

Evaluating Experts: Understanding Citizen Assessments of Technical Discourse

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ABSTRACT: Rhetorical analysis of Oregon’s 2010 Citizens’ Initiative Review (CIR) transcripts provides insight into understanding how citizens evaluate the rhetoric of experts as well as how they process technical discourses. The CIR demonstrates the potential of a Deweyian model of expertise—where *experts inform* and *citizens deliberate*—for improving expert-citizen interactions.

KEYWORDS: citizen engagement, deliberation, John Dewey, *ethos*, expert-citizen interaction, expertise, public understanding of science.

1. INTRODUCTION

In many ways, Philip Wander’s (1976) prediction about technical discourse coming to dominate public discussion of policy decisions has come to fruition. Increasingly we rely on “expert opinion” to guide and direct us in what to do and what to think about particular issues (Fischer, 2009). Political actors stall policy decisions by demanding more information from experts and stalemates between differing technical perspectives bog down debate. Alongside this increasing reliance on technical information, growing specialization within academic disciplines has led to an explosion in areas of expertise that might be called on for making these decisions.

Scholars studying issues of expertise often discuss the increasing gap between experts and laypeople and worry that expert discourses are drowning out the voices of citizens (e.g. Goodnight, 1982; Jasanoff, 1989; Wander, 1976). In response to these concerns, some scholars have called for closing that gap and creating space for citizen input (Wynne, 1989). In heeding such calls, various approaches for bringing citizens and experts together in discussion over particular issues or policies have been explored (e.g. Davies and Burgess, 2004; Mitchell and Paroske, 2000). The Oregon Citizens’ Initiative Review (CIR) represents one such approach, given its aim to provide citizens with better access to experts with specialized information on state ballot initiatives. Much can be learned from studying these types of events, as examining the interactions between experts and citizens can provide useful information for understanding how publics process and utilize scientific and technical discourses.

The CIR represents a unique opportunity to examine the rhetoric of expertise. This study examines how citizens respond to enactments of expertise as well as how they interpret and evaluate technical information, through rhetorical analysis of CIR transcripts. Analysis reveals a potential disconnect between what experts emphasize and what citizens attend to. Despite an emphasis on *ethos* by experts, citizens focused on assessing support for claims, rather than evaluating experts’ character. Encouragingly, within the CIR structure, citizens

demonstrated their aptitude for critically examining technical information, rather than simply accepting the information provided unquestioningly. Citizens found their voice alongside experts and demonstrated that although they did not possess technical knowledge, they still had significant contributions to make to the deliberative process. Ultimately, I argue, the Oregon CIR provides an example of a Deweyian model for using experts in public policy decisions where *experts inform* and *citizens deliberate*. Thus, the CIR offers a model for closing the gap between experts and citizens in civic life if its structure and process can be translated into other realms of public policy debate.

I begin with a broad sketch of the rhetorical dimension of expertise. I then provide a history of the CIR, followed by a broad overview of the enactments of expertise that emerged over the course of program. I then analyze the citizens' assessments of expertise, highlighting some general findings from the CIR transcripts. I end with a brief discussion on how the CIR incorporates a Deweyian model of expertise as well as the implications of this study's findings for future efforts to bridge the gap between experts and citizens.

2. EXPERTISE: AN OVERVIEW

As Fischer (2009) notes, "It is increasingly recognized that as societies become more complex so does the importance of expert advice in matters related to governance" (p. 17). With this growing dependence on experts, academic attention has turned increasingly to issues of expertise. According to Lyne and Howe (1990) "an expert is defined by reference to the norms and content of a field" (p. 134). However, expertise is not just a matter of possessing knowledge of a particular field, but also of sharing that knowledge. As Lyne (1990) observes, "Expertise is not only a matter of the relationship of a specialist to a body of knowledge; it is also a matter of the relationship to the audience" (p. 52). Thus, any person with specialized knowledge can be considered an expert, defined as such by the relation between that individual and the larger community.

Experts rely on communication to relay their specialized information to nonspecialists (Carr, 2010; Collins & Evans, 2007; Lyne & Howe, 1990). In the public discourse arena, where healthy competition among experts exists, rhetoric serves as an important tool for persuading listeners to pay attention. Thus, much can be gained by carefully examining the discourses of experts in order to understand which inventional resources they utilize when speaking to nonexperts. Several scholars within rhetoric of science have developed excellent studies on the rhetorical aspects of expertise (Goodnight, 1982; Lessl, 1989; Lyne & Howe, 1990; Miller, 2003; Wander, 1976).

However, much can also be gained from understanding the other side of expert-citizen interactions. Analyzing how laypeople interpret different enactments of expertise can provide insight into perceptions of experts in the public domain, but can also be challenging. While scholars can often easily obtain accounts of expert rhetoric, accounts of audience response are more limited, making it challenging to determine layperson assessments of the communicative practices of experts. Through analysis of the CIR transcripts, which contain citizen discussions about experts, this study aims to provide a more robust understanding of the rhetorical relationship between experts and citizens, and in particular, of citizen assessment of experts and their discourses.

3. OREGON'S CITIZENS' INITIATIVE REVIEW

In 2010, Oregon introduced a pilot program of the CIR. Ultimately the program aimed to provide informed, unbiased evaluations of select ballot measures to guide voters come Election Day (Gastil & Knobloch, 2010, p. 3). In the summer of 2010, the CIR pilot gathered two small groups of Oregon citizens to participate in one of two weeklong panels.¹ During the week, citizens learned about and deliberated on an assigned ballot measure. For the pilot program, two ballot initiatives were reviewed: Measure 73, which called for implementing mandatory minimum sentencing for repeat DUI and sexual offense offenders; and Measure 74, which proposed implementing a dispensary system for the distribution of medical marijuana (Oregon CIR Archive, 2010). Citizens heard presentations from both pro and con initiative advocates and selected background witnesses to testify and fill in information gaps.² At the end of each week, citizens engaged in deliberation to sort through all the provided evidence, evaluate the measure, and write a general statement of findings for inclusion in the voter's pamphlet.³

The significance of the CIR cannot be overestimated; it represents the first such attempt to change how citizens participate in the initiative process. Although it builds off deliberative democracy theory more generally, and citizen deliberation experiments like citizen juries more specifically, the CIR program remains unique in its commitment to encouraging deliberation amongst a small group of citizens for the benefit of the larger population (Gastil & Knobloch, 2010). Given the success of the 2010 pilot program, the Oregon legislature approved making the CIR a permanent part of the state's initiative process.

The detailed CIR transcripts provide a unique text for studying and understanding the rhetoric of expertise. Small group discussions following expert presentations allowed citizens time to discuss what information they found most useful, but also provided a discursive space for commenting on and evaluating individual speakers as well. Citizen comments reveal how they assess various enactments of expertise while also demonstrating how they receive and interpret complex technical information. Thus, a rhetorical perspective on the exchanges at the CIR provides a better understanding of how audiences of nonspecialists interpret and evaluate the rhetoric of expertise.⁴ Additionally, CIR's success in bringing citizens and experts together into conversation carries implications for improving expert-citizen interactions in public policy debates.

4. ENACTMENTS OF EXPERTISE

Carr (2010) argues for attending to enactments of expertise rather than acquisition of expertise (i.e. how expertise is used rather than how expertise is gained), believing that a focus on

¹ The first panel met August 9-13 to discuss Measure 73. The second panel met Aug 16-20 to discuss Measure 74. For more background information on the CIR, please see Gastil and Knobloch (2010) or <http://www.healthydemocracyoregon.org/citizens-initiative-review>.

² Citizens selected witnesses from a provided list, which was compiled with the advocates' help.

³ Please see the Oregon CIR archive website (<http://cirarchive.org>, 2010) for access to recordings and other background information. All direct quotes in this paper come from transcripts created from audio recordings of the CIR by John Gastil and Katie Knobloch.

⁴ I treat both initiative advocates and background witnesses as experts, in part because they all speak about areas of specialized knowledge and in part because citizens did not typically distinguish between them.

communicative interaction will provide new understandings of the role of experts in society.⁵ CIR experts relied most heavily on enactments of expertise that emphasized *ethos*. Typically defined as an audience's perception of a speaker's character, a speaker's *ethos* can significantly influence how an audience receives the delivered message. *Ethos* can play a particularly important role in enactments of expertise. As Miller (2003) argues, "The reliance on expertise is an argument from authority, and thus, in rhetorical terms, a signal that *ethos* is an important mode of appeal" (p. 169). The CIR experts seemed to share this understanding and put significant effort into developing their *ethos*.

Aristotle further classified *ethos* into three components: *phronesis* (practical knowledge), *arête* (virtue), and *eunoia* (good will). Within the discourse of CIR, experts employed appeals relating to each component of *ethos*. Presenters established *phronesis* through introductory comments that highlighted credibility by emphasizing professional experience. This included experts not just identifying their professions but also underscoring the length of time spent in that profession. Throughout their presentations, experts relied on anecdotes that spoke to *arête*. Such stories portrayed the speaker as having good intentions and being trustworthy, i.e. by depicting the speaker as a dedicated member of law enforcement or as the victim of a crime trying to keep others from suffering the same experience. Finally, experts' comments on the CIR process overall, and specifically the citizens' efforts, reflected on *eunoia*; positive comments helped convey a sense of good will toward the citizens, while negative comments undermined it.

5. ASSESSMENTS OF EXPERTISE

While experts devoted significant time to building *ethos*, citizens paid little attention to such appeals. When citizens did mention the experts, they typically did not refer to them by name, but rather relied on pronouns or occupational references. However, an expert's character did become a topic of discussion for citizens when they perceived a speaker to be violating some aspect of *ethos*, especially *arête* and *eunoia*. Additionally, most anecdotes delivered by experts did not receive explicit attention during small group discussions; instead citizens focused most explicitly on evaluating the relevance, credibility, and objectivity of provided information. In the next sections, I look at these assessments of expertise more closely.

5.1 Reducing Ethos to Occupation

Regardless of the sometimes elaborate introductions and anecdotes experts used to establish themselves and their credibility, the citizens did not pay much explicit attention to these appeals. However, citizens did focus on *ethos* when they felt an expert to be disingenuous in some regard. Speakers perceived as lacking *arête* received particular attention. For example, one citizen declared, "Sometimes they're feeding us lines of bull." These citizens expressed a clear sense of what they expected of experts and did not take it lightly when speakers failed to meet those expectations, as demonstrated by the following exchange:

⁵ Space does not permit for a detailed accounting of enactments of expertise. Since the main focus of this paper is on understanding citizen assessments of expertise, this discussion will necessarily be limited and fairly broad.

Panelist 1: You also have to remember that when Dr. Barthwell was speaking yesterday—remember, she represents a pharmaceutical company. That—I took 25 steps back. Come on. Come on.

Panelist 2: One of the first things she does is give us this big pamphlet full of the pharmaceutical drugs that she’s been working on, half of which were based on marijuana.

Panelist 1: That’s just where I’m coming from. What I heard today [from other background witnesses] was far more concrete. I heard evidence and I heard a solid case for those in need.

Given her professional association, these citizens considered this expert to have a conflict of interest in speaking in opposition to Measure 74, which dealt with establishing medical marijuana dispensaries. This conflict of interest reflected poorly on this expert’s *ethos* and negatively impacted the citizens’ evaluation of the information she provided.⁶ Citizens also commented on experts who, from their perspective, lacked *eunoia*. After a somewhat disorganized opening presentation from the con advocates of Measure 74, a citizen expressed disappointment:

Panelist: My issue is the way the DA presented himself in the beginning. ‘I was kind of called in here because so and so’s my friend and I’m not really prepared.’ Then what are you doing here? That kind of sets the tone so then to me I was questioning in my mind everything that was shared.

Citizens treated their role in the CIR process quite seriously and didn’t approve of experts who didn’t show enough goodwill toward them or respect for the task at hand. The con advocates on Measure 74 managed to redeem themselves later in the week and re-establish *eunoia*, as evidenced by another citizen’s comment: “I found that they actually put in a lot more into it today.” Thus, while citizens may not have explicitly discussed an experts’ positive *ethos*, they did note those experts whose *ethos* were perceived less positively.

Beyond discussions of negative *ethos*, citizens frequently reduced experts’ *ethos* to their profession and forgot the rest. In referencing the various speakers, citizens often used vague pronouns rather than specific names. Citizens struggled to link information with the speaker who provided it and comments such as “individuals that are in law enforcement” or “that lady from yesterday” occurred frequently. Often citizens simply referenced speakers by their occupation. For example, one citizen stated, “I don’t think the opponent—the police officer—put out a very good—they don’t push out a very good case for it.” Another citizen referenced a speaker by saying, “the doctor there.” These vague references may be a result of the number of presenters heard over a short span of time. However, this focus on occupation may also result from the emphasis speakers placed on their job experience during introductions. Interestingly, citizens remembered a select few experts explicitly and almost always referenced them by name. For example, citizen participants on Measure 73 identified Craig Prins when he was the source of information being referenced. Citizens may have remembered Prins because they had more interaction with him; he spoke longer than anyone else and even came back a second day for follow up. But advocates also talked up Prins before he spoke to the citizens, and perhaps these recommendations helped frame Prins in a way that made them particularly attentive to him, increasing the likelihood of them remembering his name.

Additionally, citizens often grouped together those presenters with similar occupations. One individual commented, “I thought even the Law Enforcement people were

⁶ Another group had a similar exchange over the seriousness of this conflict of interest.

saying that there's really no increase in crime." Another citizen corrected this statement and pointed out that only some, not all, of the law enforcement people had made such a statement, but even then, citizens failed to realize that one of the "law enforcement" individuals appearing at the CIR had spoken as a private citizen, not a police officer.⁷ Citizens didn't even use length of service or amount of work experience to distinguish between individuals in the same profession, despite speakers emphasizing such details in introductory comments. Likewise, citizens also did not distinguish between specialities within professions, but rather categorized experts broadly, i.e. as "law enforcement" or "lawyers." This tendency to reduce speakers to a profession may carry implications for public discourses that incorporate expert voices. Lyne and Howe (1990) note how standards of accountability and validity become blurred as technical discourses cross over disciplinary boundaries or from the technical into the public sphere. Within public discourse, especially in media, experts may be asked to speak beyond the scope of their specific area of study. If citizens are likely to think of experts broadly, for example as "scientists," rather than recognize their distinct areas of expertise, they may be ill-equipped to evaluate which experts are best qualified to speak on particular issues and may perceive all expert opinions as equal. This may help explain the ease with which manufactured controversies are able to sustain themselves in the public sphere, often simply by providing an opposing "expert" viewpoint (Ceccarelli, 2011).

5.2 Statistics Not Stories

While experts frequently utilized storytelling, citizens didn't often discuss the stories told. Instead, they expressed a desire for reliable evidence. This emphasis by citizens on information rather than anecdotes might be a result of the overall structure of the CIR and the instructions provided, which directed citizens' attention to evidence. At the beginning of the week, moderators instructed citizens to stay in "learning mode" and to gather as much information as possible with an open mind and without immediately jumping into evaluation of it. Similarly, the moderators framed small group discussions as an opportunity for citizens to select "strong and reliable evidence." Citizens especially valued statistics, as demonstrated when one remarked, "Every time we ask for statistics, they say, 'Oh, we don't have that record.' Or, 'We don't track that.'" This pattern among CIR participants reinforces research by Hornikx (2008), which demonstrates that laypeople perceive statistics as the most persuasive type of evidence while they perceive anecdotes as the least persuasive.

Citizens also exhibited an ability to engage with experts and critically evaluate the quality of claims being made. Several times during presentations citizens asked for source citation or references for the information presented. For example, during a presentation for Measure 74, an advocate relayed a story about a medical marijuana grower being arrested and prosecuted for possessing one plant over the legally allowed limit. At the end of the presentation, a citizen said, "I just really want to know the Washington case by name or date or the cost analysis of \$100,000 that was spent for the guy that was over with one plant. I just want to be able to check that out." Rather than immediately accepting the story as accurate because someone with more law enforcement experience shared it, the citizen asked for additional information in order to verify the story. Citizens expressed similar feelings during

⁷ This confusion may demonstrate the difficulty of separating citizen action from professional identity, an idea discussed by Pielke (2007) specifically in regards to scientists.

small group discussions, which experts were excluded from. One group discussed the reliability of a particular witness based on the information she provided:

Panelist 1: I'm disagreeing with her on that part. I think she's exaggerating.

Panelist 2: I don't think we could say evidence's that exaggerating. It's a piece of evidence. I think you would just throw that out and not include that.

Panelist 3: It sheds doubt on anything else she --

Panelist 1: Exactly. She was unclear about her information.

This exchange demonstrates not only that citizens did not blindly accept all information given to them by experts, but also, that they were not afraid to express their own perspective alongside that of the experts.

Additionally, group discussions worked quite effectively as a type of quality control. Citizens frequently corrected each other when they misremembered a statistic or confused two pieces of evidence. Also, during discussions, citizens sometimes collectively discovered discrepancies in the data or conflicts in the evidence, as demonstrated in the following interchange:

Panelist 1: Actually, the thing that we got back from the lady yesterday --

Panelist 2: Kind of stated the exact opposite.

Panelist 1: Exactly. And that was from several different Police Chiefs

Panelist 2: They totally negated that statement.

Furthermore, citizens never forgot that many experts presenting information also had a particular stance on the initiative up for discussion. Throughout the process citizens sometimes expressed scepticism about experts' comments. One citizen commented "They are both trying to pull us onto their side." Another citizen spoke up when he felt that presenters were not properly conducting themselves. He commented, "It seems to me that you guys have been using a lot of fear and exaggeration rather than factual stuff, especially you, sir, the sheriff." The comment calls out these experts on their rhetorical tactics and enforces that the citizens valued credible information over fear tactics.

These observations about citizens' abilities to analyze and evaluate the technical discourse of the CIR experts carry implications for the public understanding of science debate. In America, claims of scientifically illiterate citizens frequently garner headlines (California Academy of Sciences, 2009; Mooney and Kirshenbaum, 2009). However, the CIR transcripts reveal citizens capable of engaging in a dialogue with experts, understanding technical information, and asking for clarification when needed. Although neither initiative relied solely on scientific information for support, with both measures, experts presented some highly technical data and complicated statistics. During this process, citizens depended almost entirely on the experts to provide the information they used in making their recommendation to voters. At the end of the week, citizens spent significant time deliberating in order to sort through all the presented information and select the most pertinent elements for voters. In their evaluation report on the CIR pilot program, Gastil and Knobloch (2010) noted that citizens were successful in recognizing unsupportable claims and selecting accurate information to use in the citizens' statement for the Voter's Pamphlet. This observation speaks to the citizens' ability to not only understand technical presentations but also to evaluate the relevance and credibility of provided information.

6. A DEWEYIAN MODEL OF EXPERTISE

John Dewey envisioned experts as not only possessors of specialized knowledge but also leaders in teaching citizens the skills of deliberation, which he considered essential for improving the strength of democracy in America. Fischer (2009) explains:

The answer for Dewey was to rethink professional expertise . . . Dewey called for improvements in the methods and conditions of debate, discussion, and persuasion. The experts would have a special role in such deliberation, but it would take a different form. Instead of only rendering judgments, they would analyze and interpret them for the public. If experts, acting as teachers and interpreters, could decipher the technological world for citizens in ways that enabled them to make intelligent political judgments, the constitutional provisions designed to advance public over selfish interest could function as originally conceived. (p. 28-29)

Dewey's vision of expertise ceded the technical sphere to the professionals but then placed it in service to a political sphere governed by citizens. However, in the post-World War II era, the emergence of a technoscientific sense of expertise steadily gained popularity in America as citizens recognized the role science played in winning the war (LaFollette, 1990). With the continued advancement of both science and technology, the public came to rely more heavily on the advice and guidance of technoscientific experts. As experts became more specialized and citizens became more dependent on technical advice, the separation between experts and citizens grew into the current culture of privileging expert opinion over citizen voices.

However, the overall structure of the CIR reverses the traditional expert-layperson hierarchy by incorporating a Deweyian model of expertise. By mediating interactions between experts and citizens, providing ample time for citizens' questions, and giving citizens time for discussion without experts present, the CIR gave experts the responsibility of informing citizens and placed the onus for deliberation on the citizens themselves. Within such a structuring of expert-citizen interactions, citizens were more likely to speak up rather than simply defer to the experts. Citizens readily pointed out when they felt the experts weren't providing sufficient evidence to support their claims or were demonstrating poor *ethos*. Citizens also demonstrated their ability to assess technical information and hone in on accurate, credible data. Through their role in the CIR, these citizens demonstrated that while they did not possess the same technical knowledge as the experts, they still had plenty to contribute to the discussion and possessed the skills necessary to engage in productive deliberation.

Additionally, citizen comments reveal that they took their responsibility to report back to Oregon voters very seriously. This sense of accountability may have helped motivate citizens to pay close attention to expert presentations, take notes, and carefully weigh all the evidence in ways they might not have done if they weren't responsible to someone else. Citizens' willingness to ask for further explanation or stronger data created a sense of accountability for the experts as well. Replicating this sense of accountability may be an important strategy for raising the quality of interactions between experts and citizens. Citizens' assessments of the experts they encountered provide support for Miller's (2003) claim that face-to-face interactions between experts and citizens can encourage accountability and enable *ethos*—in this case the failure to establish positive *ethos*—to operate as a useful resource in assessing experts. More everyday encounters with expertise, such as reading a news article on the risks of contaminated food or hearing a televised debate on alternative energy options, lack this ability to engage more directly with experts. Thus, events like the Oregon CIR, which can

replicate a Deweyian model for utilizing experts, are particularly important for creating opportunities for engaged interaction between experts and citizens.

7. CONCLUSION

Miller (2003) observes, “When our age is characterized as an age of science and technology, what is often meant is simply our deference to expertise in the public realm” (p. 190). This observation reflects the actualization of what Wander (1976) predicted, a society in which technical discourse dominates and “non-expert” citizens are often discounted as too uninformed to have much to contribute. As Myers (2003) notes, “Such divisions between science and non-science, professional and non-professional, divisions that we take for granted, were formed in historical struggles, and are re-formed in everyday practices” (p. 274). Contemporary practices often perpetuate an expert-layperson binary. However, the CIR offers hope for addressing these historical struggles and closing the gap between experts and citizens in civic life. Activities like the CIR, which create a space for citizen engagement and recognize the contributions citizens can make alongside experts, help make that move. Constraining experts to analyzing technical issues and informing while placing the onus of deliberation and debate on citizens holds promise for getting those most affected by policy decisions involved and increasing citizen engagement in politics.

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REFERENCES

- Aristotle. (2007). *On rhetoric: A theory of civic discourse* (2nd ed.). (G. A. Kennedy, Trans.). New York, NY: Oxford University Press.
- California Academy of Sciences. (2009, February 25). American adults flunk basic science: National survey shows only one-in-five adults can answer three science questions correctly. Press Release. Retrieved from http://www.calacademy.org/newsroom/releases/2009/scientific_literacy.php
- Carr, E. S. (2010). Enactments of expertise. *Annual Review of Anthropology*, 39(1), 17–32.
- Ceccarelli, L. (2011). Manufactured scientific controversy: Science, rhetoric, and public debate. *Rhetoric and Public Affairs*, 14(2), 195–228.
- Collins, H., & Evans, R. (2007). *Rethinking expertise*. Chicago: University of Chicago Press.
- Davies, G., & Burgess, J. (2004). Challenging the ‘view from nowhere’: Citizen reflections on specialist expertise in a deliberative process. *Health & Place*, 10(4), 349–361.
- Fischer, F. (2009). *Democracy and expertise*. Oxford: Oxford University Press.
- Gastil, J. and Knobloch, K. (2010). Evaluation report to the Oregon state legislature on the 2010 Oregon Citizens’ Initiative Review. Portland, OR.
- Goodnight, G. T. (1982). The personal, technical, and public spheres of argument: A speculative inquiry into the art of public deliberation. *Journal of the American Forensic Association*, 18, 214–227.
- Healthy Democracy Oregon. (2010). Oregon CIR Archive. Retrieved from <http://cirarchive.org>
- Hornikx, J. (2008). Comparing the actual and expected persuasiveness of evidence types: How good are lay people at selecting persuasive evidence? *Argumentation*, 22(4), 555–569.
- Initiative and Referendum Institute. Oregon. (2011). Retrieved from <http://www.iandrinstitute.org/Oregon.htm>

- Jasanoff, S. (1998). Technocracy and democracy. In *The 5th branch: Science advisors as policymakers* (pp. 229–250). Cambridge, MA: Harvard University Press.
- LaFollette, M. (1990). *Making science our own: Public images of science 1910–1955*. Chicago: University of Chicago Press.
- Lessl, T. M. (1989). The priestly voice. *Quarterly Journal of Speech*, 75, 183–197.
- Lyne, J. (1990). Bio-Rhetorics: Moralizing the life sciences. In H. Simons (Ed.), *The Rhetorical Turn: Invention and Persuasion in the Conduct of Inquiry* (pp. 35-57). Chicago: The University of Chicago Press.
- Lyne, J., & Howe, H. F. (1990). The rhetoric of expertise: E. O Wilson and sociobiology. *Quarterly Journal of Speech*, 76, 134–151.
- Miller, C. R. (2003). The presumptions of expertise: The role of *ethos* in risk analysis. *Configurations*, 11(2), 163–202.
- Mitchell, G. R., & Paroske, M. (2000). Fact, fiction, and political conviction in science policy controversies. *Social Epistemology*, 14(2/3), 89–107.
- Mooney, C. and Kirshenbaum, S. (2009). *Unscientific America: How scientific illiteracy threatens our future*. New York, NY: Basic Books.
- Myers, F. (2003). Discourse studies of scientific popularization: Questioning the boundaries. *Discourse Studies*, 5(2), 265–278.
- Pielke, Roger A. (2007). *The honest broker: Making sense of science in policy and politics*. Cambridge: Cambridge University Press.
- Wander, P. C. (1976). The rhetoric of science. *Western Speech Communication*, 40, 226–235.
- Wynne, B. (1989). Sheepfarming after Chernobyl: A case study in communicating scientific information. *Environment*, 31, 10–15, 33–39.