

This article was downloaded by: [University of Waterloo]

On: 09 April 2014, At: 12:31

Publisher: Routledge

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



Rhetoric Society Quarterly

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/rrsq20>

Political Rhetoric in a World Risk Society

Robert Danisch^a

^a Concordia University

Published online: 25 Mar 2010.

To cite this article: Robert Danisch (2010) Political Rhetoric in a World Risk Society, Rhetoric Society Quarterly, 40:2, 172-192, DOI: [10.1080/02773941003614456](https://doi.org/10.1080/02773941003614456)

To link to this article: <http://dx.doi.org/10.1080/02773941003614456>

PLEASE SCROLL DOWN FOR ARTICLE

Taylor & Francis makes every effort to ensure the accuracy of all the information (the "Content") contained in the publications on our platform. However, Taylor & Francis, our agents, and our licensors make no representations or warranties whatsoever as to the accuracy, completeness, or suitability for any purpose of the Content. Any opinions and views expressed in this publication are the opinions and views of the authors, and are not the views of or endorsed by Taylor & Francis. The accuracy of the Content should not be relied upon and should be independently verified with primary sources of information. Taylor and Francis shall not be liable for any losses, actions, claims, proceedings, demands, costs, expenses, damages, and other liabilities whatsoever or howsoever caused arising directly or indirectly in connection with, in relation to or arising out of the use of the Content.

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden. Terms & Conditions of access and use can be found at <http://www.tandfonline.com/page/terms-and-conditions>

Political Rhetoric in a World Risk Society

Robert Danisch

We live in a world of risks that lurk everywhere, in the food and water we consume, in the viruses and bacteria we encounter, and in the global political scene that seems more and more volatile. This article pursues two lines of inquiry: first, I use the concept of risk, and specifically the work of Ulrich Beck, to show how the relationship between science, politics, and rhetoric is being transformed from earlier, politically progressive, twentieth-century conceptions of the role of science in public culture. Second, I try to explain how the concept of risk has altered political culture and requires a different form of prudence for political rhetoric. These two lines of inquiry work to demonstrate how uncertainty and contingency are now the products of techno-scientific rationality. This way of thinking about contingency changes how we understand the practices of political rhetoric and the constitution of public culture.

We live in a world of persistent, incalculable, and ever-changing risks, according to Ulrich Beck and others. These risks lurk everywhere, in the food and water we consume, in the viruses and bacteria we encounter, in the technologies on which we increasingly depend, and in the global political scene that seems more and more volatile. Within such a world, whole industries and agencies are concerned with the production of knowledge about the risks we confront, the invention of techniques and technologies for coping with and insuring against risk, and the task of communicating information to the so-called “general-public” so as to avoid potentially irrational hysteria. The threat of natural disasters, nuclear accidents, terrorism, or virulent strains of common diseases, to name just a few examples, increasingly occupy a place in the political and scientific conversations of the moment. These threats influence decision-making processes at all levels of government and in various science labs throughout the world. The variety of risks that we face creates conjunctures and collusions between science, industry, and politics all in the context of future uncertainty. By relying on Ulrich Beck’s sociological descriptions of the “world risk society,” I argue that both the kind and degree of uncertainty that we

Robert Danisch is Assistant Professor in the General Studies Unit at Concordia University, 1455 De Maisonneuve West EV-6.233, Montreal, Quebec H2S 2E3, Canada. E-mail: rob.danisch@gmail.com

now face have changed the relationship between science and public culture. The tremendous “success” of scientific research and technological development now acts to produce uncertainty, fear, and danger. As such, science and technology stand at the center of contemporary political rhetoric in a radically different way.

This argument rests on three theses. First, uncertainty and contingency have long been central motivating forces for political rhetoric. The relationship between uncertainty and political rhetoric, however, relies on a set of distinctions (between the probable and the necessary to name one example) that collapse within a “world risk society.” Second, the Enlightenment, the Industrial Revolution, and the beginnings of “modernity” all rely on the belief that scientific rationality and technological development could control and improve upon the natural world through the acquisition and deployment of certain knowledge. This entails a particular relationship between science and politics, one perhaps best embodied in progressivism and committed to a belief in progress by means of techno-scientific rationality. The relationship between politics and science as it was constituted at the beginning of the twentieth century is no longer viable because of a “radical change” in contemporary society “that poses a challenge to Enlightenment-based modernity” (Beck, *World Risk* 1). The third thesis is that our society has moved from a kind of “industrial modernity” to “second” or “late modernity,” as Ulrich Beck claims. This break between “industrial modernity” and “late modernity” has important implications for the category of the political. The first part of this essay is devoted to elaborating on these three theses.

The second part of this essay unpacks the implications of these three theses for the contemporary practice of political rhetoric and the constitution of public culture. Progressive era politics often looked to science and engineering for rational/expert advice on social problems, presuming that rationality and expertise were the grounds for authoritative judgments. The risk society, however, recalibrates the place of judgment by demonstrating the limits of techno-scientific rationality and highlighting the uncertainty that attends scientific and technological development. Every person in Beck’s “risk society” is capable of judgment because techno-scientific rationality is not, even regarding complex, technical controversies. This becomes clear in the emergence of what Beck calls “subpolitics.” I argue that this “subpolitics” calls for the formation of rhetorical citizens with the capacity to make judgments regarding scientific and technical controversies by understanding that even scientific work is a form of persuasion. Thus the risk society calls political rhetoric back to its classical roots through the form of rationality that we thought would displace (or, perhaps, had displaced) persuasion with better mechanisms for dealing with uncertainty. This is a deeply ironic turn—a turn that will shape political rhetoric for the next century, and a turn that reverses the erosion of the public sphere initiated by the expansion of the domain of technical argument and scientific knowledge (see Goodnight).

This ironic turn also has implications for the rhetoric of science. For the most part, rhetorical studies has been concerned with elaborating the ways in which risk

is socially constructed and demonstrating how risk communication is not a straightforward, technocratic project but a difficult rhetorical enterprise that requires many different actors (Katz and Miller; Waddell; Grabill and Simmons). This general insight surely corroborates Beck's basic views, as well as other social theorists of risk such as Joost van Loon and Mary Douglas, and it offers an important beginning in thinking through the relationship between rhetoric and risk. Within the field of the rhetoric of science, Beverly Sauer provides the most thorough argument that a broader range of stakeholders should be a part of decision-making procedures that surround risks—again, this certainly dovetails with Beck's normative recommendations. Sauer uses rhetorical criticism to show how risks are invented and why stakeholder knowledge should be integrated with expert judgment in risk situations. As the rhetoric of science confronts the issue of risk, the classical categories of rhetorical theory become both tools for critical analyses of risk (Sauer relies effectively on Aristotelean rhetorical theory) and objects of revision in the light of social theories of risk. J. Blake Scott, for example, explicates “an alternative notion of *kairos*—one that complements and complicates traditional notions—as an indeterminate response to distributed, transforming, immeasurable, and, to some extent, uncontrollable global risk” (116–117). Building on Carolyn Miller's work, Scott is able to rethink the classical concept of *kairos* given Beck's social theory—a useful and important project. Scott and Miller both show the importance of using rhetorical theory for the analysis of technology and science *and* of rethinking the meaning of classical rhetorical theory within a contemporary context. I am interested in the latter task in this essay. In other words, I try to build on Scott's work to show how the contingency thesis, the category of deliberative rhetoric, and the concept of prudence require some rethinking within the context of contemporary scientific and technical risk. I see this project as an extension of many of the basic insights of the rhetoric of science. Instead, however, of applying rhetorical concepts for critical work, as Alan Gross recommends at the beginning of *The Rhetoric of Science* (“the spirit of the first Sophistic must roam free”), I use social theory from the field of Science and Technology Studies to rethink traditional categories of rhetoric. The extensive application of rhetorical criticism to scientific texts, facts, and theories, while useful and important, can be reversed and sociological studies of science can teach us new things about rhetoric in the twenty-first century. The most important lesson that we learn in a risk society is the need to develop a scientific prudence capable of guiding deliberation in public culture and that rhetorical theory (not sociology) must develop such a form of prudence in the twenty-first century. I argue in this essay that this is a major entailment of Beck's work.

Contingency, Modernity, and Risk

Uncertainty and contingency drive political rhetoric, or as Dilip Gaonkar puts it, “the contingent is the unproblematic scene of rhetoric” (151). This claim has its

origins in Aristotle, who outlined two main characteristics of the relationship between contingency and rhetoric. First, Aristotle made a distinction between the contingent and the necessary in order to carve out a specific domain for rhetoric. If the contingent is opposite the necessary, then it deals with probable knowledge instead of certain knowledge. In Aristotle's thinking, the probable was associated with everyday considerations of what is normal or common, and not with what is statistically predictable. However, as I later show, the probable becomes a central feature of the collusion between science and politics in a risk society. In any case, the contingent/probable becomes the domain of rhetorical practice instead of the necessary, which becomes the domain of philosophy and science. Second, Aristotle also claimed that contingency was a basic characteristic of human actions because humans always have the capacity to act in different ways. Thus, rhetoric becomes the discursive means of deliberation. This aspect of contingency has never sat easily within considerations of scientific and technical development (which often understand progress in deterministic terms and eradicate considerations of choice from historical narratives of technical change) (see Heilbroner). But wherever deliberation occurs (even in scientific and technical contexts), contingency serves as a backdrop.

Aristotle's description of the relationship between contingency and rhetoric can be further refined by making a distinction between the contingent as an event and as a property of propositions. A contingent event is one that could possibly occur or possibly not occur. On the other hand, a contingent proposition might or might not be true. This distinction highlights why contingency is taken as a starting point for rhetorical practice. Without contingent events and contingent statements, it's not clear what we would be deliberating about in the public sphere. Thus Gaonkar can claim that the contingency thesis stands behind a "cluster of concepts and propositions" concerning rhetoric: "rhetoric is a method for inquiring into and communicating about the realm of the contingent . . . inquiry into the contingent yields opinions of variable validity and utility, but no certain knowledge. Hence, opinion is the material with which rhetoric must work . . . the proper mode of working with opinion is deliberation (involving dialogue and debate) that relies primarily on probable reasoning to make decisions and to form judgments" (158). Without some degree of uncertainty and contingency, we would not need to get together to make collective decisions as a public.

Because rhetoric is so closely understood in relation to contingency, it is always entangled with questions of opinion and context. The need for judgment within a contingent situation can seem troubling when one realizes that any judgment that is rendered will be based on opinion instead of certain knowledge and will be bound by context and not universally valid. This has always been the cause for substantial criticism of rhetoric, and various rhetorical theorists have attempted to explain the status of the opinions deployed in deliberation. Thomas Farrell, for example, refers to the use of "common knowledge" or "social knowledge" in guiding reasoned judgments about public affairs. This notion of "social

knowledge” is another mechanism for understanding the probable in contrast to the necessary. Farrell claims that this kind of knowledge rests on consensus and collaboration and requires that the audience co-produce it. The assumption is that this form of knowledge is different from scientific/abstract knowledge, which can be demonstrated with certainty and only produced through experiment and expertise. Farrell’s notion of the use of the probable in guiding deliberation follows the Aristotelian tradition of domesticating rhetoric (or making explicit the domain of rhetoric)—a tradition that the rhetoric of science project has tried to reject through developing multiple approaches to studying science and technology using rhetorical methods. By understanding the link between contingency and deliberation in this way, and by explicating the function of opinion or “social knowledge” in guiding deliberation, theories of rhetoric provide a specific account of how a public sphere is imagined and managed and how politics relates to rhetorical practice. The Enlightenment and the expansion of what Thomas Goodnight calls the “technical sphere” of argumentation complicates this vision of the domain of rhetoric.

Goodnight begins his influential essay, “The Personal, Technical, and Public Spheres of Argument,” by directly relating deliberation to the “domain of probable knowledge” (251). In other words, he begins by noting the importance of contingency and uncertainty for rhetorical practice. Thus argumentation involves “the creative resolution and the resolute creation of uncertainty” (252). What is unique about Goodnight’s essay, however, is not this restatement of the contingency thesis, but the way in which he describes how uncertainty is channeled through specific discourse practices: “In the democratic tradition, we can categorize these channels as the personal, technical, and the public spheres” (253). The differences between these spheres issue from differences in the standards for arguments employed within them and the ways in which judgments are rendered in response to arguments. In the light of this distinction, Goodnight makes a more controversial claim: “the public sphere is being steadily eroded by the elevation of the personal and technical groundings of argument” (258). I will argue that, in the light of the risk society thesis, Goodnight is wrong on this count, and that the growth of the technical sphere of argumentation has had the opposite effect: it has broadened and enhanced the public sphere. Two arguments, however, support the notion that the public sphere is being steadily eroded. First, according to Goodnight, by relying on Charles Beard’s account of Progressive era changes to American civic culture, the advent of modern technology, which brings with it greater complexity and specialization, transformed government into a kind of technocracy. Burgeoning technical knowledge meant that the participation of common citizens was unnecessary and unwanted in public affairs. Second, expanding communication technology seemed to lead to the disappearance of the public and the celebration of “privatism.” These two factors are best understood within the context of the success of the Enlightenment and the project of modernity.

In the late nineteenth and early twentieth centuries, engineers and scientists believed that they had the technological power to make a world according to their own blueprints. They thought of the natural world as “expendable and exploitable or simply as scenery” (Hughes, 9). Railroads, highways, telephones, electric power, agricultural machinery, and countless other technological inventions were the creation of an emerging, creative class of engineers and scientists who were graduating from new universities built on the principles of Enlightenment thought. These scientists and engineers sought to deploy certain knowledge gleaned from empirical experiments in order to invent mechanisms by which humans could control the natural world. This belief in the human capacity for control over the natural world was supported by the Enlightenment assumption that history was a record of progress. The steady, cumulative, and inevitable expansion of human knowledge, so engineers and scientists thought, was the grounds for human control and power over nature, and the new scientific knowledge and technological power were expected to make possible a comprehensive improvement in all the conditions of life—social, political, moral, intellectual, and material. Obviously, the idea of “scientific knowledge” was understood over and against contingent or probable knowledge. The scientific method had the capacity to produce epistemic certainty based on inferential reasoning. The combination of a commitment to reason and empirical investigation were thought to produce knowledge of a different kind than, for example, Farrell’s “social knowledge.” This knowledge could also be used in the service of the public and could be incorporated into political culture.

The advent of modernity carries with it humanity’s hubris that uncertainty and contingency could essentially be eliminated. It is little wonder that the Enlightenment project reconfigured rhetoric as a matter of aesthetic taste. The tremendous material success of the development of technology was a marker that this hubris was well deserved. It is the fact that the technical sphere, to which Goodnight refers, was actually able to grow so quickly and develop new vocabularies and new machines so efficiently that made the claims to control, progress, and certainty seem unable to be challenged. The advancement of the technical sphere also made rhetoric seem less important for political culture—a state managed by experts conversant in the technical sphere, so many thought, would be far better than any state managed by ordinary citizens (Walter Lippmann, for example, was an early champion of this kind of argument). From the perspective of the Enlightenment, it was just a matter of time before contingency was eliminated altogether. Goodnight’s claims rest on the belief that there is an epistemic difference in kind between knowledge claims generated within the public sphere by common citizens and knowledge claims made by experts within technical fields. The product of such a belief is a kind of rhetoric of lament, a lament that the public sphere has been eroded, and a longing for the ancient Athenian agora. If rhetoric is motivated by contingency, and the Enlightenment and the advent of modernity were committed to a form of epistemic certainty that could make control and progress possible, then it seems clear that these two projects work at cross-purposes.

In other words, if contingency and uncertainty generate rhetorical discourse and a robust public sphere, then it would seem that the Enlightenment, which sought to eliminate contingency and uncertainty through empirical investigation, has as one of its goals the suppression and elimination of rhetoric. But the very success of the Enlightenment project may be the cause for its unraveling and the reassertion of the centrality of rhetoric for public culture. If this is the case, however, the distinction between the technical sphere and the public sphere needs to be abandoned. Ulrich Beck's "risk society" thesis advances this argument in sociological terms and can aid any contemporary rhetorical theory that seeks to abandon the assumption that there is an epistemic difference in knowledge claims made in the public sphere and those made by technical experts.

Beck consistently claims that contemporary Western societies are living through a transitional period, in which industrial society is becoming "risk society." The most notable fact about this transitional period is that the production of wealth is accompanied by the production of risks, which have proliferated as an outcome of modernization. Therefore, the central problem that Western societies face is the management and minimization of risks, not the production and distribution of goods (as was the central problem in early modernity). Because debates over risks have begun to dominate public conversations, people within Western societies have become increasingly aware of risks: "Everyone is caught up in defensive battles of various types, anticipating the hostile substances in one's manner of living and eating" (*Reflexive Modernization* 45). This notion of "transition" begs the question of what "risk" means for Beck. A risk, for him, is another word for hazard or danger, and he claims that the "risks of modernization" are "irreversible threats to the life of plants, animals, and human beings" (*Risk Society* 13). From Beck's perspective, risks are both material (or real) and socially constructed (cultural processes shape our perceptions of risk). Essentially he claims that the risks of modernization are social constructs of potentially devastating material hazards. But is there something unique about the risks that contemporary society confronts? Beck acknowledges that all societies and all historical periods have been subject to threats, but the term "risk society" exclusively applies to the contemporary era because the risks we confront are different in kind. The major dangers that contemporary society faces are environmental problems (like air and water pollution and global warming), toxic chemicals in foodstuffs, and nuclear disasters (to name three examples consistently referred to in his work). These threats are real and exist on an unprecedented scale because they cannot be delimited spatially, temporally, or socially. It is the magnitude and global nature of contemporary risks that set them apart from earlier forms of risk and lead to the development of a different perception of risk. Moreover, these contemporary risks are more and more difficult to quantify (what are acceptable levels of CO₂ emissions?) and are open-ended events. In other words, hazards in the contemporary era are far more apocalyptic (threatening to destroy all of humankind) and less available to the science of statistics for purposes of quantification.

In pre-modern societies, common threats (plague, famine, war, etc.) were thought to be incalculable because they were attributable to external causes. Through the advent of modernity and industrialization, however, these threats were transformed into risk calculations through the deployment of a kind of instrumental rationality. The science of probability and statistics, developed in the eighteenth and nineteenth centuries, calculated norms as an embodiment of the belief that reason could bring disorder under control. The modernist concept of risk assumed that unanticipated outcomes were calculable and predictable. As Sanjay Reddy claims: “Moderns had eliminated genuine indeterminacy, or ‘uncertainty’, by inventing ‘risk’. They had learnt to transform a radically indeterminate cosmos into a manageable one through the myth of calculability” (237). By the end of the twentieth century, however, these foundations of risk logic, according to Beck, are being subverted and suspended. The risks involved in contemporary society are not calculable because of their non-localized nature and potential long-term effects: “To express it by reference to a single example: the injured of Chernobyl are today, years after the catastrophe, not even born yet” (“World Risk Society” 31). Although risk is still closely tied to the science of statistics, that tie does more to highlight the uncertainty that attends risk than it does to eliminate it.

The more important characteristic of the connection between risk and uncertainty, however, is that the very growth of scientific/expert knowledge that seeks to improve the human condition is the central causal factor for the explosion of risks and the deepening of uncertainty. For example, epidemics of bacterial infections are caused by medicines that have created antibiotic resistant bacteria; the cause of floods, landslides, or famines can be traced back to global warming, which in turn can be understood as a side-effect of industrialization. Risks, in contemporary society, are forms of what Beck calls “manufactured uncertainty,” and, as such, they are based on decisions made by the collusion of science, industry, and politics. In other words, human intervention into the natural world (mostly for the purposes of industrialization and the expansion of capitalism) results in unintended consequences and a proliferating scene of uncertainty and contingency. Thus Beck can define risk as “a systematic way of dealing with hazards and insecurities induced and introduced by modernization itself. Risks, as opposed to older dangers, are consequences which relate to the threatening force of modernization and to its globalization of doubt. They are politically reflexive” (“World Risk Society” 21). The notion of reflexivity is the final characteristic of the “risk society” that for Beck signals the transition away from earlier forms of modernity.

Risk causes society to become reflexive in three ways. First, society becomes an issue for itself at the global level (instead of individual, local nation-states concerned with their own constitution). Second, the global nature of risks leads to the invention and development of cooperative international institutions. Third, the boundaries of the political are either blurred or removed altogether and the very category of the political is radically opened up. In the light of these claims,

the public sphere of political debate is made into a global public sphere, which produces a form of global citizenship (more on this later). Beck insists on the importance of the term reflexive because it is meant to highlight the ways in which modernity comes to examine and critique itself, and thus to see itself as the cause of the growing dangers and hazards characteristic of contemporary life. The naïve certainties of the Enlightenment (the belief in human progress through science, technology, and reason) have disintegrated. People are now skeptical of science and technology because these very enterprises have created the problems we face. Reflexive modernization, therefore, brings with it anxiety, uncertainty, and insecurity because the old social orders seem to be breaking down through the active criticism of the structures and goals of Enlightenment-based modernity.

So far I have tried to outline three broad theses: first, that uncertainty and contingency are the motivating forces for rhetoric, and have been key issues in domesticating or locating the practice of rhetoric. Second, that Enlightenment-based modernity was founded on the advancement of scientific and technical knowledge and consequently the erosion of the public sphere and the dismissal of rhetoric as a central and necessary political art. Third, that the transition to a “risk society” reconfigures the relationship between uncertainty/contingency and science, on the one hand, and uncertainty/contingency and politics on the other hand. One can call the transition out of Enlightenment-based modernity “post-modernity,” “reflexive modernity,” “globalization,” or “late modernity.” But whatever the name, some transition is identified in which the contradictions of Enlightenment-based modernity are brought to light and challenged, leaving us with both hope and despair. From my perspective, what is at stake in the transition from Enlightenment-based modernity to Beck’s “risk society” are the ways in which uncertainty and contingency condition rhetorical practice and make possible specific forms of public culture. Theorizing the rhetoric–contingency relationship from within the perspective of the risk society thesis becomes an essential task for understanding politics and public culture in contemporary society and a way of extending work in the rhetoric of science. Thus the question becomes: What are the implications of Beck’s claims for political rhetoric and/or the rhetoric of science?

Judgment, Prudence, and Subpolitics

At the core of Beck’s description of the risk society are issues surrounding the constitution of the public sphere and practices of democratic politics: “Much political debate over the last twenty years has centered on the decline in the power and legitimacy of government and the need to renew the culture of democracy. Risk society demands an opening up of the decision-making process, not only of the state but of private corporations and the sciences as well. . . . This could encourage environmental innovations and help to construct a better developed public sphere in which the crucial questions of value that underpin risk conflicts can be debated

and judged” (Beck, *World Risk* 5). This argument counters the claims that Goodnight made about the separation of the technical and public spheres. Because the development of what Goodnight calls the technical sphere was so successful, we have been left with persistent and incalculable risks, and those risks are in the process of forcing an opening up of the public sphere and a renewal of democratic life. We may be initially suspicious of this kind of optimism about democratic life, but Beck’s move relies on the following pronouncement: “One thing is clear. Endemic uncertainty is what will mark the lifeworld and the basic existence of most people—including the apparently affluent middle class—in the years that lie ahead” (*World Risk* 12). Once the proliferation and inescapability of uncertainty are in place (and these are just the things the Enlightenment tried to overcome or, at the least, control), then the conditions are set for the development of a rich public sphere that requires a rich tradition of rhetorical practice. Beck seems to be involved in some level of prophecy here. It is not immediately clear whether the public sphere as it exists right now has been opened up by risk, whether it is in the process of being opened up, or whether we are waiting for a future moment in which it will be opened. Beck seems to suggest that the evidence of global environmental social movements is enough to indicate that the process of revitalizing the public sphere has already begun. Even in cases like the outbreak and response to the AIDS epidemic at the beginning of the 1980s (chronicled by Paula Treichler) one can see the birth of political action in response to expert pronouncements from the scientific and medical communities. It is difficult to say if the transition out of modernity has occurred just in the minds of humanistic scholars or whether it has extended more broadly, but it does seem evident that the public’s trust in science and technology is not what it was at the beginning of the twentieth century.

Whatever public culture looks like in the risk society, it is not, however, the rational public sphere of polite conversation described by Habermas. The “common sense” politics of the epoch of “industrial modernity” sought control over everything from populations to nature, but this quest for control “brings about its opposite—the return of uncertainty and insecurity” (Beck, *World Risk* 38). Thus the politics of the nation-state or the public sphere of the coffee house are not viable visions of political culture in a “world risk society.” Instead, Beck uses the concept of “subpolitics” to describe “politics outside and beyond the representative institutions of the political system of nation-states.” This concept “focuses attention on signs of an (ultimately global) self-organization of politics. . . . Subpolitics means ‘direct’ politics—that is, *ad hoc* individual participation in political decisions, bypassing the institutions of representative opinion-formation (political parties parliaments) and often even lacking the protection of the law. In other words, subpolitics means the shaping of society from below” (39). The outcome of the practice of this kind of politics is that it changes the rules and the boundaries of the political so that political culture is more open and more susceptible to new linkages. Beck’s prime examples of these practices were the mass

boycotts of Shell Oil in 1995 and the worldwide movement against President Jacques Chirac's decision to resume nuclear testing. What happened in both of these cases was that "paradoxically, the challenge of global dangers provides it [politics] with a fountain of youth—for a new transnational morality and activism, for new forms (and forums) of protest, but also for new hysterias" (Beck, *World Risk* 41).

Perhaps Beck is being overly optimistic here. Lisa Keranen, for example, reads TOPOFF 3, a government mandated drill to test responses to bioterrorism, as promoting "a powerful interlacing of our public health system and the military industrial complex" (228). In other words, Keranen shows how the risk of bioterrorism is transformed into a justification for preferring military solutions to potentially catastrophic risks. She cites Beck's work approvingly, as an example of the social construction of risk, but actually draws different conclusions about the political ramifications of public considerations of risk. Keranen's work is an important starting point for discussions about the relationship between risk, rhetoric, and deliberation in democratic societies, and biological weapons are clearly an example of manufactured risks and the unintended consequences of modernity. The question that Keranen raises concerns the extent to which risks like bioterrorism can perpetuate a public culture in which "the realities of decision-making elites . . . do not link up well with the everyday experiences of the citizenry" and particular visions of public culture monitored by a military-industrial complex are legitimated (244). Beck is concerned with the opposite rhetorical effects—that is, the extent to which these risks crack open public culture and allow for the invention and success of social movements. The task for rhetorical theory is to continue to explore the link between science, rhetoric, and political deliberation. This seems especially important given the exploding literature surrounding rhetoric's connection to democratic deliberation (see Ivie). From Beck's work, and Keranen's research seems to support this, the central rhetorical effect of risk is to place security as the central value of democratic public culture instead of equality or freedom. At the very least, democratic public culture now understands the value of security alongside equality and freedom as central characteristics of democratic societies.

To return to Beck's claims regarding subpolitics, in the protest against Shell oil (for trying to dispose of an obsolete oil rig by dumping it in the ocean), Shell tried to control the problem by reaching an agreement between government, experts, and managers. This was a traditional Enlightenment strategy. The experts were thought to possess objective knowledge and could be seen as independent judges of the best/safest course of action. However, "there are no expert solutions in risk discourses, because experts can only supply factual information and are never able to assess which solutions are culturally acceptable" (*World Risk* 42). Politics, therefore, "gains priority over expert reasoning" (42). The Enlightenment conception of the authority of science brought with it a vision of the public as well intentioned but irrational and ignorant. As Beck describes it: "If the public only knew what the technical people know, they would be put at ease—otherwise they are just

hopelessly irrational” (*Risk Society* 58). Thus scientists, following this vision, need to do a better job, so the argument goes, of presenting information to the public, but, as Beck claims, “this perception is *wrong*. Even in their highly mathematical garb, statements of risks contain statements of the type *that is how we want to live*—statements, that is, to which the natural and engineering sciences *alone* can provide answers only by overstepping the bounds of their disciplines” (58, emphasis added). This is not necessarily a new argument, and Beck speaks for a chorus of researchers in the field of sociology of scientific knowledge (see Fuller). What happens within a risk society, however, is that competing rationalities and experts begin to generate controversies regarding methods, orientations, calculations, procedures, objectives, standards, plans, and so on. Debates between expert groups or persons undermine the authority granted to these groups by shifting the burden of judgment and the location of deliberation (from out of the science lab and into the public sphere). The prevailing Enlightenment sentiment was that “if one simply conducts research long enough, then the opposing arguments will fall silent and clarity and unanimity will prevail” (Beck, *World Risk* 100). But research that goes further and further actually “heightens the need to justify things and the uncertainty of all arguments” (100). In other words, the form of reasoning championed by the Enlightenment produces conditions in which the politics of justification becomes increasingly important in the absence of unanimity. The word justification here opens the door to the rhetorical tradition with its emphasis on reasoning and argumentation. Rhetorical practice is at the center of the risk society, and the competition between experts makes this clear.

A recent forum in *Argumentation and Advocacy* takes up the issue of argument in science and technology controversy. Goodnight begins this forum by noting that: “As important as electoral debates and politics may be, the controversies of science and technology supersede localizing disagreements by bringing into contention the vulnerabilities of culture to its own tenuous interface with the natural world and by opening up new horizons of conceptual and material change” (26). The subsequent brief essays corroborate Goodnight’s claims about the “generative power of science and technology controversies” and worry over the best way to weave together and theorize the abundance of case studies of controversy being conducted. Adding Beck’s social theory to the issues that Goodnight and others raise shows that it is not just a matter of the “social significance of thinking of science and technology controversies as rhetoric” but also a matter of thinking about the ways in which such controversies constitute public cultures and public spheres (Lyne, 42). John Dewey thought of the public as an outcome of collective perception and embodied communication. His pragmatic orientation led him to search for the conditions and forms of community life in social inquiry and social action. But Dewey was concerned that “the machine age has so enormously expanded, multiplied, intensified and complicated the scope of the indirect consequences . . . that the resultant public cannot identify and distinguish itself” (126). Given the extent of science and technology controversy, Dewey’s

concern is not our concern. Our concern is with the conditions and forms of community life in which scientists and scientific knowledge work alongside other kinds of people and other forms of knowledge; in other words, how scientific and technical controversy drives collective perception and embodied communication. Keranen's TOPOFF 3 essay highlights an example of this, but there are other examples that lead to the advent of social movements as counterpublics enhancing democratic life through active participation in various deliberative procedures. All such examples show how security becomes a new and important value in democratic societies. The first rhetorical effect, therefore, of scientific controversies in a world risk society is to add the value of security as a central characteristic of democratic societies. Democratic public culture is then organized around issues of security (just as it might have been organized around issues of equality or freedom in earlier periods).

According to Michael Warner, publics have the following characteristics: they are self-organized, consist of relations among strangers, require both personal and impersonal public speech, are constituted through attention, and perform the function of poetic world-making. In Warner's work (and in Asen and Brouwer's anthology on counterpublics), a series of examples from mass publics to intellectual publics to queer publics are used to explain these features of any public. Many of the examples are historical but none seem to be founded on scientific or technological controversies. One might ask what would happen to Warner's theoretical account of the formation of publics and counterpublics if scientific and technical work were the generative engines of public speech, attention, and relations? Moreover, what would happen to such a theoretical account of publics if the scientific and technical work was generative because it was dangerous? These are the questions that Beck poses to public sphere theory. These questions seem to make Habermas's historical claims about the bourgeois public sphere and the mass culture that has replaced it a relic of the twentieth century. Surely there is some sense in which deliberation in a public generated by scientific or technical controversy would be rational in a Habermasian sense, but the theory of communicative action alone cannot explain the rhetorical dynamics of such publics or forms of deliberation because it cannot account for risk perception, expert debate, and alternative forms of knowledge.

The complexity of the role of scientific and technical controversy in the public sphere cannot be overstated. According to Beck, "the victory of science once again imposes on us the burden of making crucial decisions which may affect our very survival without any proper foundations in knowledge" (*World Risk* 105). Here Beck strikes at the heart of the contemporary inadequacy of Aristotle's distinction between the necessary and the probable and contemporary rhetoric's gesture toward "social knowledge" instead of expert knowledge. In the Athenian public sphere (if we can call it that), citizens engaged in deliberation argued over the expediency of various courses of action, but in the risk society one cannot simply debate the expediency of a course of action because any claim to expediency rests

on something more than “social knowledge.” These claims do not rest on certain, objective, empirical knowledge either, but they do issue from a rationality different in kind from the rationality that underpins “social knowledge”—Goodnight makes this clear in his essay by outlining the argumentative structures of the different spheres. It is a mistake to assume that this rationality (plagued with politics and uncertainty) is not an integral part of public sphere arguments, and it is equally mistaken to assume that the presence of this rationality erodes the richness of the public sphere. In the light of the expectation that citizens must engage in acts of deliberation while surrounded by (and asked to deploy) forms of knowledge that those citizens are not familiar with, what ought we to do?

Beck does make a normative move to argue for a specific program that will allow us to cope with this situation. At the center of his normative move is the belief that we need “more democracy—the production of accountability, redistributions of the burden of proof, division of powers between the producers and the evaluators of hazards, public disputes on technological alternatives. This in turn requires different organizational forms of science and business, science and the public sphere, science and politics, technology and law, and so forth” (*World Risk* 70). In order to produce more democracy in this manner, we must, according to Beck, follow two principles. The first principle is a commitment to a division of powers, and the second principle is a commitment to a renewed and revitalized public sphere. These are not simple tasks: “Only a strong, competent public debate, ‘armed’ with scientific arguments, is capable of separating the scientific wheat from the chaff and allowing the institutions for directing technology—politics and law—to reconquer the power of their own judgment” (70). Such an argument should ring pleasantly in the ears of rhetoricians who are constantly either lamenting the deterioration of the public sphere or calling for better forms and forums for public argument. But Beck’s public sphere has the added expectation that it must be in “cooperation with a kind of ‘public science’” that “would act as a secondary body charged with the ‘discursive checking’ of scientific laboratory results in the crossfire of opinions” (*World Risk* 70). Such a public would be charged with the responsibility of articulating the relationship between scientific plans and the general answer to questions regarding how we want to live. This also “presupposes that research will fundamentally take account of the public’s questions and be addressed to them,” and this would lead to a “filtering out of its [science’s] limitations in a public test of its practices” (70–71). This is a relatively vague prescription for how best to invent an improved public sphere and political culture that can meet the demands of the risk society, and Beck only articulates (instead of answering) the toughest question: “how will we win back the competence to make our own judgments through a culturally created perceptibility of hazards?” (71). This question is best answered by thinking through the variety of ways that the rhetorical tradition has tried to cultivate good judgment in citizens for the purposes of democratic life. As it stands, Beck’s analysis here is thin because it has no generative conception of how this competence will emerge or how it has

emerged in the past. Rhetorical theory offers perhaps the best tools for extending Beck's work and offering a more robust account of how the recommendations he makes might actually take place.

To look toward the rhetorical tradition for answers to Beck's question is also to consider the role that language plays in mediating and making possible such judgments. Beck seems acutely aware of this: "Tangible, simplifying symbols, in which cultural nerve fibers are touched and alarmed, here acquire a key political significance. These symbols must be produced or concocted, in the open fire of conflict provocation, before the strained-terrified television eyes of the public. The decisive question is: who discovers (or invents), and how, symbols that disclose or demonstrate the structural character of the problems as well as creating the capacity for action?" (*World Risk* 44). This sentence, just as the earlier claims regarding the public sphere, should be warmly received by rhetoricians who devote research to carefully considering the invention and significance of symbols for politics. It seems that Beck is implicitly committed to the deep connections between rhetoric and political culture but does not offer any profound insight into how best to realize these connections in a risk society other than to say that an awareness of science, a "strong public," and "more democracy" are necessary components of political culture if we are to meet the demands and anxieties produced by risk—again, thin suggestions at best. The task for rhetorical theory, therefore, is to answer both the question about judgment and the question about the invention of symbols, and to answer them in a way that is responsive to the conditions of the risk society—Keranen, Simmons, Grabill, Scott, and others have begun this task.

In order to continue such lines of thought, it is best to return to the contingency thesis. Aristotle's project of domesticating rhetoric by associating it with the probable is no longer plausible or desirable. The major reason for this is that the category of the probable can no longer be delimited in the way that Aristotle intends. Risk analysis and risk assessment are the latest scientific and mathematical procedures deployed with the intention of producing probable knowledge. These procedures then become the grounds for political deliberation and decision-making, yet it's not clear they would count as instances of probable reasoning for Aristotle. Moreover, these risk assessments show how the improbable becomes just as likely to motivate political decision making as the probable. Perhaps more importantly, however, the risk society thesis, in conjunction with other currents in the sociology of scientific knowledge, explodes the Enlightenment idea that science can produce necessary knowledge of the world. In other words, what works as the antithesis of the probable in Aristotle's distinction, actually becomes the driving force behind the manufacture of uncertainty—the search for the necessary is the main cause of the production of uncertainty. But this is not to say that we need to abandon Aristotle's insights altogether. The more general claim that uncertainty and contingency provide the grounds for deliberation and rhetoric remains essentially important to our contemporary understanding of political culture. The risk

society thesis, however, asks that we rethink the category of the uncertain and the contingent. Once we do so, we realize that this category is replete with scientific and technical propositions and possibilities—a realization that would not have been possible before the twentieth century and would surely seem odd to Aristotle. Following this logic, techno-scientific rationality stands as a central feature of contemporary political culture, but not in its capacity to make authoritative judgments, settle controversial issues, or improve social conditions (as we thought it might at the beginning the twentieth century) but as the constitutive force in creating the horizon of deliberative choices in front of us.

This argument can be clarified by returning to the distinction between contingent events and propositions. When Beck interjects issues of morality into all scientific and technical practices, he discounts the possibility that techno-scientific rationality is producing objective, certain propositions about the world. Instead, he essentially argues that the techno-scientific enterprise is engaged in the task of producing contingent propositions because such work makes implicit assumptions about what our culture values, believes, and desires. Risk assessments and the procedures of risk analysis are obviously engaged in the task of producing contingent propositions, but Beck sees these procedures of scientific work as extensions of a more general trend. That more general trend relates back to the capacity of Enlightenment science to affect the natural world (and supposedly improve the natural world). The calculations involved in risk assessments are merely the attempt to quantify the consequences of early scientific and technical successes, but that process of quantification does not produce certainty, it only produces contingent propositions. The reason that risk assessment and risk analysis can only produce contingent propositions is that scientific and technical work stopped describing the natural world and started intervening in it. This led to the production of contingent events. Risk assessment and risk analysis describe these contingent events. But all scientific and technological development carries with it the production of contingent events—events that could possibly happen. Thus once we see scientific and technical work not as a descriptive enterprise but as a productive enterprise (and we will be forced to recognize this in the ominous anxieties of the risk society), we begin to understand science as an enterprise that manufactures both contingent events (or unintended consequences as they are sometimes called) and contingent propositions. This is how scientific and technical work has come to stand at the center of political culture. If the “contingent is the unproblematic scene of rhetoric,” then the forces that set that scene (techno-scientific rationality in the case of the risk society, and certainly some other set of forces in the case of Athenian culture) go a long way in determining what kinds of rhetorical practices are made possible and what kinds of rhetorical citizenship are required for deliberation. This is a matter of historical circumstances, and rhetorical practice must respond to the contingencies that we find in our political culture. In our case, those contingencies, at least according to Beck, are techno-scientific.

In the early twentieth century, this meant that issues of judgment and authority were to be left in the hands of experts. Certainly expertise carries with it its own rhetoric and its own mechanisms for deliberation. However, rhetorical theorists often see the rhetoric of expertise as an impediment to the constitution of the public sphere and as a way of disempowering citizens and making political culture less democratic. It turns out that there is little reason to believe such claims at the beginning of the twenty-first century. The judgment and authority of expertise, once thought to be unassailable, is undermined within the risk society. But no simple transition moves the locus of judgment and authority back to the community of common citizens. Because the contingent scene has been set by techno-scientific rationality, the precise problem becomes how to cultivate common sense in citizens and how to render judgments without the foundations of expert knowledge. The risk society thesis shows that the conditions of possibility for returning judgment and authority to common citizens are now in place, but this has not happened yet. Classical theorists identified prudence as the ability to deliberate well about what is good and bad. According to Aristotle, prudence, or *phronesis*, required the cultivation of a kind of wisdom that he distinguished from theoretical wisdom and craft knowledge. This form of wisdom referred to the capacity to deliberate about particular, contingent matters while relying on practical experience and virtue. Cicero developed Aristotle's initial claims further. In *De oratore* he defines native Roman *prudential* as a form of practical wisdom grounded in experience in Roman cultural institutions combined with an interest in and commitment to the study of theoretical learning (or what we might call philosophy). Prudential reasoning and practice are at the center of Cicero's ideal orator. Training in rhetoric, from the perspective of this model of political culture, amounted to training in prudential reasoning and practice. Cicero's goal in tying rhetoric to prudence was to recover a deliberative model of civic participation in the face of a movement toward dictatorship (see Garsten). This is certainly what Beck is after when he talks about the competence to use our "own better judgment" and the development of "more democracy" (*Risk Society* 214 and *World Risk* 70).

The problem, however, is that prudence itself is a historically contingent category. In other words, when Cicero makes reference to the experience of Roman cultural institutions he hints at the ways in which the art of dealing wisely with contingency is itself a historically and culturally contingent ability that would need to be developed in different ways at different times. If we are to historicize the concept of the prudent, then we might realize that any contemporary version of prudence must include a facility for dealing with scientific and technical matters (and not, say, Roman cultural institutions). Prudence is certainly not a static art, but what would a scientific and technical form of prudence look like? And how would we train citizens in the cultivation of a scientific prudence? Most important, it would seem to require a familiarity with working through cases of scientific controversy. In other words, understanding the ways in which scientific work is itself deliberative and conditioned by uncertainty and controversy is necessary.

Scientific and technical reasoning may be thought of as different in kind from practical reasoning, but this distinction would need to be removed. Citizens in a world risk society would need to begin to see scientific reasoning as a special case of practical reasoning and have some training in that form of reasoning. This would be the only way of restoring judgment to common citizens.

In addition, all scientific and technical work would have to be understood as advancing particular moral agendas, and prudential citizens would have the capacity to read the morality of techno-scientific rationality. Beck claims repeatedly that there are no neutral or objective scientific statements in a “world risk society” and that all risk statements carry a morality with them. Unfortunately, one of the great successes of the Enlightenment and modernity was the separation of techno-scientific rationality from questions of ethics (at least in the minds of scientists). This separation was a ruse, and we know that now in the face of such great dangers. But one must have the capacity to identify the morality of a scientific claim in order to challenge or critique it. Certainly this is just a beginning. Rethinking the category of prudence from within the “world risk society” thesis is a difficult challenge. If this is something that can be taught, rhetorical theorists must face the challenge of articulating all the aspects of a scientific prudence and then engage in the task of promoting the teaching of that skill for the improvement of the public sphere and the return of judgment to common citizens. I am not alone in this recommendation. Jeffrey Grabill’s *Writing Community Change* and Michele Simmons’s *Participation and Power* are two examples of attempts to understand the rhetorical work of citizenship within a risk society. Extending this kind of work (which I have tried to do here) requires that scientific examples not only be critically analyzed through the lens of rhetorical theory, but also that scientific and technical work become the grounds for a re-articulation of key themes within rhetorical theory so that those themes become better suited for pragmatic work within contemporary public culture.

Public Culture and Political Rhetoric in a Risk Society

Beck’s insights have direct implications for rhetorical work on the constitution of publics and counterpublics. Risk, as a construct, defies rhetorical control and has material effects. Beck’s argument about democratization does not imply that a greater number of people control risk but that no one can control it. Even though no one can control risk it demands our attention and calls forth engaged acts of public communication, usually such acts of public communication place security ahead of freedom or equality as central democratic values. A theory of scientific and technical controversy might go some way to explaining the stylistic components of such acts of communication and account for how, and what kind of, publics are constituted by risk (and how security becomes a default democratic value). This requires building conceptual bridges between work on the relationship between rhetoric and political deliberation and the rhetoric of science project.

It has been my contention in this article that Ulrich Beck's social theory provides a useful and important resource for explicating that relationship.

If we are to accept Beck's risk society thesis, two critical questions emerge: What will be the central characteristics of political culture in a "world risk society"? What kind of political rhetoric, or what forms of civic training, should we teach if we are preparing citizens for life in a "world risk society"? Beck answers the first but only asks the second. His answer to the first includes the revitalization of the public sphere (and the invention of a kind of global public sphere), and engagement in a form of subpolitics that cracks open the boundaries of the political, subverts the normal channels of governance, and operates on a global scale. More democracy, for Beck, is on the horizon. But political culture will also be marked by the constantly looming potential of hysteria and mass destruction. In other words, anxiety will be the mood of political culture and the acquisition of more and more knowledge (even the development of prudence) will coincide with the expansion and deepening of anxieties. In the face of that kind of political culture, the best forms of civic training must involve the development of a scientific prudence, that is, a democratic capacity for all kinds of citizens to engage in acts of deliberation about scientific and technical matters. In addition, political culture would need to foster the development of sites of connection and exchange between citizens and scientists, so that a collective, moral, and technical vision of our future could be authored. Beck seems incapable of delivering a theory that could advance such an agenda, but the roots of that work are clearly available within the rhetorical tradition. For this reason, it seems rhetoricians can profitably mine Beck's work for useful resources and sociologists concerned with risk would benefit from engaging the rhetorical tradition.

Beck's descriptive move relies on the historical argument that the success of "first modernity" actually had the consequences of producing more uncertainty and danger. This is a deeply ironic outcome of a historical movement that sought to control the natural world. Because science and engineering practices are now seen as the engines, or producers, of uncertainty, it becomes clear why and how science is related to political rhetoric in a "world risk society." Beck's normative recommendations for what to do in these circumstances are, however, thin, at best. He lacks the substantive history of the rhetorical tradition with its emphasis on cultivating judgment and engaging in deliberation over contingent matters. He manages to historicize the concept of contingency, but not to articulate a program for civic training such that judgment is returned to the citizenry even in highly technical and scientific matters. This project is left to rhetoricians and political scientists. Or perhaps it is best left to the agents of subpolitics who will develop their own forms of prudence on the ground while engaged in acts of debate and deliberation with scientific communities of experts (as was the case in the early 1980s AIDS protests). If we are to assume that the project of developing a new prudence for the age of risk rests with the agents of subpolitics, then the only requirement is that we invent and foster locations or forums for deliberation

between scientists and engineers (which is what Michele Simmons recommends as well). Such locations and forums would provide places for reaching moral and ethical decisions regarding the dangers we face—maybe this is just the same vision that John Dewey articulated in *The Public and Its Problems*. But if that is not sufficient, then the task of the rhetoric of science is to argue for civic training that includes the development of a scientific prudence. A fuller articulation of the constitutive features of this prudence would be required, but still the practice of political rhetoric would seem to rest increasingly on that form of reasoning. Cultivating such a scientific prudence would return the location of judgment to the citizenry and move us beyond the vision of a technocracy of experts articulated and sought at the beginning of the twentieth century.

References

- Asen, Robert and Daniel Brouwer. *Counterpublics and the State*. Albany, NY: SUNY Press, 2001. Print.
- Beck, Ulrich. *Risk Society: Towards a New Modernity*. London: Sage, 1992. Print.
- . “World Risk Society as Cosmopolitan Society? Ecological Questions in the Framework of Manufactured Uncertainty.” *Theory, Culture & Society* 13.4 (1996): 1–32. Print.
- . *World Risk Society*. Malden, MA: Blackwell Publishers Inc., 1999. Print.
- Beck, Ulrich, Anthony Giddens, and Scott Lash. *Reflexive Modernization: Politics, Tradition, and Aesthetics in the Modern Social Order*. Palo Alto, CA: Stanford University Press, 1994. Print.
- Cicero. *De Oratore I-III*. London, UK: Duckworth Publishers, 2002. Print.
- Dewey, John. *The Public and Its Problems*. Athens, OH: Swallow Press, 1954. Print.
- Douglas, Mary. *Risk and Blame*. New York: Routledge, 1992. Print.
- Farrell, Thomas. “Knowledge, Consensus, and Rhetorical Theory.” *Quarterly Journal of Speech* 62.1 (1976): 1–14. Print.
- Fuller, Steve. *Social Epistemology*. Bloomington: Indiana University Press, 1991. Print.
- Gaonkar, Dilip. “Contingency.” *Encyclopedia of Rhetoric*. New York: Oxford University Press, 2001. Print.
- Garsten, Bryan. *Saving Persuasion: A Defense of Rhetoric and Judgment*. Cambridge, MA: Harvard University Press, 2006. Print.
- Goodnight, Thomas. “The Personal, Technical, and Public Sphere of Argumentation: A Speculative Inquiry in the Art of Public Deliberation.” *Contemporary Rhetorical Theory: A Reader*. Eds. John Lucaites, Celeste Condit, and Sally Caudill. New York: The Guilford Press, 1999. Print.
- . “Science and Technology Controversy: A Rationale for Inquiry.” *Argumentation and Advocacy* 42.3 (2005): 26–29. Print.
- Grabill, Jeffrey. *Writing Community Change: Designing Technologies for Citizen Action*. Cresskill, NJ: Hampton Press, 2007. Print.
- Grabill, Jeffrey and W. Michele Simmons. “Toward a Critical Rhetoric of Risk Communication: Producing Citizens and the Role of Technical Communication.” *Technical Communication Quarterly* 7.4 (1998): 415–441. Print.
- Gross, Alan. *The Rhetoric of Science*. Cambridge: Harvard University Press, 1990. Print.
- Habermas, Jurgen. *The Structural Transformation of the Public Sphere: An Inquiry into a Category of Bourgeois Society*. Cambridge, MA: The MIT Press, 1991.

- Heilbroner, Robert. "Do Machines Make History?" *Does Technology Drive History? The Technological Dilemma of Technological Determinism*. Eds. Merritt Roe Smith and Leo Marx. Cambridge, MA: MIT Press, 1994. Print.
- Hughes, Thomas. *Human-Built World: How to Think about Technology and Culture*. Chicago: University of Chicago Press, 2004. Print.
- Ivie, Robert. "Rhetorical Deliberation and Politics in the Here and Now." *Rhetoric and Public Affairs* 5.3 (2002): 277–285. Print.
- Katz, Steven and Carolyn Miller. "The Low-Level Radioactive Waste Siting Controversy in North Carolina." *Green Culture: Environmental Rhetoric in Contemporary America*. Eds. Carl Herndl and Stuart Brown. Madison: University of Wisconsin Press, 1996. Print.
- Keranen, Lisa. "Bio(in)security: Rhetoric, Science, and Citizens in the Age of Bioterrorism—The Case of TOPOFF 3." *Sizing Up Rhetoric*. Eds. David Zarefsky and Elizabeth Benacka. Long Grove, IL: Waveland Press, Inc., 2008. Print.
- Lyne, John. "Science Controversy, Common Sense, and the Third Culture." *Argumentation and Advocacy* 42.3 (2005): 38–42. Print.
- Miller, Carolyn. "Opportunity, Opportunism, and Progress: Kairos in the Rhetoric of Technology." *Argumentation* 8.1 (1994): 81–96. Print.
- Reddy, Sanjay. "Claims to Expert Knowledge and the Subversion of Democracy: The Triumph of Risk over Uncertainty." *Economy and Society* 25.2 (1996): 222–254. Print.
- Sauer, Beverly. *The Rhetoric of Risk: Technical Documentation in Hazardous Environments*. Mahwah, NJ: Lawrence Erlbaum Associates, Inc., 2003. Print.
- Scott, J. Blake. "Kairos as Indeterminate Risk Management: The Pharmaceutical Industry's Response to Bioterrorism." *Quarterly Journal of Speech* 92.2 (2006): 115–143. Print.
- Simmons, Michele. *Participation and Power: Civic Discourse in Environmental Policy Decisions*. Albany, NY: SUNY Press, 2007. Print.
- Treichler, Paula. *How to Have a Theory in an Epidemic: Cultural Chronicles of AIDS*. Durham: Duke University Press, 1999. Print.
- Van Loon, Joost. *Risk and Technological Culture: Towards a Sociology of Virulence*. New York: Routledge, 2002. Print.
- Waddell, Craig. "Saving the Great Lakes: Public Participation in Environmental Policy." *Green Culture: Environmental Rhetoric in Contemporary America*. Eds. Carl Herndl and Stuart Brown. Madison: University of Wisconsin Press, 1996. Print.
- Warner, Michael. *Publics and Counterpublics*. New York: Zone Books, 2002. Print.