Rhetorical Analysis of Science and Technology in Public Discussion: A Review and Call for Collaborative Research

by Stephen M. Weinstock

(Unsubmitted conference paper circa 1984)

The following paper is presented here for historical purposes. It was scanned January 2005 from a partially typed copy of a paper intended for but never submitted to a national communication association's annual convention. I have estimated the date to be around 1984.

> The contemporary experience of things technological has repeatedly confounded our vision, our expectations, and our capacity to make intelligent judgments. Categories, arguments, conclusions, and choices that would have been entirely obvious in earlier times are obvious no longer. Patterns of perceptive thinking that were entirely reliable in the past now lead us systematically astray.
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> from Langdon Winner, *Autonomous Technology: Technics-out-of Control as a Theme in Political Thought* (Cambridge: The MIT Press, 1977), pp. 7-8.

If Langdon Winner's observations are nearly as true today as they were in 1977, the theme of this convention ("Human Communication in the High Tech World of Tomorrow") sanctions a look at what scholars of rhetoric and public address have to offer this so-called "World of Tomorrow." After all, rhetoric traditionally has been the art whose main concerns are expectations, categories, arguments, conclusions, and choices about thinking wisely and speaking eloquently.

The purpose of this paper is threefold: (1) to present an overview of recent speech communication research on matters of science and technology, (2) to identify research areas within the traditional domain of rhetoricians, and (3) to suggest avenues for long range collaborated research. Ultimately, the path I choose leads to the rhetorical analysis of scientific and technological issues in public discussion.

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In choosing this path, I am motivated by three concerns which I expect many of us share: (1) personal research interests, (2) potential contribution to the field, and (3) potential for finding sources of funding.

The theme of this convention is not new to the speech communication field. A review of five recent annual convention programs (SCA -1981, 1982, and 1983 and ECA 1982 and 1983) reveals eighty-four papers and workshops attesting to an emergence of the high technology theme. It is indeed an idea whose time has come and

which may pervade scholarship for decades.

Many of the convention papers and workshops descriptively identify new technologies and their various uses. Themes addressed include technological hardware,[1] the development and control of technology,[2] technology and problem-solving,[3] technology and organizational communication,[4]4 using technology in the university,[5] using technology to teach,[6] using technology to do research,[7] and using technology to publish.[8]

Another category of papers addresses effects of science and technology on communication, including effects on language and thought,[9] effects on interpersonal relations and transactions,[10] and effects on rhetoric and public address.[11] Themes related to the effects of science and technology on rhetoric (as theory) include the applicability of traditional and contemporary rhetorical concepts to the business of doing science and technology[12] and the suasory dimensions of mass media[13] and other technological artifacts.[14]

Related to the effects of science and technology on public address are papers on science and technology as themes and issues within rhetorical discourse[15] and papers on the rhetorical analysis of scientific and technological issues in public discussion. Particular issues addressed in the convention include the evolution-creation debate,[16] abortion,[17] birth control,[18] breastfeeding versus infant-formula advertising,[19] the laetrile controversy,[20] the swine flu program,[21] the recombinant DNA controversy,[22] cameras in the courtroom,[23] home video recording versus copyright laws,[24] technocracy,[25] the PATCO strike,[26] environmental issues,[27] nuclear power,[28] and nuclear weapons.[29]

Many of the same research themes have been published in both our national and regional speech communication journals, as well as in other favorites, such as *Philosophy and Rhetoric*. Articles addressing various contemporary aspects of rhetoric's applicability to the business of science and technology have been published, including many falling under the rubric of the rhetoric of science.[30] Other articles have appeared addressing historical aspects of rhetoric's applicability to science and technology.[31]

Without doubt, in recent journals, the rhetoric of science articles outnumber the published rhetorical analyses of public issues rooted in scientific and technological concerns. By my count, the recent articles number four: Bytwerk's "The SST Controversy: A Case Study of the Rhetoric of Technology" (1979),[32] Farrell and Goodnight's "Accidental Rhetoric: The Root Metaphors of Three Mile Island"

(1981),"[33] Bantz's "Public Arguing in the Regulation of Health" (1981),[34] and Mechling and Mechling's "Sweet Talking: The Moral Rhetoric Against Sugar" (1983).[35] Presumably, the list will grow as many of the analyses presented as convention papers are published.

While these studies tend to show that the mutable art of rhetoric is once again adapting to the prevailing socio-historical epoch, (if I may borrow a particularly apt phrase) more research is needed. It is needed to continue providing rhetorical equipment for living in the "high tech world of tomorrow." This includes not only rhetorical analyses of scientific and technological issues, but also the other aspects of communication mentioned above-the rhetoric of science, the effect of science and technology on language and thought, the suasory dimensions of mass media and other technological artifacts and as well, other types and categories of research not yet mentioned need attention.

Rhetoricians, I believe, are particularly suited to examine and adapt the corpus of communicative options collected throughout the past 2500 years and to provide a rhetorical framework for understanding expectational patterns, categories, arguments, conclusions, and choices for thinking wisely and speaking eloquently in a technological society.

At first glance, many of the research areas, especially the rhetorical analysis of scientific and technological issues in the public arena, seem to coincide with the purposes of two federal research programs: Ethics and Values in Science and Technology (EVIST), which is administered by the National Science Foundation, and Science, Technology, and Human Values (STHV), which is run by the National Endowment for the Humanities. According to its program announcement,

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> The program on Ethics and Values in Science and Technology at the National Science Foundation supports research and related activities to improve public and professional understanding of
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> -ethical and value aspects of contemporary issues that involve science and technology, and
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> -ethical, social, and professional standards that influence the conduct of scientific and Technological activities.[36]

The program is expressly directed at scholars in the humanities in addition to scientists and engineers, and according to some of the stated criteria,

> proposals are accepted for support based on the degree to which they will:
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> -address issues of demonstrable importance to nonspecialists in science and ethics, especially decision makers and persons affected by science and technology;
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> -facilitate discussion and understanding among as broad a range of concerned individuals and groups as possible; and
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> -contribute to the formulation of improved policy or practice with respect to the issues under consideration.[37]

There are, however, specific areas which are not fundable under the NSF EVIST program: (1) activities directed solely or primarily at curricula development, (2) "general social or philosophical studies of science and technology or studies in the foundations of ethics," (3) "studies of social problems as such . . . without particular emphasis on the roles and responsibilities of science or engineering," and, among a few others, (4) studies "focusing: solely or primarily on ethical issues associated with military technologies and national defense strategies."[38] Nonetheless, the program encourages "collaborative efforts of natural and physical scientists, social scientists, engineers, and scholars in the humanities."[39]

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Perhaps a little more directly related to traditional concerns of rhetoric and public address is the NEH Science, Technology and Human Values Program. The opening lines of the STHV program announcement read as follows:

> Histories of human societies have often celebrated the achievements of scientific inquiry and technical invention. The immortals of science and technology parade through our textbooks like heroes, enriching past societies and paving the way, inevitably, to our own.
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> But is only in the twentieth century that scientific technology has become a central characteristic of human life. Never before has the way we work and play, the way we communicate and travel, even the way we are born and die, been so deeply shaped by the intellect and ingenuity of scientific men and women.[40]

After a few more lines extolling some of the virtues of science, the program announcement addresses concern over "the limits of scientific inquiry" and questions about hazards of science and technology:

> The last two decades have witnessed jolting occurrences: thalidomide; oil spills . . . and the Love Canal. Even those scientific innovations which first promised to conquer man's hunger, disease, pain, and ignorance . . . have generated troubling side effects and questions about the authority for their use.[41]

With these types of concerns under consideration, the STHV program seeks to develop interest in the relationship of science and technology to human values and to advance the understanding of its projects by American citizens.[42]

> The Endowment is particularly interested in programs which go beyond the analysis of specific conflicts to look at the philosophical and historical underpinnings of the scientific and technical activity in this and other cultures, and how these relate to other currents of belief and practice.[43]

Over the past 14 years, the NEH has funded projects related to Science, Technology, and Human Values through seven divisions: research grants (team research, research conferences, regional studies, translations, reference works), fellowships (independent study, college teachers, summer stipends, summer seminars), educational programs(higher curricular development pilot projects, implementation projects, elementary/secondary curricular development, summer planning institutes, model activities), public programs (interpretive museum exhibits, media planning, scriptwriting and production projects, library projects), Special Projects (interdivisional scholarly educational-public projects aimed at broad audiences), Youth Programs (High School-Master's non-degree related individual or group projects), and lastly the Science, Technology and Human Values Program itself (interdisciplinary research or conferences on value issues in science and technology to be funded jointly with NSF. Individual Awards to support scholars newly interested in STHV are, or those with sustained activity in the field).[44] (See Table 1.)

It would seem that these programs would be appropriate sources of funding for some of the research projects rhetoric and. public address scholars might engage in. At least that was my thinking when I began to consider possible long range research projects. Hoping to find out what kinds of studies were funded related to my interests in rhetoric and public address, I obtained a copy of a grants list covering STHV related grants from 1970 to 1981. Table 1 indicates the number of grants made in each division for each year as well as the amounts of the grants awarded. (Note that some of the awards were granted for periods of longer than a year, particularly the Educational Program grants.)

Tables 2 and 3 indicate the academic fields (or non-academic institutions represented by grant recipients. Table 2 shows research grants; Table 3 shows fellowship awards. With Table 3, note that 33% of all fellowships went to academicians associated with departments of philosophy, religion, ethics, or some

combination of these. (If we include philosophy of medicine in this group, it accounts for 35% of the grants.) Note also that recipients in historical fields account for 29% of all fellowships. (The figure jumps to 32% if we include history of medicine, history of health sciences, and art history.) One might conclude from the table of areas represented that the field of rhetoric is unconcerned with questions of science, technology, and human values. However, the question of rhetoric's concern with values need not be addressed here.

In attempting to discover projects done by scholars of rhetoric and public address, I had little luck. There were, however, two references to rhetoric. In 1976, a fellowship in residence for college teachers was awarded to Dr. Carol Woodall, Assistant Professor of Communication Arts at Tompkins-Cortland Community College. The study, entitled "Side Lights of Science - A Rhetorical Study," was an attempt "to define a rhetorical structure to represent the dominance of the deductive mode of thought and the technique of saturation--two side lights of the scientific method--in contemporary American society. "[45] (So far, I have not found any additional information about this study.) The other mention of rhetoric occurs in a 1981 Youth grant to Andrea Sharp of Berkeley, California. Her project was entitled, "Reason, Rhetoric, and the Recombinant DNA Debate."[46] (As of yet, I have not obtained information on NEH-STHV grants for 1982 or 1983.)

[The remainder of the paper (1) identifies non-rhetorical projects funded by the NEH which relate to rhetorical research, (2) identifies kinds of projects funded which would be appropriate projects for students of rhetoric and, public address, and (3) suggests several projects which would benefit from long range collaborative planning. The projects range from seminars and interdisciplinary conferences organized by rhetoricians to the publication of resources to assist public understanding of scientific and technological issues and the publication of indexes, bibliographies, and guides to rhetorical resources related to the EVIST and STHV programs.]

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