

ISSA Proceedings 2006 - Creating Controversy About Science And Technology

✘ This paper is a response to Tom Goodnight's 'rationale for inquiry' into 'science and technology controversy', which was recently published in the forum section of *Argumentation and Advocacy*.

My first response to his published essay was printed in the same issue of that journal, as were responses by Alan Gross, Carolyn Miller and John Lyne. My purpose in this second response is to summarize some similarities in the arguments that Miller, Lyne and I independently presented in that published forum, and to offer a new critique of the language used to discuss science and technology controversy.

Gross's response to Goodnight's call to arms was to reenlist and begin preparing his armaments; he laid out theoretical frameworks for the analysis of scientific controversy borrowed from Joseph Gusfield, Victor Turner, and Jürgen Habermas. Miller, Lyne and I, who like Gross are career rhetoricians of science, took a somewhat different approach when writing our responses. While we were excited to hear a call for the further support of a segment of our field, we could not help but also act as critics of the argument that Goodnight offered. While failing to advance theoretical frameworks of our own, we did suggest that there might be some problems with the initial map of the field that Goodnight sketched.

All three of us focused on Goodnight's characterization of science and technology controversy as being generated from a contest between 'traditional culture' and 'modernity', 'between community and society, between lifeworld and systems-world' (p. 27), a repeated 'struggle between prudencebased reason and modern reasoning [or reasoning] from science/technology' (p. 28).

Invoking Habermas, Goodnight suggests that 'systemsworld reasoning' is 'usurping lifeworld functions, at too high a price', and at the same time, science is becoming 'increasingly tied down by the practices of party politics' (p. 27).

In response, he says, science and controversy studies should 'engage the nexuses among risks deliberated from traditionbased, prudential reasoning or assessed by contemporary epistemic strategies', and find a way to help public deliberation 'continually negotiate its status, evolve, and reclaim its powers on either side of a

divide between forces that would irreparably politicize science or progressively scientize the lifeworld' (p. 28).

Miller, Lyne and I, well-trained debaters all, recognized an antithesis when we saw one, and we decided it was our duty to complicate it. Miller, looking to some cases of science controversy about which she's written, points out that what strikes her the most in these studies is 'the strategic instability of the distinction between epistemic and policy issues, between expert and public forums' (p. 36). This, she suggests, is evidence that 'the public sphere and the technical sphere are more intimately intertwined - and perhaps more similar to each other than Professor Goodnight's earlier work maintains' (p. 37). 'Controversy in the technical sphere can involve ambiguity, emotion, and multiple forms of power, much like deliberation in the public sphere', says Miller.

'And controversy in the public sphere often is shaped and constrained by influences from the technical sphere' (p. 37).

Lyne makes a similar point in describing his research on evolutionary biology controversies. He says: 'In view of Goodnight's narrative about the negotiation of a livable set of trade-offs between prudential reasoning and modern epistemic techniques, between the lifeworld and science, it is interesting to see the rhetorics of scientific modernity and common sense being used on all sides' of the debate over evolution (p. 39). As such, says Lyne, 'it seems best to acknowledge the commingling of science and common sense. The forces of modernity and traditional culture are no pure strains, but already-entangled provinces of meaning, semiotically constituted in reference to each other' (p. 40).

In my own response in that journal, I move beyond description of the similarities between public and technical spheres to prescription, arguing that 'there may be moments when we want to resist the urge to parse the elements of a controversy along the two-cultures divide, or even celebrate 'the *scientific-ity* of modern life and the *rhetoric-ity* of modern science'; moments 'when choosing not to police the borders between the technical and public spheres, encouraging some migration between the two, or even refusing to recognize those borders, is the best way to achieve the goal that Goodnight sets out for science and technology controversy study, [that is,] to reconfigure overall debate to more productive, sustainable, and equitable trajectories of disagreement' (p. 32). To emphasize my point, I reverse the terms of Goodnight's antithesis, arguing that we should seek to help public

deliberation 'reclaim its powers on either side of a divide between forces that would fail to recognize the inescapably political nature of science or that would refuse to respect the scientific expertise of those rare public rhetors who show that they are capable of contributing to the technical controversy' (p. 32).

In our responses, all three of us rhetorical critics describe conditions where Goodnight's antithesis does, or should, break down. Miller talks about the 'contact zone' which is in neither the expert or public realm, where backstage brokers exert their power in formulating science policy (p. 37). Lyne talks about the 'third culture', in which articulate celebrity scientists take on the role of public intellectuals (p. 40); he's also encouraged by the rise of the Intelligent Design community, 'where strategies that may not be rooted principally in science can incorporate elements of science' (p. 40). I personally do not find as much encouragement there, but I do find encouragement in rhetorician of science Celeste Condit, who learned a great deal of biological science and then worked to publish her rhetorical critiques in scientific journals. Rather than only address other rhetoricians, Condit crosses the cultural divide and uses both common sense and epistemic reasoning to make a controversy out of the unreflective practices of scientists (like, for example, the assumption that brain differences between males and females should be researched rather than brain similarities between the sexes).

What may be the most telling example of the crossing of prudential reasoning with modern scientific reasoning is Goodnight's own rhetorical call to theorize science and technology controversy. Insofar as Goodnight's essay identifies the generating factors of science and technology controversy, describes the three forms it takes, and outlines five general statements to initiate the field of inquiry, I think it participates in a form of epistemic reasoning, proposing the theorization of this field as any good scientific paper might. But at the same time, Goodnight adopts the rhetorician's preference for prudential reasoning when he recognizes that 'each science/technology controversy is itself a singularity' and when he says he's tempted to resist the impulse to offer universals: 'Instead, let us *not* theorize the spaces of contention' he proclaims, right before initiating the theorization of the spaces of contention. Walking a fine line between the two cultures, he shows that sometimes the *prudent* thing to do is to adopt modern epistemic techniques.

Perhaps I am being imprudent then in embracing Goodnight's initial call to not theorize the spaces of contention. As a scholar firmly situated in the humanities, I consider myself a rhetorical *critic* first and foremost, and I like to think that I turn

to theory only when it can help me to illuminate the particular case. There are too many differences between cases and too many exceptions to the rule for me to feel comfortable about making large pronouncements concerning the generating forces, forms, or processes of science and technology controversy.

But I am comfortable examining multiple particular cases to illustrate the possibilities available to rhetors who seek to reconfigure discourse into 'more productive, sustainable, and equitable trajectories'. And there have been many cases studied by rhetoricians of science over the last twenty years that I think we would do well to review in getting a better understanding of what can happen in controversy over science and technology. A preliminary look at some cases mentioned in this forum conversation suggests to me that paradoxically, two of the most interesting situations for critics of argumentation today arise not when there is science and technology controversy, but when that controversy is lacking.

First, there is the situation when science and technology controversy should exist but it is being suppressed. The case of the alleged biological effects of non-ionizing electromagnetic fields is an example. Carolyn Miller has studied this case of disagreement between epidemiologists and physicists, and concludes that the controversy is muted 'because there is now virtually no funding for research on this issue in the United States; the policy dimensions of the controversy have tilted in favor of those who deny the biological effects of non-ionizing radiation, in part because policy-makers have been more willing to listen to them, in part because extra-scientific interests have been able to exert pressure in this direction' (p. 35). It seems to me that this is a case in which the proper role of the argumentation critic may be to *create* controversy, or at least to amplify the dampened voice of the less powerful side in a scientific debate, adopting the sophistic ethic to 'make the weaker case the stronger' in a public forum.

Other similar cases might include the effort to create a controversy about what scientists consider a legitimate set of research questions in brain sex studies, or what the government deems a safe site for the storage of nuclear waste, or how determined our behavior is by the genes passed down to us by our Paleolithic ancestors.

In these cases, the scientifically-informed rhetorician can play the role of 'third culture' public intellectual as well as, if not better than, the rhetorically-informed scientist. The rhetorician can tell the story of a controversy that truly comes into focus only as a result of the well-researched argumentation analysis that we develop.

The second situation that argumentation scholars should find especially interesting right now is the flip side of the first: when controversy does not exist but is being manufactured as a rhetorical tool to serve the ends of a particular group. For example, the scientists who I invited to debate the Intelligent Design supporters in my public debate course earlier this year told me that there *is* no scientific controversy over evolution, and so they would not stoop to debating it in a public forum. Of course, that left the nonscientist observers in my class without an understanding of why evolutionary scientists reject the critiques of their theory, and forced those students to make an uninformed decision as to whether or not 'Intelligent Design' was in fact a legitimate scientific theory set in controversy against the current paradigm. Maybe this is a case where scientifically-informed critics of argumentation can take the place of scientists uncertain about their rhetorical skills and fearful of being outdebated by their opponents. In this case, it would be the proper role of the rhetorician to adopt Aristotle's ethic to make the stronger case really appear the stronger to an uninformed public.

A similar case concerns the current scientific thinking surrounding global warming. One of the most compelling examples of criticism that I have seen lately on the matter of science and technology controversy was offered by Al Gore in the documentary *An Inconvenient Truth* and in his accompanying book. Filmed in front of one of the many audiences for his traveling slide-show-enhanced speech, Gore relayed the results of a study that was published in *Science* magazine of 928 randomly selected peer-reviewed scientific articles on global warming. He asked his audience: 'After reading these articles, how many did the research team discover to be in doubt as to the cause of global warming?' With a click of the slide advancer, he revealed the answer to that question: zero. Gore then relayed the results of a second study published in *Science* magazine, this one examining 636 articles in the *popular press* about global warming. 'What percentage of these newspaper articles relayed doubt as to the cause of global warming' - 53% - a stark contrast to that big zero that filled the other side of the screen to represent *scientific* articles that were in doubt about global warming. This presented a powerful conclusion to Gore's argument that the oil industry has been successful in creating the public perception of a scientific controversy where one does not actually exist.

In this movie, filled with powerful and accessible arguments about the science of global warming, Gore adopts the stance of the scientifically-informed rhetorical critic, exploring the argumentation in scientific and public texts and making the

case that scientists so far have been unable to persuasively make to the public. It seems to me that there is a niche here waiting to be filled by argumentation scholars who can move between scientific and public texts to expose those controversies that are manufactured and that work against the public interest.

So this is my call for inquiry, to supplement Goodnight's invitation to (re)initiate the study of science and technology controversy. I think we should not only accept Goodnight's invitation, but we should also turn our attention to those cases where controversy is lacking (either because it is being suppressed, or because the controversy is itself a deception created by those whose interests are served by the illusion of keeping the debate open). And we should take care to adapt our analysis to the particular case. At times we should strengthen the borders between technical and public spheres, protecting life-world functions from colonization by systems world reasoning, and vice versa. But at other times, we might find it more appropriate to blur the boundaries, recognizing the ways in which scientists use forms of rhetoric that are drawn from the public sphere and also recognizing that some public speakers are capable of employing technical reason in critiquing science on its own terms. And finally, there are times when we should point out that the drawing of boundaries between spheres by arguers is *itself* a part of the controversy.

In the final lines of this paper, I would like to make one more point about science and technology controversy as a field of inquiry. As self-reflective rhetoricians, I think we should be as sensitive about the linguistic choices we make as we are about the ones we study. When it comes to scholarship about science and technology controversy, the metaphors we use reveal a lot about how we are envisioning the field and our role in studying it.

The metaphor used most often in Goodnight's essay compares controversy with 'vast weather systems and disturbances': disagreements 'erupt' each a 'ripple' in the larger exchange, disputes 'rush outwards' macro-disputes 'swirl and eddy across the globe', controversies 'gather into themselves tensions' each is a 'singularity, drawing [different issues] into the vortex of disagreement' as it 'gathers force' (p. 26-27).

Part of me likes this metaphor. It suggests that the controversies we study are complex - forces of nature that are timeless, ubiquitous, and important. But another part of me fears the implications that follow, namely, that rhetoricians, in

studying controversies, are taking on the role of that most disrespected of scientists, the weather forecaster (you know, that 'expert' seen on your local television station making lame repartee with the anchors and offering predictions that often turn out to be wrong). Or worse, insofar as we 'aspire to channel or reconfigure the overall debate to more productive, sustainable, equitable trajectories of disagreement', we are aligning ourselves with weather workers - rain-makers who travel to remote farming communities along with snake-oil salesmen and carnival sideshows. Are we setting ourselves up for failure by imagining controversies as vast weather-systems?

The other metaphor that Goodnight uses compares controversy to a disease. He says: 'Controversies do not so much die out as become dormant, only to reappear in a more virulent form later' (p. 27). The 'colonization' metaphor he uses aligns with this one as well, suggesting that the encroachment of creatures from one sphere into another will lead to disaster for the host. Lyne picks up this metaphor as well. He says: 'One could, for instance, think of [science and technology controversies] epidemiologically, and follow their routes of transmission' (38). This metaphor places rhetoricians in a more prestigious role (we become doctors or biomedical scientists, cultural heroes who save the day by healing the public), but it regrettably treats controversy in rather negative terms, as something to be prevented or cured.

I do not have the perfect metaphor to recommend as a replacement, nor do I think there ultimately is a perfect metaphor; the appropriate metaphor varies according to the purposes we want to put each particular study. But I think it would be good for us to discuss this a bit, to see which metaphors fit best with our goals as we describe science and technology controversy, analyze it, critique it, and offer recommendations for changing it.

REFERENCES

- Ceccarelli, L. M. (2005). Let Us (Not) Theorize the Spaces of Contention. *Argumentation and Advocacy* 42,1, 30-33.
- Goodnight, G. T. (2005). Science and Technology Controversy: A Rationale for Inquiry. *Argumentation and Advocacy* 42,1, 26-29.
- Gore, A. (2006). *An Inconvenient Truth*. Emmaus, Pennsylvania: Rodale.
- Gross, A. (2005). Scientific and Technical Controversy: Three Frameworks for Analysis. *Argumentation and Advocacy* 42,1, 43-47.
- Guggenheim, D. (2006). *An Inconvenient Truth*. USA: Paramount.

Miller, C. R. (2005). Risk, Controversy, and Rhetoric: Response to Goodnight. *Argumentation and Advocacy* 42,1, 34-37.

Lyne, J. (2005). Science Controversy, Common Sense, and the Third Culture. *Argumentation and Advocacy* 42,1, 38-42.