wrote against Donato suggested that the article may not have been gotten through peer review in a discipline specific journal like The Journal of Forestry or Conservation Biology (Evergreen 25). By publishing in Science, Donato avoided review and critique by his core-set peers and instead appealed to a wider audience. The publication of the article after the review process validates Donato's methodology and supports the presented conclusions. The majority of those reading the journal and the article are not forest scientists or natural resource managers, nor do they understand the intricacies of fuel load calculations, regeneration measurement methodologies, and the regulations dictating forest harvesting.

If we view the publication of Donato's work in Science through the frame suggested by Collins and Evans, then by entering a quasi-public forum, the article invites a public sphere debate. However, the appeals made within the article are supported by technical warrants, the *ethos* of the author is that of a technical expert, and the forum it is being presented in argues that it is technical and does not allow public input: Science thus becomes a forum supporting quasi-technical sphere claims.

Technical Arguments in the Public Sphere or Vice Versa: Asymmetry

If Goodnight claims that "a person's identification with his or her work in a special occupation [is] the essential ingredient of technical argument" ("The Personal, Technical, and Public Spheres of Argument: A Speculative Inquiry Into the Art of Public

Deliberation” 200), then it should be expected that a technical expert should present their technical claims in the technical forum that will best be able to resolve the conflict between new and old claims. In this case, Donato did not. By choosing a forum that presents technical arguments to fellow scientists and avoiding forums that could have been more critical of their work, Donato et al. created an asymmetry: technical claims were presented within a quasi-public forum under the guise of a technical sphere debate. By grounding their work within a pre-existing technical controversy, the effectiveness of salvage logging, the authors warranted their claims with their technical *ethos* while avoiding participating in a technical forum capable of critiquing them. In addition, the quasi-public forum does not support claims supported by public warrants.

One group, the pro-salvage logging network, challenged the validity of Donato’s strategy. They argued that, while Donato may have had the *ethos* to make the statements he made, it was the wrong forum to present the arguments. The fact that Newton and Sessions had published arguments on the topic in a separate, technical forum was ignored; while Newton and Sessions’ article was cited by Donato, it was only done so to frame the debate and present a counter argument but was not critically engaged. The existence of a technical forum and a core-set of researchers only enters the discourse around Donato’s article when the rebuttals are published. Even at a congressional hearing on HR 4200, the differentiation between Donato and his opponents is explained by Oregon Representative Ringo:

At least the Daniel Donato report was independently peer reviewed, which is really the mark of excellence in science. This committee has relied on the report of Professor John Sessions before with a study that was never independently peer reviewed and said, well, that is the good science and that is what we are going to rely on. I just suggest to you that the studies from Professor Sessions really are

done at the behest of industry and that is why they should be given less credibility. (H.R. 4200—The Forest Emergency Recovery and Research Act Hearing 31)

Donato's claims are viewed as being supported by his technical *ethos* and peer-reviewed methodology, while Sessions and his colleagues are having their *ethos* and claims challenged.

There are parallels to previous case studies where scientists take their technical debate into the public for arbitration. When the scientific community, specifically those within the discipline of physics, challenged the validity of Fleischmann and Pons' claim to have discovered cold fusion, their home institutions made direct appeals to both the public and their congressional representatives. When they were denied funding and recognition, the institutions solicited direct public support and national news coverage (Gieryn 218). However, the scientific community was able to resist public interest in cold fusion and prevailed, invalidating the claims of the scientists. Similarly, Donato went outside his discipline and made his appeal to a wider scientific, practically public, community in order to gain validation. Unlike Fleischmann and Pons, Donato's initial appeal to the scientific community strengthened his argument because it presented itself in a quasi-technical forum.

Science's peer-review processes warranted Donato's *ethos* and was viewed as an endorsement of his work by the scientific community at large, enabling Donato to bypass the core-set of scientists capable of determining the validity of his claims. This choice gave Donato's work standing as a technical claim in public forums. As an example, Representative Ringo points out that "It is just one study. You need to look at it in the context of lots of other studies and the entire body of science. But that was a study

nonetheless that would not support this bill, at least the objective of this bill of recovering forests,” but later added, as was quoted above, that the peer-review process “is really the mark of excellence in science” (H.R. 4200—The Forest Emergency Recovery and Research Act Hearing 24, 31). Since Donato’s claims were warranted by peer-review, his claims were resistant to technical attacks. While the journal *Science* stood by its peer-review process, newspapers reported on the BLM punishing Donato for findings they did not like, and the Union of Concerned Scientists and the Oregon State Faculty Senate stood up for Donato’s intellectual freedom, the arguments of the opposition lost their strength. This is complicated because, as The Columbian reported, Representative “Baird said the Forest Emergency Recovery and Research Act he agreed to co-sponsor protects stream buffers, requires removal of all roads built to get access to burned timber, and specifies that projects to remove dead and damaged trees must be based on peer-reviewed science” (Durbin A1). Baird both claimed that peer-reviewed science should stand as a determining factor in management plans, but later challenged the rationale for considering Donato’s paper’s findings in policy decision making. In the end, Baird was unable to challenge Donato’s claims effectively and HR 4200 was never passed into law.

This is the crux of discourse, where the asymmetry created by Donato resists the corrective arguments presented by his opposition. Instead of accepting Newton and Session’s rebuttal as a technical question presented by experts with “contributory expertise,” their response is viewed as political in nature – along with Baird and the BLM’s actions. By appealing in a quasi-technical forum, Donato created a situation where all attacks made on the validity of his claims were deemed political while his claims were viewed as technical.

When Ulrich Beck warned against the public sphere being usurped by carefully crafted technical arguments, this is the kind of situation he had in mind (32). Just as Carolyn Miller found that value judgements made by experts were being passed off as fact in her work on nuclear safety, and Fahnestock and Secor have shown that scientists can make claims with the knowledge that their arguments will suggest political action, Donato is calling for political action and supporting it with his technical findings. This is a clear deviation from the *is/ought* divide discussed earlier. While the final published article has no mention of HR 4200, the earlier drafts show that the claims presented in the essay were originally framed as oppositional arguments to the bill. Despite all of this, any opposition to Donato's claims is deemed political while the article itself is held up as technically accurate.

This appears to be a case where the authors presented their findings in order to influence political decision making. As stated above, the claims and *ethos* of the rhetor are not only consistent with the criteria Goodnight requires of technical sphere discourse, but they have also been vetted by a scientific community and deemed appropriate ("Public Discourse"). At the same time, it cannot be ignored that claims were made in a quasi-technical forum to address a public audience.

The interconnected networks that support Donato and his opposition, as detailed in the ANT account, enables claims to be viewed both as an act of translation to recruit actors and actants as well as invoking a sphere for debate. While the sphere theory analysis allows us to see how claims are used to invoke spheres in different forums, the ANT account allows for an understanding of how claims are being used to recruit and strengthen a network: sphere theory analysis shows that Donato invokes the technical

sphere using claims supported by the scientific warrants of methodology and impartial analysis, but the ANT analysis enables that same claim to be viewed as an appeal for public action against HR 4200. The asymmetries become observable when the methodology of ANT is examined through the lens of sphere theory.

Conclusion: The movement of claims and ethos

Why did Donato's claims circulate and Newton and Sessions's, published two years earlier, did not? The answer appears in the choice of forum and *ethos* of the presenter. Newton and Sessions published their findings in a core-set technical journal, invoked an expert *ethos*, and called for political action: they argue, after framing the slow moving bureaucracy that is needed to approve timber harvests, "Alternative timber sale preparation procedures could also be considered" for salvage logging ("Consequences of Delay" 44). But they do so within the confines of a technical forum that is not authorized to take political action. In contrast, Donato published his findings in a journal with a broader audience that lacked the technical expertise to challenge his claims, invoked the objective scientific *ethos*, and made statements of cause and effect without calling for political action or placing value on previous decisions. Even though Donato's argument was political, he presented himself as apolitical with an appropriate *ethos*.

If you were an activist who wanted to oppose HR 4200, or were against salvage logging, Donato offered you a useful argument that was divorced from the political debate. In contrast, the call for action from Sessions and Newton in a technical forum made their claims distinctly political – responses from the scientific community did not name Newton and Sessions directly, but pointed out that they had gone about disproving

Donato in the wrong way: “Science is much the same with hypotheses measured against what has come before, ‘precedent,’ ... only after we’ve attempted to disprove the [null] hypothesis that we can say the hypothesis may be true. Even then, further examination may modify or disprove the previous conclusion” (Dick 379). Since they did not support their arguments with technical/scientific warrants, they were easily ignored. Furthermore, since Newton and Session had previously published their findings in a much smaller journal, the public had little access to their claims. The asymmetry created by Donato propelled his claims into public forums where they circulated, while invoking the technical sphere to give them energy and authority. In this way, public forums were inhabited by the technical sphere while technical forums were deemed politically motivated and incapable of engagement. The circulation of technical claims from the quasi-technical sphere created within the journal Science silenced both experts and the lay-public alike – each side calling the other politically motivated.

Conclusion

There are two distinct conclusions to be taken from this case study: first, that neither the ANT methodology nor the framework of sphere theory can independently explain why Donato’s rhetoric effectively moves between forums and situations; and secondly, that claims can move from the technical sphere into the public sphere.

The ANT methodology, by creating an archive through the tracing of actors and actants, was able to uncover source material that may have not been found otherwise. By tracing the article’s origins, previous drafts exposed the conflicting rationales leading to its publication. In contrast, simply viewing Donato’s article through the lens of sphere theory would have produced an incomplete picture – while yes, the claims were

supported by technical warrants and the authors inhabited an appropriate *ethos*, the claims themselves were also political in nature and intended for a public forum and not an invoking of the technical sphere. Conversely, exposing the asymmetry created by Donato publishing in a more public forum provides at least one explanation for why Donato was able to recruit more effectively than Newton and Sessions, and why ultimately the anti-salvage logging group won the trials of strength surrounding Donato's publication and House Bill 4200.

Lastly, by inhabiting a technical *ethos* and presenting technical claims in a quasi-public forum, the claims Donato made were able to circulate more widely than had they been presented in a traditional technical sphere. The strength of the asymmetry created by Donato gave force to the claims, and as the claims circulated they were able to restructure discourse around them: dissent in the technical sphere became political and dissent in a public sphere ignored the technical arguments.

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Chapter 5: Riparian Reserves

While previous chapters have examined how claims and *ethos* function in different rhetorical situations around an exigence, this last chapter examines how defining a term, “riparian reserve,” is an exigence. Like “forest health,” “riparian reserves” are loosely defined. Simply stated, a riparian reserve “encompasses lands along streams and other water bodies” (BLM, Biological Assessment 32). The function of a riparian reserve is to protect aquatic ecosystems from human activity, specifically construction and timber management and harvesting. The size and space of these reserves must be determined within a given management plan – the concept of a riparian reserve is an exigence in and of itself, demanding a discussion over how best to define it and delineate it on a map.

Defining a “riparian reserve” requires an understanding of how it functions within an ecosystem and what kind of forestry activity can occur within it or adjacent to it. But this ignores the social construction of the term: changing the definition of the term changes measurable attributes of water quality as well as the amount of timber that can be harvested and the cost of harvesting that timber. Defining the attributes of a “riparian reserve” is about not just the object being discussed, but also the local and regional economies’ relations to natural resource products, as well as recreational fishing and clean drinking water. To define a riparian reserve is to weigh economic and social values alongside ecosystem functions.

This clearly raises concerns: is this an exigency for technical or public debate? On the one hand, how to best protect aquatic ecosystems from human activity appears to be a

technical question requiring expert opinion and scientific study. On the other, if the definition of a riparian reserve is informed by social and economic concerns, then various publics and quasi-public groups should be engaged in evaluating alternatives and ranking priorities. Furthermore, beyond the scientific and public communities, there is a legal component that defines the function of a riparian reserve and the forest that it works within. This leads to multiple forums discussing the same exigency in sometimes incommensurable ways. It then becomes the role of the Bureau of Land Management (BLM) in the Department of the Interior (DOI) and its agents to resolve such conflicts in order to produce a single definition.

The BLM is functioning both as rhetor and mediator – they frame the constraints of discourse, participate in the debate, and then resolve conflicting definitions. Through transparency by documentation, the BLM works to offer multiple alternative plans for comment and then offers their accepted terminology with justification.

The corpus for this case study is slightly different from previous chapters. While still relying on Actor-Network-Theory (ANT) to trace a network of interconnected texts, the bounds of this network will be the BLM's documentation of the planning process. To come to a management decision, the BLM must produce a plethora of documentation including, but not limited to: review of previous management plans, review of previous public commenting, reports on scoping meetings with the public, scientific analysis, legal analysis, more public comment, agency collaboration, biological and geological assessments, climate change projections, responses to private and public comments, modeling methodologies, and more public comment. The term “riparian reserve” will be traced through the corpus in order to compare conflicting definitions and observe how

they are resolved through trials of strength. All ANT accounts wrestle with where to stop building the corpus; accounting for only the BLM produced documents, the corpus already contains 10,000 pages of documents and no documents will be traced outside of the BLM's corpus.

After completing the ANT analysis, forums where riparian reserves will be identified and networks will be built around the discourse. In each forum, the discourse will be viewed as a trial of strength over the definition of riparian reserves with the rhetors trying to mobilize a network into action in order to defeat competing networks. After the networks have been traced, the discourse will be viewed through the lens of sphere theory in order to identify asymmetries. By the end of this chapter, I will show that there are a variety of places where asymmetries occur, but very few of them effectively cause their claims and *ethos* to circulate. Instead, this chapter will show that while the BLM proposes to engage with public forums and discourse as well as technical arguments, legal discourse and claims appear to be the only kinds of claims that have any salience. This suggests that, as Miller warns in her critique of Goodnight, much of the riparian reserve discourse is “backstage” and hidden from public view.

ANT Account

The Required Network:

When President Obama took office in 2009, his newly appointed Secretary of the Interior, Ken Salazar, was almost immediately handed an aborted set of revisions for the Resource Management Plan (RMP) for Western Oregon, which is often referred to as the Northwest Forest Plan (BLM, “Interior Withdraws Legally Flawed Plan for Oregon

Forests” 1). The revisions were designed to update the 1995 Northwest Forest Plan so that it would comply with new regulations while also increasing timber production because the originally proposed targets were not being met (BLM, Resource Management Plan Evaluation Report: Western Oregon Districts 7). The revisions and their accompanying Environmental Impact Statement were found to be incomplete because they failed to comply with all environmental regulations. The failed revision process would allow Salazar and the BLM to research and propose a new Resource Management Plan.

The BLM’s planning process is designed to engage multiple groups, agencies, and actors and actants, asking them to offer their input on past and proposed management actions. This process connects participants into a network of actors and actants, but does not necessarily recruit them to an existing network: aligning an actor with a network involves an act of translation designed to recruit new actors – the BLM does not necessarily reframe its rhetoric or management plan in order to recruit actors and agencies to its network. The BLM began the process by scoping, or holding public meetings in communities around the management area. After the comments were collected and organized, the BLM went about proposing alternative management plans and then assessed their outcomes – this information became the Environmental Impact Statement (EIS). After the publication and distribution of the EIS, the public and other organizations were allowed to comment, or respond, to the proposed plans. Once comments had all been collected, the BLM responded to the arguments and claims given to them, leading to an explanation of which management plan the BLM had decided upon.

This constant interaction among stakeholders, communities, publics, agencies, and other actors is designed to facilitate meaningful discourse while also, possibly, recruiting these nodes to the BLM's network. From a legal standpoint, the National Environmental Protection Act (42 U.S.C. § 4321), or NEPA, requires the BLM to produce an EIS and solicit public input in a timely manner and then respond to it. More pragmatically, the BLM used the failed 2008 report to rebuild trust in the agency and improve its chances of recruiting allies. Researchers at the University of Montana conducted an assessment of public involvement in the previous report and found that "There has been an erosion of trust due in large part to the settlement agreement, but also because people do not know what is going on or how they can be involved" (McKinney and Morgan 4). The authors suggested that more public involvement is needed, enabling stake holders to participate as either individual citizens and/or members of larger groups or agencies.

In order to increase public trust, the BLM also recognized that they needed to be more transparent: "Transparency of decision-making process and the transparent process of preparing planning documents is important" (BLM, "Lessons Learned" 3). It is obvious that the BLM was concerned with how best to recruit various publics and quasi-public groups as allies to their network. Recognizing that reliance on the "best available science" to persuade people was not always effective (BLM, "Lessons Learned" 3), the BLM turned to direct engagement to recruit new allies to their network.

Riparian Reserves

“Riparian Reserve” is a term that appears throughout the technical texts produced by the BLM, in public comments, and in statements submitted by other agencies and private interest groups during the revision of the Resource Management Plan for Western Oregon. Previous plans had not included Riparian Reserves – instead, riparian reserves had been lumped together with all other kinds of reserves in the original 1995 Northwest Forest Plan. When that plan was reviewed and revised during the Bush administration, many changes were suggested but the revisions were never implemented. Due to legal challenges over the incomplete 2008 EIS, the BLM and DOI were forced to throw out the revisions and the planning process was started all over again.

In March of 2016, after over a decade of research and public outreach, the BLM finally released their Record of Decision (ROD) for the new Northwest Management Plan. In the plan, the BLM incorporated the “riparian reserve” classification in order to manage lands adjacent to aquatic ecosystems, and then separated riparian reserves from other kinds of reserves. This is the exigence from which this ANT analysis will spread, mapping how the definition of the Riparian Reserve was created.

A “riparian reserve” is a hybrid, an actant that is both physically present in the natural world and rhetorically constructed. A Riparian Reserve “encompasses lands along streams and other water bodies” (BLM, Biological Assessment 32). In the management plan, these reserves are treated differently than other areas in order to protect the aquatic ecosystems that they are connected too. They are not only measured by their physical space, but also by their effectiveness at protecting the aquatic ecosystems adjacent to them. They are also a reserve, an area meant to be left untouched from human activity,

and thus serve a certain aesthetic value. These values of effectiveness and aesthetic are rhetorical constructions.

Public Engagement

Starting in 2012, the BLM conducted scoping workshops where citizens were invited to participate in the early stages of the planning process. The goal of the scoping sessions, as required by Sec. 1501.7 of the NEPA, is for “determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action.” Public input helps define the issues that should be addressed in the EIS and RMP.

The agenda for the scoping meetings hosted by the BLM included a break-out small group sessions on “Clean Water and Healthy Fish.” Not surprisingly, the comments tended to focus around riparian zones. In Corvallis, people suggested that the BLM needed to “Ensure that riparian buffers are adequate to protect water and fish” while recognizing that “Larger riparian buffers/areas are better for salmon” (BLM, Report on Community Listening Sessions 7). At the same time, the participants also argued that these zones should be managed, both actively and passively (BLM, Report on Community Listening Sessions 8). In this brief excerpt, riparian zones (as they are referred to by the speakers) are connected to fish, such as salmon, along with BLM technical experts. This suggests that the health of fish is connected to, if not dependent on, the quality of the riparian zone. The ending conclusions are that riparian zones should be expanded, and that they should protect both fish-bearing and non-fish-bearing waterways (BLM, Report on Community Listening Sessions 12).

Similar arguments were echoed and strengthened at other listening sessions: “No logging, no entry in riparian reserves, need to expand riparian buffers” (BLM, Report on Community Listening Sessions 18). At the same time, however, there were also calls for increased discretion when designing the zones, arguing that the “Lay of the ground should determine riparian zone size. Cannot have a single management approach across the board; cannot apply one size fits all” (BLM, Report on Community Listening Sessions 17). This recognition suggests that riparian zones are also affected by the physical environment in which they exist. This comment connects the riparian zone to the soil, the slope of the bank, the kinds of vegetation found within, as well as the fish and aquatic ecosystems.

The network of actors and actants grew even larger during the scoping sessions in Roseburg. There, the focus groups offered oppositional arguments to previous sessions. While Corvallis and Medford argued that the riparian zones should have minimal or no thinning, in Roseburg the BLM was told to “Allow active management in riparian areas and don’t call them reserves” (BLM, Report on Community Listening Sessions 36). While it is not elaborated in the notes from these sessions, the resistance to labeling these areas “reserves” supports the participant’s desire for thinning and harvesting, or “active management,” to occur. In addition, the participants called for the BLM to “Engage watershed councils on designing riparian management alternatives” (BLM, Report on Community Listening Sessions 36). Echoed later in the BLM’s official Report on Public Outreach Sessions (6), this comment further expanded the network associated with riparian reserves, adding local organizations, forest and resource managers, and

ecologists and scientists as actors capable of defining riparian reserves, and thus recruitable to a network.

Lastly, the working group at the Medford session said that the BLM should not wait on conclusive science, and instead said that, “Delay would be bad. Let’s not wait for more data to act / move forward” (BLM, Report on Community Listening Sessions 36). If riparian reserves/zones/buffers are a hybrid quasi-object constructed out of a material reality to meet the needs of social groups, then a call to diminish the role of science in their construction is an endorsement of political values at the expense of nature. This can either be seen as an act of purification, removing nature from a political construction, or a further hybridization of the term, further imparting it with political values. This draws a clear division between those for expanding reserves and those who want to limit their size and regulation. A trial of strength to recruit riparian reserves to a network is being created. While it is tempting to suggest that science will side with the former and impose an economic justification for the later, imposing such evaluations hide the movement of claims between forums and must be avoided.

Legal Requirements

In addition to accounting for community desires, ecological factors, and environmental protection, the BLM’s management plan has to also balance legal requirements. While the scoping session is required by the NEPA and its focus is to allow the public to define the scope of the EIS and revisions to the RMP, there are other non-human actants within the network that shape the defining of riparian reserves: the legal obligations of the BLM. One of the findings from the 2006 community engagement

review was that there was a “lack of a common understanding and/or agreement about the O&C lands [Oregon & California lands] purpose, conflicting mandates, and the current role of public lands in western Oregon” (McKinney and Morgan 5). In addition to the Endangered Species Act (16 U.S.C. § 153 et seq.), Clean Air Act (42 U.S.C. §7401 et seq.), Clean Water Act (33 U.S.C. 1251 et seq.), Federal Land Policy and Management Act (43 U.S.C. §§1701-1785), and other state and local environmental regulations, the BLM is bound by the Oregon and California Revested Lands Sustained Yield Management Act of 1937 (43 U.S.C. § 1181f), often referred to as the O&C Act, or simply the O&C lands. This is land that had been granted to railroads that ran through Northern California and Oregon, but the railroads had not followed the regulations under which the lands been granted. In response to fraudulent activity by the railroads and a loss of property tax revenues for the counties where the land was, the federal government took back the lands with “The Chamberlain-Ferris Act of 1916” (39 Stat. 218). Under the 1916 Act, all unsold O&C lands as of July 1, 1913—2,891,000 acres— were revested in the United States (Blumm and Wigington 19). In order to compensate counties where these lands were located, the government agreed to share the receipts from timber sales with local governments. However, “Because Congress agreed to share timber sale revenues from the BLM lands with localities at a higher rate than adjacent forestlands managed by the U.S. Forest Service (USFS), county governments quickly became dependent on timber-sale receipts” (Blumm and Wigington 21).

Within the O&C Act were provisions requiring sustained yield, and thus sustained income, for counties. The 1995 North West Forest Plan (NWFP) created targets for annual sustained yield in order to create a base line of income for counties. However, the

BLM's 2012 evaluation of the NWFP found that timber sales were substantially below targets set by the plan (BLM, Resource Management Plan Evaluation Report: Western Oregon Districts 6). A federal lawsuit led to a settlement in which:

The Secretary of the Interior, the Secretary of Agriculture, the AFRC [American Forest Resource Council], and the Association of O&C Counties agreed to a settlement ... which requires that the BLM re-focus their efforts to on-the-ground management by fulfilling the commitments made in response to the NWFP. The settlement also requires the BLM to consider in each proposed RMP revision at least one alternative which will not create any reserves on O&C lands except as required to avoid jeopardy under the ESA [Endangered Species Act] and that 'all plan revisions shall be consistent with the O&C Act as interpreted by the 9th Circuit Court of Appeals.' (McKinney and Morgan 9)

Since the original NWFP did not differentiate between riparian reserves and other forest reserves, the settlement over the O&C Act required the BLM to offer the possibility of eliminating riparian reserves completely.

So, in addition to the legal requirement to revise the 1995 North West Forest Plan, unmet annual timber sale goals were also acting as an exigence for this discourse. It is now impossible, legally, to discuss riparian reserves without also accounting for their effects on timber sales, receipts from timber sales, and county funding. While not all lands managed by the BLM in Oregon are considered O&C lands, a substantial enough percentage is to require that any regional plan take the legal obligations of those lands into consideration.

In addition to the O&C Act, counties also receive revenues from non-O&C lands managed by the USFS and BLM through the Secure Rural Schools and Community Self-Determination Act of 2000 (Pub. L. 106-393). Again, sales from forested lands must be

shared with the communities in the same vicinity to compensate for lost property tax revenues.

EIS and Alternative Plans

Within the EIS, the BLM created multiple alternative plans. Each plan has its own definition of what a riparian reserve is and how it should be managed. The rationale for such reserves is presented as BLM's recognition that "Managing watersheds is essential to meeting our purpose of contributing to the recovery of fish listed under the Endangered Species Act, as well as complying with the Clean Water Act" (BLM, Issue Paper: Riparian 1). A riparian reserve must, according to the BLM, provide appropriate shade for the stream, sustain and create stream appropriate aquatic habitat (this requires that there be large trees that will fall into the stream bed at some point in the future), and control the inflow sediment (BLM, Issue Paper: Riparian 1).

The BLM's objectives for a riparian reserve include the following: "Contribute to the conservation and recovery of listed fish species and their habitats," "Maintain and restore riparian areas, stream channels and wetlands by providing forest shade, sediment filtering, wood recruitment, stability of stream banks and channels," and "Maintain water quality and stream flows within the range of natural variability, to protect aquatic biodiversity, and provide quality water for contact recreation and drinking water sources" (BLM, Draft Resource Management Plan / Environmental Impact Statement: Western Oregon 36-37). These objectives not only connect riparian reserves to water quality, aquatic biodiversity, human activity, and fish populations, they also frame them not as an ecosystem or environment, but instead as a utility that serves a function. Riparian

reserves should: filter runoff, protect stream banks, produce habitat, and provide shade. The value of a riparian reserve becomes measurable: how much sediment is entering a stream, how much of the stream bank is being eroded, what percentage of a stream is a specific habitat, and how much shade is provided. The riparian reserve is an actor, albeit a hybrid one, within a management plan.

The EIS will then measure the effects that their management plan has on timber production and on aquatic ecosystems. As required, the BLM proposes multiple alternative definitions of riparian zones, which suggest multiple management plans, and then compares their effectiveness. The plans are as follows:

Alternative A:

- Riparian Reserves would encompass lands within one site-potential-tree-height on all streams and would include an inner ‘no-thin’ buffer of 120 feet on perennial and fish-bearing intermittent streams and 50 feet on non-fish-bearing intermittent streams
- Only non-commercial thinning would be allowed in the outer zone of the reserves. (BLM, Resource Management Plans for Western Oregon: Planning Criteria 20)

Alternative B:

- Perennial and fish-bearing intermittent streams: Riparian reserves would encompass lands within one site-potential tree and would have a 60-foot ‘no-thin’ buffer
- Debris-flow-prone, non-fish-bearing intermittent streams: Riparian reserves would encompass lands within 100 feet and would have a 50-foot ‘no-thin’ buffer
- Non-debris-flow-prone, non-fish-bearing intermittent streams: Riparian reserves would encompass lands within 50 feet, all of which would be a ‘no-thin’ buffer
- Thinning in outer zones could be either commercial or non-commercial. (BLM, Resource Management Plans for Western Oregon: Planning Criteria 21)

Alternative C:

- Perennial and fish-bearing intermittent streams: Riparian reserves would encompass lands within one site-potential tree and would have a 60-foot ‘no-thin’ buffer
- Debris-flow-prone, non-fish-bearing intermittent streams: Riparian reserves would encompass lands within 100 feet and would have a 50-foot ‘no-thin’ buffer
- Non-debris-flow-prone, non-fish-bearing intermittent streams: Riparian reserves would encompass lands within 50 feet, all of which would be a ‘no-thin’ buffer
- Thinning in outer zones could be either commercial or non-commercial. (BLM, Resource Management Plans for Western Oregon: Planning Criteria 21).

Alternative D:

- Riparian reserves would encompass lands within one site-potential-tree-height on all streams. The reserves would include an inner ‘no-thin’ buffer of 120 feet on all streams
- Thinning in outer zones could be either commercial or non-commercial. (BLM, Resource Management Plans for Western Oregon: Planning Criteria 22)

The BLM chose Alternative B, despite its “risk of adverse effects to listed fish and water quality” (BLM, Draft Resource Management Plan / Environmental Impact Statement: Western Oregon 76) because this definition would result in the second highest payment to counties (\$36.4 million) and the second highest jobs created (9,230) of all alternative plans (BLM, Draft Resource Management Plan / Environmental Impact Statement: Western Oregon 98).

After the publishing of the EIS, citizens, agencies, companies, and organizations were allowed to comment on the draft. The BLM compiled all of these comments and responded to them in the Director’s Protest Resolution Report. While all of these documents expand the discourse, they do not expand the networks. The same terms, the same actants and actors, are invoked again and again.

Trial of Strength?

The BLM is highly constrained by a growing legal framework on what it can and cannot do. While publics are asked to provide scope and input, their ability to alter the actions of BLM seem very limited. Neither the groups that called for expanding riparian zones nor those asking them to be disregarded were able to affect the final management plan. The legal actors, or laws, connected to these networks resist translations that could enable the recruitment of other actors to the network.

This turns a competition over the definition of riparian reserves, as the scoping sessions framed the exigence, into a trial of strength between various quasi-public groups and the BLM. The BLM attempts to engage with and recruit these groups to its network by translating submitted comments to fit into the BLM's network. As an example, various environmental interest organizations – Pacific Rivers, Coast Range Associates, Trout Unlimited, American Rivers – submitted a written report stating that “The BLM's response indicates that it does not consider the functions of riparian reserves in providing connectivity and corridors for fish and wildlife to be part of its legal mandate” (BLM, Director's Protest Resolution 81). The BLM responded by first summarizing the statement as “The BLM inadequately analyzed or did not analyze the effects of the alternatives on hydrologic resources,” before stating:

The BLM has appropriately analyzed the impacts of the alternatives in the Western Oregon PRMP/FEIS. Data and analyses in an EIS must be commensurate with the importance of the impact (40 CFR § 1502.15), and NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail. (BLM, Director's Protest Resolution 82)

Here the BLM translates the issue of “connectivity and corridors for fish and wildlife” into an issue of compliance with NEPA. This translation turns a trial of strength over the

right to define a riparian reserve into the rejection of a challenge to the BLM's network of actors and actants.

Riparian reserves, functioning as a hybrid quasi-object, are both a physical space and a politically contracted utility that produces timber and thus revenue for surrounding human communities. If the BLM allows others to define riparian reserves, or if an oppositional group is able to recruit the definition to their network, the BLM would be forced to change logging practices, alter its relationships with communities that are dependent on timber for their economy, and face legal challenges. It makes sense then that the BLM would resist their opponents by using legal and economic actors to defend their network.

Spheres

The previous section makes clear that the BLM has been given an impossible task.

They must

Provide a sustained yield of timber; Contribute to the conservation and recovery of threatened and endangered species, including—Maintaining a network of large blocks of forest to be managed for late-successional forests, and Maintaining older and more structurally-complex multi-layered conifer forests; Provide clean water in watersheds; Restore fire-adapted ecosystems; Provide recreation opportunities: Coordinate management of lands surrounding the Coquille Forest with the Coquille Tribe. (BLM, Southwestern Oregon Record of Decision 1)

These objectives are at odds with each other – providing clean water may mean limiting trail access for recreation, encouraging old-growth forests means taking land out of sustained timber production, and local management objectives may not be commensurate with regional objectives. While each individual objective may be informed by science

and technical experts, the determination of action to balance objectives against each other requires an evaluation of acceptable risk.

These objectives create a situation where forums are unstable, featuring sudden shifts between technical sphere and public sphere discourse as the exigence shifts between claiming the effects of management decisions to evaluating the cost-benefit analysis of management actions. Since most forums are incapable of adapting to this level of rhetorical fluidity, asymmetries are going to occur.

A useful way of framing the complexity of this case study is mapping sphere theory onto stasis theory. As previously stated in this dissertation, science traditionally works at lower levels of stasis – fact, definition, cause and effect – but is not expected to make statements at higher levels – value and action (Fahnestock and Secor 432). In contrast, public debate often focuses on evaluating and suggesting action. From Bitzer's model of the rhetorical situation, since an exigence requires an audience capable of resolving it, it follows that a public debate is over an exigence that a public can resolve. A technical debate, it would follow, is over an exigence that technical experts can resolve. Since technical debate is at the lower levels of stasis, it is expected that exigencies would stem from questions over conflicting facts, how something is defined, and what causes something to happen. At the same time, a public debate would be over placing value on something or calling for action.

The structure and timeline of drafting an EIS requires a public evaluation of the current situation (scoping), a scientific discussion defining key terms and analyzing cause and effect of management actions, and then a public evaluation of the proposed

management plan. As the process moves through these stages, there should be an observable shift from technical sphere discourse to public sphere discourse.

Evaluation of Action

The ANT analysis made clear that how riparian reserves are defined is controversial. In the scoping session conducted by the BLM, there were those who wanted to expand riparian reserves and there were those who wanted to do away with them. While some called for a ban on and logging activity within the stand, others thought the Endangered Species Act shouldn't apply to O&C Lands (presumably because the later law pre-dates the former) (BLM, Report on Community Listening Sessions).

While ostensibly this is a discussion over the definition of riparian reserves, it also appears to be a debate over value. Expanding riparian reserves decreases available timber for harvest and thus decreases payments to communities within and adjacent to the managed forests. At the same time, decreasing the size of riparian reserves could hurt aquatic ecosystems and contaminate watersheds with sediment or chemical runoff from human activity. Understanding that values and calls for action should connect to appeals for public good while supporting such assertions with technical claims, or expert *ethos*, becomes vital. The parameters of the forum are not clear, so using technical claims and *ethos* to support public appeals allows the discourse to be more malleable and responsive to a forum and its audience; a rhetor, with technical *ethos*, can make public appeals for action supported by technical claims and enable their rhetoric to quickly adapt when a new sphere is invoked.

In the public comments, there are examples where the rhetor processes the technical *ethos* and uses well supported technical claims, but fails to realize that they are speaking in forum where the public sphere has been invoked. One such situation comes from a group of researchers who submitted a paper outlining their problems with the proposed plan:

We conclude that attempts to reduce protections to watershed, riparian, and freshwater ecosystems by weakening major components of the ACS [Aquatic Conservation Strategy] and other related conservation elements of the Northwest Forest Plan are not justified by new and emerging science. (Frissell et al. “Implications of New Science for the Aquatic Conservation Strategy of the Northwest Forest Plan” in BLM, Public Comments 23)

Their paper relies on previous scientific findings to fault the plans for shrinking the size of riparian reserves, but they fail to recognize that they are not participating in a purely technical debate. The decision to go with Alternative B has to do with timber harvest yields and job creation in addition to environmental considerations. Since the authors do not engage *aretê* and *eunoia* in the establishment of their *ethos*, their claims will not circulate in public sphere discourses.

The ability to function within this strange forum can be tied to a speaker’s willingness to state their values clearly and then support them with appropriate claims. As an example, the state of Oregon argues that aquatic ecosystem health and water quality is more important:

The State suggests that Alternatives A and D provide the most certainty for reducing the risk of adverse effects to listed fish and water quality. Alternative A allows for more ecologically appropriate thinning on non-fish streams than Alternative D and thus could facilitate additional conservation opportunities. Alternative D provides more riparian protection in small non-fish streams than Alternative A. Alternative D has the additional assurance of maintaining

ecological processes such as sediment routing and habitat creation. (State of Oregon in BLM, Agency Comments 5)

In contrast, the counties containing O&C lands value an increased sustain yield:

Given this strategy is effective for meeting the stated objectives, the area treated within the reserve under Alternative C is very modest, there is no reason to expand the area in the riparian reserve and further preclude sustained yield. (Association of O&C Counties in BLM, Agency Comments 32)

The arguments presented by the state of Oregon rely on scientific understanding of ecosystem functions while those presented by the counties rely on appeals for public funding to meet their personal interests. This is not to diminish one argument in the face of another, it is more to realize the complexity of the forum. While the State invokes a technical sphere discourse over water quality designed to support calls for increased riparian reserve size, the counties invoke a public sphere debate challenging the acceptability of risk to aquatic ecosystems measured against the personal desire for increased public funding.

The previous speakers had an *ethos* appropriate to the claims they were supporting, or relied on previously made technical claims that could be readily circulated in a new forum. In contrast, other commenters attempted to make technical arguments to undermine the validity of the BLM's decision but lacked the *ethos* to make them. In one such situation, Jerry Malloy, who offered no credentials, argued that "I understand the study showed little difference in sediment added under the other alternatives but am of the opinion that the riparian zones support many non-aquatic species and retaining this buffer is valuable" (BLM, Public Comments). Since Malloy offers no proof to support his assertion and does not establish an appropriate *ethos*, his claims do not circulate in any

forum later in the texts. Similarly, David Rogers lacked *ethos* to support his claim that “Protecting and restoring *riparian areas and watersheds* should be a major emphasis of the plan revision” (BLM, Public Comments). While he is making a public appeal for action to protect rural environments, the support for such a claim would come from a scientific understanding of the effects of deemphasizing riparian areas. Since he neither offers credentials to grant him expertise or technical claims to support his assertion, the statement falls short of being effective.

In contrast, other comments relied directly on public appeals. A claim that occurred multiple times from multiple writers was: “Encouraging clear-cutting and harvest within Riparian zones on public lands is a huge step backward for the economy of our state and the health of our environment both locally and globally” (Terri Davis, Sunrise Ocean in BLM, Public Comments). A clear cause and effect statement connects proposed actions to the community’s economic concerns and environment. Contrastingly, Helen Scott used the same structure to argue the opposite:

The financial burden of adding restrictions to the counties and the other riparian owners and the taxpayers, for managing the control, is substantial. Placing this burden on the citizens and governments in Josephine County, where, according to the U.S. Census and the Department of Health and Human Services one-third of its citizens fall below the value for poverty guidelines, is a bad idea. (BLM, Public Comments).

Scott, supporting her claim with appeals for equity and fairness, draws the clear connection between the proposed plan and its effects on her community.

All of these comments illustrate a central problem with the EIS review process: the forum for comment is ill-defined. It is not clear what the constraints are, who the audience is, or even what the exigence is (Walsh 147). In fact, each of these comments

creates its own exigence – pointing out a problem with the proposed plan – but it is not clear if there is a forum that can entertain debate.

Framing the Discourse: Creating Forums

While the public was encouraged to define the scope of the EIS and review process, and then asked to comment on proposed solutions, these invitations were all framed by the BLM and the legal processes dictated by NEPA. Each comment, regardless of who was making it, was made in a forum created and monitored by the BLM. If a rhetorical situation is one where rhetoric is used to motivate an audience to action, it is not clear that debates over the EIS were, in fact, rhetorical.

While the public is encouraged to comment on the draft, it is the BLM that decides on the forum, the constraints on rhetoric, and the kinds of claims and *ethos* that are appropriate. In their explanation of how to submit comments on the EIS draft, the BLM tells people to:

- Present new information relevant to the analysis;
- Present reasonable alternatives other than those analyzed in the Draft RMP/EIS;
- Make suggestions, with a reasoned basis, for the development of a proposed RMP;
- Question, with a reasoned basis, the adequacy of, methodology for, or assumptions used for the analysis; or
- Question, with a reasoned basis, the accuracy of information in the Draft RMP/EIS

Comments that are simply votes in support of or opposition to a particular alternative, or position statements in support of or opposition to particular BLM policies or proposals, without providing reasons, are less useful in the planning process. (BLM, How to Submit Comments 1)

These parameters command reasoned or technical sphere discourse, requiring comments to redefine methodologies, suggest new cause and effect relationships, or offer new data and facts that should be accounted for. What is lost is that these comments are a challenge to a management plan that is working on a call for action, suggesting how the forest should be managed. So, while the EIS document uses technical arguments to support its evaluation of possible management strategies in order to create a call for action, the public is limited to producing “reasoned” and technical challenges. The public debate over the merits of timber harvests against aquatic ecosystem health are seemingly not allowed.

Such evaluative arguments do not even need to be engaged by the BLM, according to their policies: “The BLM will respond to each substantive comment received during the public review and comment period by making appropriate revisions to the document or explaining why the comment did not warrant a change” (Perez 23049). The parameters of what is and is not substantive can be determined by the legal framework within which the BLM is functioning. The legal framework then works as a constraint on the kinds of discourse that are appropriate.

Goodnight’s sphere theory relies on the recognition that certain forums invoke specific kinds of routine discourse (“Public Discourse” 428). In a recognizable forum, then, there is a recognized *ethos* for admission and claims must be appropriately supported. It is expected in this theory that the *ethos* of the speaker will re-enforce the kinds of claims made to meet the expectations of the audience within a given forum. While in the past chapters, asymmetries were brought about when an *ethos* did not support the kinds of claims made, or the claims being used did not match the expectations

of an audience within a forum, this case shows that the forum and its expectations have become plastic to meet the needs of the audience, or the BLM. As Carolyn Miller found in her early work on EIS as a genre, “the imperfect fusion of scientific, legal, and administrative elements prevented interpretation of the documents as meaningful rhetorical action” (“Genre as Social Action” 164). Beyond this, I argue that it is not that the *ethos* or kinds of claims disagree with the routine form of discourse expected by the forum, it is that the forum can change its expectations to undermine the *ethos* of the rhetor and/or appropriateness of claims.

This is clearly illustrated in the Director’s responses to comments on the proposed plan’s riparian reserves. In the section dealing with riparian reserves, excerpts from formally filed comments are quoted under topical subheadings, like “hydrology” or “fish,” and then the BLM summarizes the complaints of that section before responding. These summaries do not only situate the comments within the scope of the EIS, they also reframe the comments around a BLM imposed exigence. As an example, when a protest lodged by Pacific Rivers and other organizations argues that “The BLM’s response indicates that it does not consider the functions of riparian reserves in providing connectivity and corridors for fish and wildlife to be part of its legal mandate” (as qtd in BLM, Director’s Protest Resolution 81), the BLM reframes the exigence being presented as “The BLM inadequately analyzed or did not analyze the effects of the alternatives on hydrologic resources, particularly from roads, water quality, riparian reserve, and climate change in the Western Oregon PRMP/FEIS” (BLM, Director’s Protest Resolution 82). While Pacific Rivers’ initial statement appears to be both a technical challenge, demanding that the ecological function of riparian zones should be expanded to

accommodate other concerns, it can also be viewed as a value statement, prioritizing wildlife corridors over increased timber harvesting. When the BLM reframes the exigence as a perceived inadequacy of their research, the discourse centers around the question of what is required and what is not. This is a legal question and the BLM's response reflects this in a continuation of its "amassing needless detail" statement quoted above:

The BLM is required to take a "hard look" at the potential environmental impacts of adopting the PRMP/FEIS (*Kleppe v. Sierra Club*, 427 U.S. 390, 410 (1976), n. 21; *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989)). A "hard look" means to make a comprehensive consideration of a proposed action, to evaluate different courses of action. *Id.* The BLM takes a "hard look" when the NEPA document contains a "reasonably thorough" discussion of an action's environmental consequences, and the agency can make an informed decision about whether there are any significant environmental impacts (*Nat'l Parks and Conservation Ass'n. v. BLM*, 606 F.3d 1058, 1072) (9th Cir. 2010) (citing *State of California v. Block*, 690 F.3d 753, 761 (9th Cir. 1982)). The BLM must analyze the effects of each alternative considered in detail, sufficient for the decision maker and the public to evaluate their comparative merits (40 CFR § 1502.14(b)). The BLM need not speculate about all conceivable impacts, and it need not evaluate impacts where there is no close causal relationship between the action and the change in the physical environment (*Metro. Edison Co. v. People Against Nuclear Energy*, 460 U.S. 766 774-75 (1983)). (BLM, Director's Protest Resolution 82-83)

Instead of a discussion on expanding the definition of a riparian reserve, or recognizing that the value of timber production may not outweigh the agency's ability to create connected corridors, the BLM cites case law and regulations. While the call for comments asks for challenges to methodologies, definitions, and data sets, and the comments offered by Pacific Rivers appears to do that, the BLM's response is legal. The forum is not as it was presented. The BLM can change the expectations of the forum to

meet the needs of the agency. In this case, the need is to invalidate calls for expanding riparian reserves.

What is most ironic is the line in the middle of the above quote: “sufficient for the decision maker and the public to evaluate their comparative merits.” As stated earlier, to evaluate the management decisions of the BLM is to debate the relevant merits of each plan as they relate to the public. It is weighing variables against each other, determining what is and is not acceptable risk, and what considerations are and are not relevant. The public comment section would appear to be the appropriate place for such a discussion. Instead, the BLM only engages with claims that rely on technical claims and respond to comments with legal definitions.

At the heart of the discourse examined in this chapter is the riparian reserve. Like “forest health,” it lacks a clear definition. It is a physical space along rivers, a utility to serve ecosystem functions, and a legal entity that must be protected. While previous chapters showed how a rhetor can change the warrants being used to support claims in order to invoke a different sphere, this case study shows how the audience and forum can change the expected sphere to nullify a rhetor’s claims.

Conclusion

The constricting structure of EISs is nothing new. As forest policy scholar Stern and his colleagues found, those drafting EISs often view them as tools to communicate decisions to the public, not forums for public debate (1372). Killingsworth and Steffens examined the “effectiveness” of EISs and found that “[the EIS] is not intended to inform action but to forestall action – legal action against the agency in question” (174). This

explains the reframing of public comments by the Director, but further raises the questions about where the public sphere is supposed to occur on environmental decisions.

Public engagement in the planning process is limited to agency sanctioned forums, and public comments can be disregarded if deemed to be un-substantive. While the nature of the NEPA was to ensure the health and safety of our environment going forward and to make the decision-making process more transparent, this analysis suggest it has also created a system of decision making and a structure of public engagement that undermines public debate. When Goodnight proposed his theory, it was to identify what kinds of discourse are appropriate in given situations, and his division was quickly critiqued. Carolyn Miller worried that the encroachment of the technical sphere into public debate was not as problematic as the backstage:

“This backstage ... lies neither in the expert nor in the public realm, but it is an important ‘contact zone’ between them... Rarely visible to outsiders, it is where lobbyists meet with Congressional staffers, where regulators determine the membership of review committees, where executive summaries are hammered out, where the Presidential Science Advisor receives advice from politically influential scientists and others. It is where power is exerted” (“Risk, Controversy, and Rhetoric” 37).

While Miller fears that this is a sign of deterioration of the public sphere and enables elites to gain control without notice, this is not necessarily the case with the EIS presented here. There is no evidence in these documents to suggest that the BLM is constructing their arguments to meet the needs of invisible private interests. However, the legal framework designed to make the decision making on environmental issues more transparent seems to be having the opposite effect. It hides the evaluation of variables against each other, or the cost-benefit analysis of trade-offs, and does not offer a space

for the public to challenge them. This is made possible, in part, because key terminology can be used to invoke different spheres, either by the rhetor or the audience. If we are worried about “backstage” dealings, it appears that they occur not during the construction of a management plan but instead in the writing of prescriptive environmental laws.

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Chapter 6: Conclusion

Using Actor-Network-Theory to create and examine a corpus proved to be an effective methodology. Compared with Goodnight sphere theory methodology, which critiques discourse at a given static moment, ANT offers a more dynamic alternative methodology that requires the researcher to move beyond *a priori* assumptions and trace material connections. This tracing not only gives the researcher insight to the historical context of the discourse, but it also, as Jenny Rice observed, self-reflexive: “the telos of network tracing and rhetorical inquiry is located within the process itself” (173). Instead of approaching a discourse as an artifact to be critiqued using a specific rhetorical lens, tracing networks requires that the discourse itself identifies what is valuable and what is not.

What ANT lacks, however, is a terminology that accounts for translation and recruitment. This is where rhetoric and rhetorical criticism can work with ANT to strengthen the usefulness of the methodology. By examining moments of recruitment or discursive moments of translation using rhetorical lenses, the effective strategies of translation and recruitment become visible. While Latour tells researchers to resist the temptation to pull away from the artifact of study and impose a social justification for action, he also says that the collective assemblage of networks will show how the social and natural are intertwined (Reassembling the Social 247). What is exposed through ANT is the intermingling of the social and natural world, but it is the work of rhetoric to explaining how and why these interminglings occur, are durable, and are effective.

In the first case study, the movement of forest health was mapped in order to follow how a piece of rhetoric moves to new and different rhetorical situations. In order to increase the strength of their networks, spokesmen for opposing groups translated “forest health,” or redefined the term, in order to recruit more allies and strengthen their networks. While ANT is not necessarily concerned with why and how these translations occur, rhetorical critics are. The critic can use ANT to identify moments of translation, then examine the rhetoric of the situation to understand the mechanics of such movement. Furthermore, these moments of translation may also show the construction and re-making of *ethos*.

Viewing the Donato Paper case study as a trial of strength between two competing networks expanded the corpus well beyond the *kairos*. Viewing an academic paper, or scientific text, as the product of a network of actors means that the network of actors, actants, institutions, and agencies allied with the paper should be examined. In this case study, it uncovered the motives of actors that would normally be outside of the scope of rhetorical criticism. While critics avoid assigning motive to actors, mapping the network of the actors at their suggestion may expose forces outside of the rhetorical situation.

The last case study had a defined corpus of over 10,000 pages of collected texts. By mapping the appearance of “riparian reserves,” a hybrid object and actant, in the corpus, networks began to emerge. This was much more efficient than reading through all the text, but was not merely an exercise in identifying instances where “riparian” occurred – each instance had to be connected to the network at-large. Mapping these connections showed how hybrid objects are translated to recruit allies or resist translation

as a trial of strength between two networks. Furthermore, examinations of sites of translation or resistance exposed the political work that could be done with technical terminology: riparian reserves functioned to both protect aquatic ecosystems and facilitate intensive timber harvesting on non-riparian lands.

In each of these situations, the discourse of the initial *kairos* was given greater complexity and depth when viewed as a trial of strength between competing networks. Each network, when traced, was an amalgamation of actors and actants recruited through acts of translation. The rhetorical critic can discover the structures and ideologies at work underneath the discourse by examining these acts of translation.

While an ANT account alone can show these connections and explain recruitment as an alliance of mutual interests, it is rhetorical criticism that exposes the politics of translation.

Organizing Metaphors

In addition to showing how ANT can identify sites for rhetorical criticism and deepen our understanding of given rhetorical situations, I have shown how critiquing organizing metaphors in environmental discourse can be necessary for unpacking complex ecological arguments, and how the use of such metaphors can hinder deliberation.

The analysis of technical languages role in public policy debate is nothing new.

Philip Wander, in his essay “The Rhetoric of Science,” recognized that:

Reliance on technical language in public debate is rhetorically significant, for in a democracy, whatever its practical imperfections, the people have a right, on the important public issues, to know the relevant social and economic facts

as well as the policy conclusions to be drawn from them. (227)

Examining technical terminology in public discourse is the work of rhetorical criticism in order to facilitate better public deliberation. As others have shown before, such as Leah Ceccarelli in her work on the frontier metaphor of science, metaphors can structure policy in unseen ways. In this situation, I suggest that organizing metaphors, like “forest health,” not only structure policy but also discourse. An organizing metaphor is problematic because it creates its own lexicon that frames the discourse. Also, as in the case of forest health, a loosely defined organizing metaphor that operates as a technical term makes constructive deliberation difficult: it is too easy for one party to change the definition of the terminology in order to avoid possible resolution. Identifying organizing metaphors and their associated lexicon needs to be a priority for environmental communication and rhetoric of science scholars if public deliberation informed by such technical claims is to be productive.

Asymmetry

In addition to organizing metaphors, I propose examining asymmetries between the *ethos* invoked by the speaker, the kinds of claims being made, and the expected *ethos* of a forum can be productive. Understanding how these asymmetries occur and are resolved allows the rhetorical critique to understand how technical claims and *ethos* can be used to exclude public participation from a given discourse.

While originally this dissertation focused on the spheres as a model for understanding the conflicts between technical and public discourse, my analysis of *ethos* and how it is constructed and moves between rhetorical situations and forums have led

me to understand that the role of the expert is at the heart of this dissertation. Identifying what an expert is, why they are an expert, and what their role is in public deliberation is apparent when moments of asymmetry occur: for Bush, it is an undermining of the expert; for Donato, it is an appeal using expertise that realizes the expert is both technical and political; and for riparian reserves, the expert has been removed from deliberation by backstage decisions, which has been explained by Carolyn Miller as an undemocratic space (37). These moments of asymmetry are challenges to expertise and understanding them allows us to see that the expert is not, as Goodnight suggests, technical and not public, but instead is, as Latour argues, both political and technical.

Movement of *Ethos* and Claims

Moments of translation in ANT often are indicators of claims and *ethos* moving from one situation to another. While the ANT account identified locations where Bush's "forest health" rhetoric occurred, it was rhetorical criticism that accounted for why such movement was possible: and ill-defined scientific metaphor can be redefined to meet the needs of the rhetor and/or audience.

In the case of Donato's paper, his findings were widely circulated by the media and were used by public officials to combat policy change. Donato's claims were able to take technical *ethos* with them, offering those who used the terms a form of quasi, or proxy, expertise: the only way to combat Donato's claims was either with counter arguments supported by technical warrants or the ability to inhabit a technical *ethos* as well. In the end, the ability of Donato's claims and their technical *ethos* to circulate so readily led to the defeat of HR 4200. Without an understanding of the broader network of

actors and actants that produced Donato's claims, it may appear that circulation was driven by factors outside of the rhetoric itself. Instead, we are able to see that by addressing a quasi-technical audience, supporting his work with technical warrants, and presenting himself and his colleagues as objective and non-political, his claims are quickly appropriated by the public. If Donato had made his arguments in a more technical forum, such as The Journal of Forestry, or had come out as political, their claims either would not have come in contact with public forums or Donato would not have been granted a technical *ethos*, making his claims non-technical. While ANT can identify the locations of forums, rhetorical theory explains why claims can or cannot circulate.

Lastly, while ANT can map connections between actors and actants, it does not necessarily account for asymmetries between claims, forums, and *ethos*. Mapping of the networks can show that a public comment is deemed irrelevant by the BLM, but it can only explain it as a trial of strength – the BLM's network is stronger than the public commenters. Sphere theory shows that the resistance of the BLM is the product of an asymmetry that must be resolved. This is not due to translation, but instead it is the result of a forum not supporting the *ethos* of the commentator or the warrants of their claims. Finding situations where the BLM does accept an outside claim as appropriate is productive because the critic can see a commentator inhabit an appropriate *ethos* and use claims to invoke a sphere that will be supported by the forum. Rhetorical criticism can identify the rhetorical qualities that enable rhetors and claims to participate in the discourse. In the case of the State of Oregon, they used technical claims and warrants to support their appeal for environmental quality for the public. In the case of the O&C counties, they used their legal standing to create an *ethos* that invoked a legal/technical

sphere discourse that excluded public participation. The volatility of the forums in the EIS drafting process requires that a rhetor be able to inhabit multiple forms of *ethos* in order to keep their claims significant to the discourse.

Forestry Discourse

While my last case study confirms the work of earlier scholars – that Environmental Impact Statements function to exclude public input while claiming to encourage participation – it also shows some avenues for improving forest management discourse. If we accept that conflicts over forest management policy center around the recruitment of hybrid quasi-objects, then the debate over management practices requires that all sides unpack their terminology. If the organizing metaphor “forest health” is said to be a policy priority, then all parties participating in the decision-making process need to clearly explain their definition of forest health. Defining and re-defining what a riparian reserve is and can be requires that parties state their values, both with technical and non-technical claims.

If this language is not unpacked, then the discourse can never move forward because the two sides become incommensurate: one side in a debate of riparian reserves may value the forest and are using the reserves to limit logging overall, another might be interested in only the salmon habitat for the purposes of fishing, and another may be interested in timber sales. Discussing riparian reserves as utilities to manage risk appropriately ignores the conflicting values of the other parties. Only by unpacking the metaphors can the discourse become constructive again.

At stake in both of these above situations is the role of forester as expert. As the forums in which they participate become more and more constrained by legal claims and frameworks, and as the quantification of variables becomes the measure of forest health and productivity, the role of the forester is diminished. The forester, tasked with managing the land for the greatest good, becomes a data collector forced to manage the land within legally mandated allowable limits. The embodied knowledge of a person who works, lives, and interacts with a forest on a daily basis, along with the communities that live in and around that forest, are no longer valued. Just as the EIS has become a tool for communication instead of collaboration, so will the forester.

To fight the fast shift away from expertise towards data, foresters need to unpack their own rhetoric. By challenging the assumptions of the rhetoric forest health that justifies the quantification of ecosystems, the forester will place themselves back in the position as expert mediator of multiple interests, values, and principles. A forester's job is technical, but it is also political and social. In order to do the most good for the most people, they must become experts in subjectively defining and redefining goodness and not data collection and analysis.

Moving Forward

This dissertation used a structured form of sphere theory with set divisions between the spheres. Expanding the conception of the public sphere would produce new and interesting findings in each of these case studies. In the Biscuit fire case, examining how public discourse changes the subjectivity of its audience would enable a critique of the

relationship between environmental management discourse and the political economy. Further examinations of the Donato case can illustrate the politics of science.

Lastly, this dissertation does not fully explore the conflict between the public, technical, and legal spheres and the question of expertise in environmental management. As ecosystems continue to become increasingly quantifiable, and decisions are more and more based on quantitative data, what is the role of the expert? Pinchot envisioned foresters as living in communities embedded in the forests they managed. These foresters would be experts, not only in their technical understanding of environmental systems, but also through their lived experience in and connection to the land and communities they served. The more and more the forest is quantified, the less role there is for actual expertise in the decision-making process. The expert is now the person who makes sure they meet the legally mandated metrics of forest health, timber production, and community engagement. While further analysis is needed, it appears that legal discourse may be displacing the role experts in the environmental decision-making process.

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