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The Production of Technology and the Production of Human Meaning

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What is a rhetoric of technology? How would rhetoric help us understand technology? How would a rhetoric of technology differ from a rhetoric of science? How would it be distinctive from other domains of rhetorical practice? How would it deepen our understanding of rhetoric? How would a rhetoric of technology help us understand our current way of life? These are some of the questions I encountered while working on *The Languages of Edison's Light*, a book about the symbolic, representational, and rhetorical work that accompanied the emergence of the incandescent light as an everyday technology.

On the face of it, my Edison project is a study about the rhetoric of technology because it examines the rhetorical productions that surround a material technology. So just as people have examined the rhetoric of science, economics, sociology, psychology, presidential campaigns, and legal briefs, I now explore the rhetoric of technology. But this project on Edisonian rhetoric turned out to be as much a project in the rhetoric of the patent system and civil court proceedings, in the rhetoric of financial investment and stock market reports, in the rhetoric of the nineteenth-century newspaper and mass circulation magazines, in the rhetoric of the new technical and financial press, in the rhetoric of small group collaboration and large corporate communications, and in the rhetoric of civic regulation, regional boosterism, and Tammany Hall politics as it was in the rhetoric of technology. The electrical technology must make its presence felt in all these discursive arenas, must take on value and meaning in the language and discursive interaction of each. So in what sense is my study of the representations of Edison's incandescent light especially a project in the

rhetoric of technology? And in what sense, if any, can there be a specialized realm of rhetorical studies called a rhetoric of technology?

THREE DISTINCTIONS

These last two questions can be put in greater relief if we make three distinctions between the rhetorical studies of technology and those of science. The first distinction concerns the identification of the fields; the second, the degree of enclosure that bounds the fields; and the last, the effect of materiality on the symbolic activity.

First, the rhetoric of science in the short run has seemed to be relatively unproblematic to define as a special area, although in the long run that may not be the case. The only recurrent definitional issue that has troubled the rhetoric of science has been precisely whether, and to what extent, science is rhetorical. I will not rehearse here the now-familiar arguments and history of the issue but only point out that some rhetoricians and scientists still would like to consider science as knowledge that is privileged and therefore free of rhetoric, knowledge that rises above the situated and purposeful use of language. Throughout the history of the rise of modern science, from the time of Francis Bacon to the time of Hans Reichenbach and Karl Popper, there have been explicit attempts to distance natural philosophy and then science from rhetoric. We can even trace to Plato and Aristotle the impulse to distinguish the uncertain persuasions of rhetoric from those domains of philosophic inquiry that provided access to certain knowledge. At various times, experimentation, methodology, objectivity, and mathematical formulations have been seen as the key ingredients that demarcate science from other less certain endeavors.

In a way, the very surprise of the title *rhetoric of science* defines it as a field and has driven the kinds of questions that attracted the field's early controversialists. Is the title an oxymoron or a tautology? The intrigue of the field's title allows even those people who would simply subsume science into prior forms of rhetoric, such as Alan Gross or Lawrence Prelli, to still identify their work as rhetoric of science instead of just rhetoric that happens to be examining some texts appearing in science journals. I think the real question is, How does the phrase "rhetoric of science" manage to be both oxymoron and tautology? That is, how can science—working through human symbolic means that are faulted, imprecise, and multiply perspectival—

nonetheless establish a high level of agreement, stability, mutual alignment to symbolic representations, and reliability in guiding behavior? Furthermore, how can the symbolic representations of science facilitate unimagined material projects and counterintuitive investigations? What set of historical developments engendered a form of discourse within specialized systems of discourse circulation, distinct from other discursive practices and networks, with a consequence of reorganizing relations with the material world and with other social-discursive systems?

Although science has gained the appearance of distinctiveness from other realms of rhetoric, technology has always been part of the rhetorical barnyard, part of commerce and finances, customers and vendors, partnerships and corporations, suppliers and production, lawyers and courts. Even more, technology has always been fundamentally designed to meet human ends. Thus, technology, as a human-made object, has always been part of human needs, desires, values, and evaluation, articulated in language and at the very heart of rhetoric. Although science has at times been able to wrap itself in a mantle of disinterested curiosity, free of overt interests (although we know this is never the case—scientists' curiosities are driven by who they are, and societies fund the kind of knowledge they need and want), technology must always overtly appeal to the marketplace, political ambitions, and personal desire.

That brings us to our second distinction, which is as rough and loose as the first, filled with exceptions and qualifications, but nonetheless as recognizably true. In the past few centuries, science has been an increasingly enclosed specialized communication system, explicitly creating distances between itself and other systems of communication. Tom Gieryn has pointed toward the boundary work by which scientists at particular moments (e.g., during the Scopes trial), to assert science's authority as a privileged way of knowing, have engaged in public campaigns to create strong boundaries between science and other sources of knowledge and belief. Within the bounded discursive world of science, an intertext of cited works or a literature defines a gradually transforming discursive space within which new claims vie for acceptance, judged by an epistemic court of insider specialists. This enclosed communication system must then represent itself and its knowledge outward to the other public realms, to spread its influence, to petition for resources, and to establish and maintain its boundaries and authority. So a rhetoric of science can study an internal discourse of claim making, a socially contentious discourse of boundary

creation and maintenance, and an outward-facing, interest-driven discourse of professional representation. The discursive communities and directions are rather clearly drawn, even though recent developments in computing and genetic sciences have overtly transgressed these socially constructed boundaries.

In contrast, although some producers of technology work within discursive enclosures of professions, corporations, and specialties, these enclosures are smaller, more recent, and more permeable. Furthermore, the technology itself moves rapidly outward from the small worlds of the expert innovators into the lives of many different kinds of people. The technology, as in the case of Edison's incandescent light and central power, must often enlist the support of numerous publics (financial, legal, corporate, public, technical) long before it becomes anything like a material reality. Certainly, scientists and science laboratories do need support from academic sponsors and granting agencies, but usually this support is mediated through science-controlled peer review, with the intended consequence that the arguments for the value of the projected work can be largely cast in terms of internal scientific values. The words of technology, however, seem to flow all over the discursive landscape, arguing for value in the terms of business, law, government, the public, and consumers (Bijker; Bijker, Hughes, and Pinch; Latour). Even the professional knowledges of engineering sciences are permeable interdisciplinary spaces that are organized around practical problems and projects rather than the advancement of a disciplinary account. The discourse of technology is as pervasive as the electricity that comes out of all our walls. Even the discourses of law or journalism, both of which comprise representation spaces that draw the entire world into them, are more enclosed than technological discourse. Both law and journalism require that the world be translated into their terms to be regulated or to become news, but technology is translated into the terms of the world so as to gain the support and use it requires for its existence.

The enclosure of scientific discourse versus the profligacy of discourse about the technical that accompanies technological objects around the world is related to a third distinction: Technology for the most part produces objects and material processes; science for the most part produces symbols. Science generally produces claims as its end product—mathematical, graphic, or verbal symbols. So once you argue that those symbols are rhetorical—that is, the strategic result of human processes of contention, fought out with words (although also in relation to the material practices of data gathering and

experiments)—then the entire project becomes deeply rhetorical, calling for examination of its language at every turn. Technology, on the other hand, generally circulates objects and material processes, not words. Words, pictures, and numbers may accompany—in the fundraising, the contracts, the manuals, or the advertising—but the technology itself has a seemingly physical obduracy. Of course, as the history of technology has always shown, the material embodies intentions and plans and perceived uses—armaments are built for wars with specific perceived enemies with known weapons, and bicycles are designed for users with specific leisure or transportation needs. Moreover, recent constructivist studies show how technologies embody interests, negotiations, and struggles, as well as the enlistment of users, so that different constituencies contend for design control of arms or bicycles. So there is a kind of material rhetoric in whether a company produces daredevil racing cycles or safe and comfortable bikes for everyday transport. But, ultimately, it is the material object that conveys the primary rhetoric and not the language that went into forming the technology and conceiving its uses and meanings.

A RHETORIC OF TECHNOLOGY

So what is a rhetoric of technology? It is the rhetoric that accompanies technology and makes it possible—the rhetoric that makes technology fit into the world and makes the world fit with technology. There is a dialectic between rhetoric and the material design as the technology is made to fit the imaginably useful and valuable, to fit into people's understanding of the world. Technological discourse is a special coalescence of the many discourses of the world. Consider how the technology of architecture brings new buildings to life in the midst of proposals to clients, legal codes, contractual relations, financial discussions, blueprints and materials specifications, negotiations with contractors, and postmodern theories of aesthetics. Of course, science discourse also intersects at many points with other differentiated discourses from the legal and even criminal to the political, financial, or cultural—but yet we can still perceive those in relation to a primary discourse of knowledge production among specialists.

So given that the rhetoric of technology encompasses such a promiscuous and varied range of practices—whose only defining feature is its relation to the material technology being imagined, projected, advanced, managed, coped with, or that is emergent in the world of

multiple affairs—why is the rhetoric of technology special in character or importance? Why does it not just decompose into the separate discourses that it engages? What is there separate to study that is not a rhetoric of law, finance, journalism, or corporate organizations? First, the obduracy of the technological object, although it may be plastic in its uses, meanings, and interpretations, challenges the discourses it intersects with to assimilate its otherness. The rhetoric of technology shows how the objects of the built environment become part of our systems of goals, values, and meaning, part of our articulated interests, struggles, and activities. The technological object, its circulation in many social worlds, and the impact it has on our daily lives give rise to the further discourses of new corporations; social communication among enthusiasts, expert users, and aficionados (e.g., computer user groups and auto collectors); and talk by people simply living in the wake of the new technology.

The changed conditions of life made possible by the introductions of new technology create new realms of discussion as we try to figure out what these changed conditions mean, what problems they pose, and what we can accomplish within them. Technology constantly invites social, legal, personal, and economic discussions that shape how that technology becomes incorporated into new ways of life. This strong discursive force of technology—the fact that we cannot seem to stop talking about the latest technological presence in our life—may make it seem that the technology is determining our life, and we are only reacting. All that talk, however, determines what the technology becomes and what our society becomes with the new tools of technology.

Nonetheless, the course of that technological development is necessarily interactant with many other powerful discursive systems, and if there seems to be an inevitable trajectory, it is not technologically determined in itself; it is in the alliance of the several discourses that provide major meanings for the technology. For example, consider the way patent monopolies, corporate imperatives, and government planning and policy values came together with citizen desires in a post-World War II period, ideological competitions, booming economies and international economic competition, and domestic and international political talk about international security to foster nuclear and rocket technology in the middle of this century. The inevitability of the arms race, if it was inevitable, lay in the coming together of these many systems of meaning and not just in the demonstrated possibilities of big explosions and distant delivery (see MacKenzie).

Because we are living at a time when our lives seem so caught up in the apparent opportunities and imperatives of technology, the rhetoric of technology—that is, the rhetoric of all the discourses that surround and embed technology—is a particularly useful endeavor. By picking apart the conjunction of the powerful discursive forces that create value for and give shape to technological developments and their uses, we can begin to regain some of our choices about the technological future we will live in.

REFERENCES

- Bazerman, Charles. *The Languages of Edison's Light*. Cambridge, MA: MIT Press, forthcoming.
- Bijker, Wiebe. *Of Bicycles, Bakelite, and Bulbs*. Cambridge, MA: MIT Press, 1995.
- Bijker, Wiebe, Thomas Hughes, and Trevor Pinch. *The Social Construction of Technological Systems*. Cambridge, MA: MIT Press, 1987.
- Gieryn, Tom. "Boundary-Work and the Demarcation of Science from Non-Science: Strains and Interests in Professional Ideologies of Scientists." *American Sociological Review* 48 (1983): 781-95.
- Gross, Alan G. *The Rhetoric of Science*. Cambridge, MA: Harvard University Press, 1990.
- Latour, Bruno. *Aramis or the Love of Technology*. Cambridge, MA: Harvard University Press, 1996.
- MacKenzie, Donald A. *Inventing Accuracy: An Historical Sociology of Nuclear Missile Guidance*. Cambridge, MA: MIT Press, 1990.
- Prelli, Lawrence J. *A Rhetoric of Science: Inventing Scientific Discourse*. Columbia: University of South Carolina Press, 1989.

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