

THE UNIVERSITY AS MEDIATOR:

A New Model for Service

by

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Submitted to the Department of Urban Studies and Planning
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ABSTRACT

There are three prevailing models of university service: "ivory tower," "service station," and "activist." Proponents of the ivory tower model hold that major research universities should refrain from direct involvement in public policy and should focus exclusively on basic research. Those who advocate the service station model argue that universities contribute through applied research and by offering expert advice to government and industry. Activist universities serve by identifying social wrongs and working to rectify them. Each model suggests a different strategy for bringing technical knowledge to bear on public policy-making.

Each of the models is flawed. The ivory tower, service station, and activist models for service are inconsistent with the basic values of the university: a commitment to advance knowledge, neutrality, and independence. A fourth model -- the university as mediator -- is possible. The university as mediator would (1) encourage disputants to work together to solve their problems; (2) bring parties in dispute together in the neutral setting of the university; (3) help public policy-makers clarify scientific and technical issues through joint fact-finding; (4) propose new options that would be better for all concerned; (5) help disputants implement their agreements. The role of mediator allows universities to maintain neutrality while contributing to public policy. It allows universities to serve without subservience. For major research universities wishing to help society confront its most complex and intractable problems while remaining true to their basic nature and functions, the role of mediator offers promise.

Thesis supervisor: Lawrence E. Susskind
Professor, Urban Studies and Planning

BIOGRAPHICAL NOTE

for Jennifer Nash

Jennifer Nash graduated from Bryn Mawr College magna cum laude in 1979, with a major in Anthropology. She worked for five years at the Clean Air Council, an environmental advocacy group in the Philadelphia area, and served as the group's Executive Director from 1983 to 1986.

Jennifer will receive her Master of City Planning Degree with a specialization in environmental policy. Recently she published two articles in Environmental Impact Assessment Review: "Assessing the Health Risks from Municipal Waste Incineration: An Example from Philadelphia," (Vol. 7, No. 3, September 1987); and, with Lawrence Susskind, "Mediating Conflict over Dioxin Risks of Resource Recycling: Lessons from a Flawed Process," (Vol. 7, No. 1, March 1987).

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FOREWORD

Philadelphia, 1985. Mayor W. Wilson Goode announces that the City will build two solid waste incinerators to burn two-thirds of the City's refuse. People living near the proposed incinerator sites protest the plan, arguing that incinerators produce large amounts of dioxin, "the most dangerous chemical known to man." They vow to fight the plan to the finish, even if it means lying down in front of the bulldozers.

The Mayor is frustrated. This is his second attempt to address the City's waste disposal problem. He was forced to abandon an earlier proposal, which also called for incineration, after the city council voted against it. He feels he has exhausted all disposal alternatives; time is running out.

The Mayor asks the Academy of Natural Science of Philadelphia to host a meeting of the nation's foremost experts on incineration. He hopes the meeting will dispel the public's fears. Having heard "the facts," people will give up their opposition. With "education," people will stop fighting and accept his plan.

The Mayor asks me, the director of a local environmental group, and a handful of others to plan the meeting. We work

hard to design a balanced, informative agenda. We invite experts who oppose incineration as well as experts who support it. About 200 people turn out for the meeting. The experts present widely divergent views. One scientist argues that health impacts of incineration are insignificant; another maintains that emissions are deadly.

The meeting only adds to the public's mistrust and confusion. People are distressed to see experts, all of whom hold impressive credentials, disagree strongly on matters of fact. I hear people grumbling that the scientists have been 'bought off,' paid by industry or government to take the positions they do. I hear people asking: "Don't they care about us? Our lives may be at stake!" "We need the facts -- but they won't tell us the facts."

As one of the planners of the Philadelphia meeting, I felt I had missed an important opportunity. The planning committee had brought together people who had devoted their work to the study of incineration impacts. I saw the meeting as a chance, not to convince the public that incineration would be safe, but to learn. But what could I, or the others who attended, discern from the discussion? How could both sides be telling the truth? Whom was I to believe? No one?

My disappointment with the Philadelphia meeting led me to the question: how can expert knowledge be brought to bear

in public policy decisions? Decision-makers often lack even rudimentary scientific training. Yet, in the environmental arena, issues are riddled with scientific and technical complexity. A foolish decision may result in irreversible harm to human health and the environment. Decision-makers are not prepared to make wise choices; they need expert advice. But, in the Philadelphia case, experts were not only advisors but advocates as well. They used scientific and technical arguments to bolster their positions for or against incineration. They did not explain why they disagreed; they made their differences appear irreconcilable. They did not help us to understand the scientific issues at stake. We left the meeting more puzzled than before.

In this research I consider how one source of expert knowledge -- major research universities -- could better serve in public policy decisions. I consider how major research universities like the Massachusetts Institute of Technology where I am a student could help government, industry, and citizen groups to make wise decisions, particularly in the environmental arena.

Universities are complex institutions. As many of those I spoke with in the course of this research told me, universities are not monolithic. Major research universities are made up of faculty, students, researchers, and administrators; within each group there is extraordinary

diversity. Faculty members' interests range from English literature to mechanical engineering. Some devote their time almost exclusively to scholarly pursuits; others work closely with industry and government in applied research. As a group, faculty rarely agree about anything. Students come to the university from all over the world and study fields from urban planning to nuclear physics.

The question I consider is: how ought major research universities, as institutions, contribute to public policy? I do not consider how individuals within the university ought to contribute. Because major research universities are associations of extremely diverse individuals, suggesting roles for individual faculty, students, researchers, and administrators would be a major undertaking, beyond the scope of this research. By focusing on how universities as institutions can contribute, I avoid much of this complexity. Yet my discussion is, by necessity, somewhat abstract. Where does the university as an institution reside? Who speaks for it? Who acts on its behalf? These questions cannot be answered precisely and I make no attempt to do so here.

CHAPTER I

THE MAJOR RESEARCH UNIVERSITY'S SERVICE ROLE:

THREE MODELS

The meeting room was filled with people. Posters hung from the walls: "Incineration Kills!" Three groups sat at the front: citizens on the left, representatives of the company on the right, and the directors of several state government agencies in the middle.

The room darkened and a spokesman for Clean Harbors, Inc. presented the company's proposal to build a hazardous waste incinerator. He showed slides: a schematic of the incineration process, architectural drawings of white, glistening buildings, a long list of impacts the company would assess.

Then the community had its say. One after another people came forward, spilled their guts, asked "Will this kill us?" "How can we trust you, given the way you've treated us?" "How did we get picked?"

At the center of the stage, listening, clarifying each question and directing it to the person best able to answer, stood LES, a professor at MIT's Department of Urban Studies and Planning.

The participation of a university professor at the public meeting described above crystallizes a dilemma: how should major research universities and their faculties serve society? At first glance this question may seem easy to answer: universities should offer the public their wisdom, competence, and objectivity. But, on closer reflection, the question becomes problematic. Whom should a major research university serve? What kinds of services should it provide? What is the relationship between service and the

university's primary functions: teaching and research? How will service to "outsiders" affect university objectivity? Who decides about service?

In 1984 there were 3,284 colleges and universities in the United States, up from 1,851 in 1950. Institutions of higher education spent approximately \$90 billion in 1984-85, a major piece of the nation's economy. 12.2 million students were enrolled and more than 700,000 faculty employed (U.S. Department of Education, 1987). The sheer size of university expenditures and enrollments means that university service affects almost everyone in the country in some way.

Some see service as the raison d'être of higher education. Others reject it, claiming service is inappropriate or even inimical to what universities are about. Opposition hinges on the belief that public service inevitably aligns the major research university with some outside interest, undermining the very qualities that distinguish academic institutions: neutrality and independence.

Problems are compounded when universities become involved in issues that are politically charged, such as the debate about hazardous substances mentioned above. Warns Buell G. Gallagher, "wherever [scholars] of conscience and good will are confronted by the organized efforts of contentious and angry partisanship, the search for the truth

is in grave danger" (quoted in McConnell, 1968, pp. 5-6). According to Gallagher and many others, politics destroys academic inquiry.

At the heart of the debate about service are competing views about the purposes of higher education and the relationship between major research universities and society. This chapter describes and compares three dominant views: the university as ivory tower, service station, and activist.

In the words of Patricia H. Crosson, Director of the Institute for Higher Education at the University of Pittsburgh, university public service is a "fuzzy and difficult concept" (1983, p. 10). Service is a word widely used in discussions of higher education. It is rarely defined. Interpreted broadly, service includes virtually everything a university does and is indistinguishable from the university's other functions. Teaching is service. Research is service. On the other hand, if we exclude all scholarly and educational activities from our definition, service may describe nothing. I prefer the definition of service used by the Carnegie Foundation for the Advancement of Teaching:

[Public service] has to do with the outreach of a university to a society at large, with extending the resources of the campus to individuals and groups who are not part of the regular academic community, and with bringing an academic institution's special competence to bear on the solution of society's problems (1967, p. 4).

The distinguishing feature of university service is its beneficiaries: people and groups who are not traditionally involved in higher education. This definition of service is not precise. What is and is not an "external" group is often difficult to determine.

Clarification of the major research university's service role is necessary because writers on this subject often use service as a rhetorical device. Service is evoked to justify new initiatives, new degree programs, and a vast array of other university activities.

Finally, clarification is important because the major research university's service role appears to be expanding. Today the American university is beset by "centrifugal forces" (Wallis, 1966) which draw faculty and students out into the world to address societal problems. Ties between universities and government and universities and industry are growing more numerous and complex. What are the implications of these new relationships? Is service to outside interests now the driving force at American universities, as some have charged? Have teaching and research been undermined? Has the basic mission of the university been subverted?

Three models of university service

The major writers on the university's service role are John Henry Cardinal Newman, Robert Nisbet, Derek Bok, Robert

Paul Wolff, Carl Kaysen, Clark Kerr, and Harris Wofford. These authors have vigorously debated the question: "How ought universities to serve society?" The debate springs from rival concepts of the university's function in society. I have clustered these views under three headings, or models, and have characterized each with a metaphor: the university as ivory tower, service station, and activist.

Each model implies its own definition of university service. For example, the ivory tower model holds that the university serves society best by pursuing knowledge "for its own sake" (Newman, 1964). The service station model maintains that the university should specialize in "useful" knowledge (Kerr, 1982). The activist model declares that the university serves by "fashioning the mind of the age" (Wofford, 1968), that is, by asserting its own view of what is important and what is right.

The models also differ in terms of their conception of what Derek Bok (1982) calls "basic academic values," qualities that universities "ought to" exemplify. The ivory tower model asserts that universities ought to be neutral; they should refrain from taking stands on public policy issues (Hook, 1971). The activist model holds that universities are political institutions; as such, they ought to be partisan (Wofford, 1968).

Each model calls for the university to be organized in a

way that reflects its service functions. Each serves a distinct clientele.

No university conforms strictly to the model it chooses. Not everyone within an ivory tower university is interested in knowledge "for its own sake." Not everyone within an activist university is politically active. Most universities encourage diversity in the views and interests of their faculty and students (Bok, 1982, p. 36). Nevertheless, a university's model for service gives direction and purpose to its teaching, its research, and its relationship with the outside world. The model sets a standard which guides the types of activities faculty, administrators, and students undertake.

For example, my university, the Massachusetts Institute of Technology, has as its motto mens et manus, mind and hand. As this motto implies, MIT is founded on the concept of "theory and practice hand in hand" (Ehrenfeld, 1986), applied research, and "real world" problem-solving. Committed to the pursuit of "useful knowledge," MIT exemplifies a service station university. While many at MIT may pursue activities that do not conform to the service station model described here, faculty, students, and staff understand that "useful knowledge" is a goal.

MODELS OF UNIVERSITY SERVICE

	IVORY TOWER	SERVICE STATION	ACTIVIST
<u>Conception of Service</u>	Advance knowledge: Scholarship, Truth	Advance <u>useful</u> knowledge: Solve problems, train experts	Pursue truth through social experimentation
	Serve as social critic	Offer means for upward mobility	Serve as social critic
<u>Values</u>	Reject societal values; advocate neutrality, independence,	Accept societal values; advocate diversity, independence, service	Critique societal values; advocate partisanship, independence
<u>Structure</u>	Unified whole: "monastery"	"Multiversity"	"University without walls"
<u>Primary Service Activities</u>	Basic research	Applied research to advance "state of the art," demonstration projects, training of employees	Activism on behalf of cause like environmental protection, public participation, corporate responsibility
<u>Clientele</u>	Primarily enrolled students and scholars Secondarily, society-at-large	Government and industry: those who can pay for the services of faculty, students, and staff	Groups whose interests correspond with the ideology of university efforts

FIGURE 1. The matrix summarizes and compares models for university service I will consider each element of the matrix in the discussion below.

THE IVORY TOWER

The image of the ivory tower suggests a pristine place above and apart from society: in Clark Kerr's words, "a castle without windows" (1982, p. 10). Despite its negative connotations, the metaphor of the ivory tower is popular and persistent. For many, the ivory tower is an ideal toward which universities should strive. It is a standard against which critics often assess the strengths and failures of modern institutions of higher learning.

Conception of Service

Advocates of the ivory tower hold that the university serves society in two ways: it creates knowledge and passes it on to the next generation (Brooks, 1968; Goheen, 1969; Nisbet, 1971; Bok, 1982), and it functions as social critic (Crosson, 1983; Giamatti, 1981; Ashby, 1971).

"Knowledge" has two meanings. Some equate knowledge with scholarship, that is, with initiation into the tradition of great works that comprise our literary and scientific heritage. For example, Bell writes of the university's role in preserving and extending a "great chain of learning" (1971, p. 163). Nisbet remarks that universities place "monumental" emphasis on "the kind of knowledge that is gained by men working in terms of the works of others" (1971, p. 32). Knowledge, in this sense, is developed incrementally by building on others' writing.

Others equate knowledge with truth. For example, Ralph F. Fuchs writes that the university is a place where scholars "pursue truth...[and] transmit it to students, who at the same time learn to pursue truth for themselves" (1963, p. 435). Scholars use reason and facts to discover "eternal truths in the universe" (Carnegie Commission on Higher Education, 1973, p. 83). Those within the ivory tower also play the important role of standing back and "assess[ing] society in its totality" (Carnegie, 1973, p. 44). Without the university's dispassionate, responsible judgment, society may "atrophy and decline." While other institutions may ask "how can we address this or that particular problem?" universities ask another kind of question: "how can we design a system that will address problems we cannot yet foresee?" University criticism is the basis for societal "self-renewal" (Carnegie, 1973, p. 43).

"Basic Academic Values"

According to ivory tower proponents, the advancement of knowledge -- through scholarship or pursuit of the truth -- requires "basic academic values" (Bok, 1982): neutrality and independence. These values are also required of the social critic, who must maintain a detached, dispassionate perspective. The more the university adheres to these values, the greater will be its contribution to society.

Neutrality

Ivory towers value institutional neutrality. The university must refrain from taking stands on political or social issues, except for those that affect academic life directly, such as infringements upon freedom of speech.

Partisanship interferes with the pursuit of knowledge and truth. Fuchs (1963) writes that knowledge grows as individuals "ferret it out," as scholars disagree, debate, and challenge one another to sharpen their arguments. The "free interplay of ideas" is the university's means of "purifying" knowledge (p. 435), of rooting out fallacious arguments. If a university takes a stand -- if it loses its neutrality -- those who disagree with the university's position may stay away. Faculty may feel required to study topics within the university's stated field of interest. They may feel uneasy about freely expressing the results of their research, if conclusions seem to contradict the university's stance. Fuchs and others (Brooks, 1968; Johnson, 1968; Goheen, 1969; Nisbet, 1971) warn that when universities become associations of like-minded scholars, academic work suffers.

Many feel that universities must maintain neutrality in order to remain independent. If the public perceives the university as partisan, it may try to coopt it. Schrecker (1983) writes that in order to make sure that outsiders do not meddle in university hiring, promotion, and curriculum

development, the university "polices itself" and eliminates faculty who "do anything that would bring about such intervention" (p. 26). The history of the university is replete with examples of professors fired or denied promotions on the basis of their radicalism. Schrecker documents the cases of teachers Granville Hicks, Jerome Davis, and Scott Nearing in the 1930s and Bruce Franklin and Michael Parenti in the 1960s and 1970s, fired from their colleges and universities because of their "political...conspicuous[ness]" (p. 29) and "insufficient" patriotism (p. 30). Extreme views threaten university interests.

Ivory towers also value the neutrality individual faculty, staff, and students. Individual neutrality is freedom from bias, from the need to prove a point. Ivory tower proponents equate neutrality with openmindedness. According to Fuchs, without neutrality, academics cannot find truth. For teacher and student "there can be no prescribed and no proscribed thoughts. There is only one rule for instruction: to justify the truth or one's teaching by reason and the facts" (quoting Friedrich Paulsen, p. 435).

Independence

Independence means self-government. One way that universities establish independence is by maintaining their own standards and establishing their own system of rewards

and sanctions. Academics assess the merit of scholarly work through faculty "peer review." Work is judged by the ivory tower's own standards: originality, clarity, and obeisance to scholarly tradition. The university has its own mechanism for recognizing achievement: tenure, publication, and, in the case of students, A's.

Work for the sake of external rewards -- for public approbation or consulting fees -- is not "academic," according to ivory tower standards. Those within the ivory tower pursue knowledge "for its own sake" (Newman, 1964; Bok, 1982; Nisbet, 1971, Wolff, 1970): for the thrill of discovery, the satisfaction of writing something that is clear and insightful, the pleasure of passing knowledge on to interested students. Newman compares knowledge to health. Just as health is a "good in itself ... [although] we cannot point out any definite and distinct work or production which it can be said to effect," knowledge is worth seeking and cherishing "as its own end" (1964, p. 124).

Many believe that external rewards corrupt free inquiry. In the words of Russell Kirk (1963), "the man who pays the piper calls the tune" (p. 607). If work is done on behalf of an outside client, the client's interests will be taken into account as researchers select study questions, choose methodology, evaluate results, and disseminate findings.

Ashford (1983) explains that the impact of outside influence is often substantial. He offers the following example:

Take the case of a toxicologist who has reason to believe that two chemicals could be significant human carcinogens, but who has the resources to pursue a study of only one. If she knows that chemical A is manufactured by a company that is about to give a large technology/development grant to her university, and that chemical B is not, will her choice be unaffected by that fact? Is it not fair to say that fear of upsetting a potential funder may provide an incentive to investigate B rather than A (p. 22)?

If universities allow outside support for academic work, researchers will direct work to areas that are financially lucrative. Scholars will pursue funding, not "truth."

Kirk identifies four ways in which industry or government grants to universities undermine academic inquiry. First, an outside client imposes "ideological pressures" upon the university. For example, an industry client may place a high value on the profitability of research findings. The profit motive contrasts sharply with the university values discussed above. Second, grants are given for "utilitarian" work, "at the expense of genuinely humane and scientific disciplines" (1963, p. 611). A university's research effort becomes skewed toward problems of immediate public importance, even if public attention is only a passing "fad." Third, the need to administer grants forces the university to become bureaucratic. Bureaucracies resent and discourage unusual talents and creative impulses, hallmarks of university expertise. Finally, industry and

government are "monolithic" (1963, p. 612) forces that impose their wills wherever they extend their influence. While government and industry are organized hierarchically, universities are typically non-hierarchical (Wallis, 1966). As such, they are particularly vulnerable to domination from outsiders.

Ivory tower values have much in common with what Merton has called the "ethos of science" (1942). The scientific "ethos" is a complex of norms designed to root out bias and error and to extend "certified knowledge." "Disinterestedness" and "organized skepticism" are two such norms. According to Merton, norms require scientists to evaluate research findings on the basis of preestablished, impersonal criteria. Whether the research confirms or challenges long-held beliefs, it receives the same intense scrutiny. No aspect of nature or society is exempt from scientific examination. Just as scientific norms help the researcher to focus with single minded intent upon his or her subject, never straying to irrelevancies that may corrupt scholarship, ivory tower values work to advance the university's basic goals.

Organizational Structure

The ivory tower's relationship with society is marked by tension. Society is "avaricious" and "demanding" (Johnson, 1968, p. 41) of university knowledge. But, in order to

survive, the ivory tower must keep society at bay. Outside interests threaten university values. Knowledge can only be advanced in a special, protected environment.

Flexner (quoted in Kerr, 1982) describes the ivory tower university as an "organism" (p. 6). Others (Piven, 1983; Wolff, 1970) compare the ivory tower to a monastery. Both images suggest a self-sufficient and self-regulating system. An ivory tower protects its integrity by locking out the world.

The ivory tower's historical roots help to explain its isolated, privileged position in American society. Wolff (1970) explains that the ivory tower model originated with the study of religious texts in medieval times. The object of study was a body of divinely-inspired writings. Nisbet (1971) writes that the sacred texts imbued the scholar with an "aura of the sacred" (p. 28) that persists today, even in secular fields:

The early proposition (going back far in civilization) that knowledge of the sacred is sacred became extended in time to the proposition that...knowledge of a learned discipline is itself sacred. Thus the prestige of the classical scholar, the historian, the philosopher, the philologist, and in time even the chemist and sociologist (p. 28).

The "sacred" quality of academic work justifies its organizational structure, which is closed and self-centered.

Activities

Ivory tower research works to advance the "frontier of knowledge," not to answer the public's questions. Study includes basic research into the fundamental properties of physical and social systems, the interaction between chemical compounds, and the internal dynamics of organizations with identified characteristics. Faculty and students select research questions for their intellectual interest. The "relevance" of research is not be taken into account. Faculty submit research findings for publication in scholarly journals. They do not try to disseminate findings to the lay public.

Few modern universities exemplify the ivory tower model any longer. Most have taken on service roles that go beyond those described here. However, within universities individual faculty members may attempt to uphold ivory tower standards in their own work. They may oppose university participation in "applied" research and argue for a return to the "basics."

Clientele

The primary beneficiaries of the research activities described above are the university scholars themselves -- those who work within the ivory tower. Scholars participating in the research enjoy the rewards of solving complex scientific or sociological puzzles. They add to the

"reservoir" of basic knowledge, thus benefitting other academics.

Ivory tower work also benefits the public-at-large, but only indirectly. Over time, government and industry use university research to develop better technologies or better public policies. But service to the public is a secondary concern for the ivory tower. Its primary allegiance is to those who dedicate their lives to the pursuit of truth.

THE SERVICE STATION

The ivory tower is an ideal toward which many feel universities should strive. The service station is a metaphor for what the modern American university actually is. The image evokes a picture of a place accessible to all, where faculty "attendants" stand ready to respond to the needs to public "customers." Clark Kerr (1982) observes that, while the service station has few advocates, it has many "practitioners" (p. 8). While few people sing its praises, many depend on it. The service station is an institution born of necessity. Society today has compelling needs which force it to call upon the best and the brightest minds. The university is the home of highly trained and specialized talent. The service station exemplifies society and university working in partnership.

Conception of Service

Like the ivory tower, the purpose of the university as service station university is to advance knowledge. But the service station specializes in the development of useful knowledge; knowledge not "for its own sake," but "for everybody's sake" (Kerr, 1982, p. 114). It provides practical solutions to society's problems in two ways.

First, service station faculty offer expert advice to government, industry, and community organizations. Typically, they advise on a fee-for-service basis, although they may offer their services free to those who cannot afford to pay. By working to solve problems of national importance (such as weapons research during World War II and space research following the USSR launching of Sputnik in 1956) the university as service station performs a "patriotic" function (Carnegie, 1973, p. 61).

Second, the service station trains specialists. "Useful knowledge," in this sense, means technical skills. The university as service station is typically the home of professional schools -- schools of law, engineering, agriculture, or nursing. Kaysen (1969) stresses that as society has become more complex, it has become more dependent on experts, which universities are uniquely able to provide.

The service station performs the additional function of offering training to many, thus elevating the standard of living for the society-at-large. While the ivory tower

initiates students to a scholarly tradition, the service station sees education as a means toward the end of societal improvement. The Carnegie Commission on Higher Education has stressed that the "economic" function of education is "the most favored purpose of all" (1973, p. 61).

Service station values

Advocates of the ivory tower maintain that the university's special role requires it to uphold "academic values" distinct from those of the general society. In contrast, the university as service station embraces society's predominant values.

Diversity

At the service of government, industry, and community groups, service stations become participants in public policy-making. How does the service station maintain its integrity? How does it avoid becoming "captured" by powerful interests?

Ashford (1983) argues that service stations should strive for diversity. If a university receives a grant from a chemical company to research the health impact of a particular toxic substance, it should also solicit funds from that company's competitors. If it hires a faculty member known for her outspoken support of conservative economic theory, it should also hire a radical economist. Rather than adopting a neutral viewpoint, Ashford explains,

"the university should properly foster a multiplicity of viewpoints" (1983, p. 20). Opposing views tend to "balance out," leaving university integrity in tact.

Ashford's argument for diversity recalls Kerr's (1982) description of the service station, which he calls "pluralistic:"

Pluralistic in several senses: in having several purposes, not one; in having several centers of power, not one; in serving several clienteles, not one...It [is] marked by many visions of the Good, the True, and the Beautiful, and by many roads to achieve these visions; by power conflicts; by service to many markets and concern for many publics (p. 137).

Wolff (1970) writes that, in striving for diversity and pluralism, the university as service station seeks to reflect the heterogeneity of American society. Just as competing interests battle for dominance in the "real world," divergent views should struggle for center stage within the service station.

Independence

Defenders of the ivory tower argue that outside influences subvert free inquiry. A "university for hire" is not a true university. Supporters of the service station maintain that grants from government and industry need not corrupt academic work. Service does not mean subservience.

Outside funding may actually increase university independence. Paul Gray (MIT, 1982), President of MIT, argues that funding from industry helps to offset uncertainties in government support. Kidd (1963) stresses

that a lack of funds is itself a limit on freedom. Grants from government and industry open up fields of inquiry that "would have lain fallow in the absence of funds." (p. 613). Outside funding strengthens the hand of the faculty member who secures the support, expanding his or her personal freedom from the demands of the institution.

Service as a value

While outside funding may direct inquiry, direction is not necessarily a bad thing. Universities are obligated to serve society. To the list of academic values mentioned above, the university as service station brings the value of service itself. Kidd (1963) writes that universities comprise a "unique resource" without which "research essential to the attainment of vital national goals cannot be done" (p. 617). While service may restrict freedom to some extent, this restriction is a small price to be paid for the greater good of society. "Complete aloofness is...not the proper solution" (Kidd, 1963, p. 617).

Organizational Structure

Kerr writes that the service station universities are "multiversities:" pluralistic institutions serving multiple purposes and clienteles. Research centers, extension services, and professional schools supplement traditional academic departments. Such universities often develop a

haphazard structure, growing in response to the needs of changing clients.

Kerr offers an enduring picture of the service station university in his description of the University of California in the 1960s:

The University of California last year [1962] had...operations in over a hundred locations, counting campuses, experiment stations, agricultural and urban extension centers, and projects abroad involving more than fifty countries;...[and] some form of contact with nearly every industry, nearly every level of government, nearly every person in its region....It will soon also have 100,000 students -- 30,000 of them at the graduate level -- yet much less than one-third of its expenditures are directly related to teaching. It already has nearly 200,000 students in extension courses -- including one out of every three lawyers and one out of every six doctors in the state (1982, pp. 7-8).

Sprawling and heterogeneous, service station universities are barely distinguishable from the societies that support them, and which, in turn, they serve.

Activities

The ivory tower university reframes issues in academic terms. In contrast, the university as service station seeks to answer the questions society asks of it. Applied research is its primary activity. Service station faculty and staff establish research centers to develop "practical solutions" to technical, institutional, and public policy problems. They consult with business, government, and citizen groups, offering advice and information. They

provide education and training programs for government officials and business executives. They testify at hearings and draft legislation. University professors may go to work for government or industry for a summer or sabbatical.

Examples are numerous. University-government alliances began with the passage of the Morrill Act in 1862. The Act offered grants of land to each state to support colleges dedicated to "practical education of the industrial classes" (Bok, 1982, p. 62). Agricultural research was the primary aim of these "Land-Grant" universities. University agricultural research has made "deserts bloom, created new and better crops, [and] multiplied production" (Saxon and Milne, 1985, p. 13). During World War II service station faculty and staff worked closely with government to develop new weapons, new medical aids, and ultimately the atomic bomb.

Recent years have seen an "explosion" (Nelkin, et al, 1987, p. 65) in the number and variety of university-industry alliances. For example, Monsanto provides funds (\$23 million over 12 years, starting in 1974) to Harvard for long-term research in biology and medicine. MIT is conducting combustion research in partnership with Exxon (a 10-year, \$7-8 million project). Twelve companies, including General Motors, Eastman Kodak, and Xerox fund MIT's Polymer Processing Center. Seventeen microelectronics firms

contribute \$12 million to Stanford's Center for Integrated Systems' research in electronics. The University of Pittsburgh has started two programs, The Center for Applied Science and Technology and the Foundation for Applied Science and Technology to "provide the environment and the essential linkages to promote and nourish the process of technological innovation'" (Crosson, 1983, pp. 87-94).

Clientele

In 1983, federal government funding to universities for research and development totalled approximately \$7 billion (Van Horn, 1985, p. 25). Major support came from the National Institutes of Health, the National Science Foundation, the Department of Defense, and NASA. Industry grants to universities have risen sharply in the last decade, from \$84 million in 1973 to \$370 million in 1983 (Nelkin, et al, 1987). Although support from industry is still under 5% of total university research and development, Nelkin anticipates that private support will continue to grow as federal support dwindles in the future.

THE ACTIVIST

The image of the activist suggests a politically motivated person involved directly in public affairs. The university as a band of activists identifies social wrongs and takes the lead in rectifying them.

The activist model originated with faculty and student criticisms of the ivory tower during the late 1960s (Crosson, 1983, p. 18). Of the three models presented here, the university as a base for activists is the most controversial. Many feel it represents a dangerous new direction.

Conception of Service

The activist's university has much in common with the ivory tower and the service station. The activist "pursues truth in unlimited directions" (Wofford, 1968, p. 18), seeking solutions to social problems. It serves as social critic (Luria and Luria, 1970; Wofford, 1968). It seeks to achieve its objectives, however, in ways that contrast sharply with the methods of "pure scholarship" that characterize the ivory tower, or the "problem solving" approach of the service station.

The activist pursues truth not through dispassionate, scholarly research, but through participation in public disputes. Luria and Luria (1970) call for universities to "engage" in public affairs. "Engagement" means "critical and constructive experimentation" (p. 81). For example, if a university determines that it supports a particular approach to solving a problem like "arms control," it should make this determination known to the public and solicit funds to study and improve this method. By making its

position explicit and by intervening directly, the university recognizes itself, and acts as, "an agency of the most profound politics" (Wofford, 1968, p. 17).

Proponents of this view insist that the university as a base for social activists is not the "agent of the public." Universities of this type work to shape the public's mind, not to be shaped by it.

As social critics, activists examine and question the status quo and comment freely on its shortcomings (McConnell, 1968, p. 6). They offer an "intellectual and ethical forum for society" (Luria and Luria, 1970). This purpose, according to Wolff (1970), is vitally important. Universities "stand alone" as institutions rich, powerful, and wise enough to challenge society, to "cry Nay Nay, when every other voice says Yea, Yea" (p. 41). This purpose corresponds closely to the critical role of the ivory tower. Unlike the ivory tower, however, the university as a base for activism engages in social action of various kinds.

Activist Values

The ivory tower rejects society and its values, and maintains values uniquely its own. The service station, so much a part of the society it supports, embraces the dominant social values. University activists critique the values of society, urging it to support "social justice, humanitarianism, equal opportunity and antidiscrimination,

environmental protection, and so on" (Crosson, 1983, p. 19).

Partisanship

Social activists strongly reject the idea of neutrality, claiming that it amounts to "silence, cowardice, emptiness, or nihilism" (Wofford, 1968, p. 13). These qualities "corrupt" the young and society-at-large and are "the opposite" of what education should encourage (p. 14). Neutrality is the antithesis of the original Socratic rule, "to follow the question where it leads" (p. 19).

Truth can only be found if one begins with an attitude of honesty. Academics must face the fact that American universities are powerful institutions. As such, they are inherently political. Denial of the university's political nature is an "untruth," "the last thing a university [should] accept (Wofford, 1968, p. 18).

Independence

Ivory tower advocates claim that if the public perceives the university as a political entity, it will try to coopt it. Proponents of the activist group model argue the opposite. They claim that neutrality puts the university in a "passive" (Wofford, 1968, p. 19) role, leaving it vulnerable to the invasion of outside interests. If the university is not explicit about where it stands, if it does not attempt to shape society in accordance with its own political objectives, others will try to capture it, to

"make it an agent for their change" (Wofford, 1968, p. 19, emphasis added).

Organizational Structure

The activist model holds that the university should have an open relationship with society. The activist's university is a "university without walls." As social experimenters, academics should venture out into the world and "engage" in public controversy. The activist invites diverse interest groups to participate in the university's "intellectual and ethical forum," a discussion and debate about pressing social issues.

While no walls separate the activists from society-at-large, the activists do not blend into society, as do the service station attendants. Activists are distinguished by their self-conscious attention to ideology. Activists are leaders; they seek to shift public opinion and influence events.

Activities

The activist model calls upon the university to sever its ties with government agencies and other organizations that engage in harmful and exploitative activities and to participate in liberal reforms. According to Jerald Johnson, activist teachers should work to upgrade inner-city schools. Sociologists should create new, more compassionate

ways to enforce laws. Biologist should invent new methods for controlling rodents and other pests that afflict low-income neighborhoods (quoted in Bok, 1982, p. 81). Law schools should establish offices where students counsel indigent clients; medical schools should provide care to those who cannot pay.

Clientele

The clientele for activist service are the people and institutions that share the activist's goals. If the activist is dedicated to environmental protection, those who live in communities threatened by development, or whose drinking water supply is contaminated with toxic chemicals, are the beneficiaries of university service. If the activist works to enact policies to house the homeless, homeless people are the university's "clients."

All three models hold that major research universities have an important role to play in shaping a better world. All maintain that a principal university function is to advance knowledge. All put a premium on "free and open inquiry" and value the independence of those in the university. But each answers key questions differently: How should academic institutions and their faculties serve society? What values should a university embody? What kind of organizational structure is appropriate and what

activities should universities perform? Whom should a university serve?

The models offer strikingly different views of university service. Proponents of the ivory tower model maintain that if we want to understand the nature of the world, we must approach our study with open minds. Those who argue for the activist model insist that informed minds can never be truly open. We must be aware of and explicit about our biases in order to inquire honestly. Many scholars abhor the activist group model, arguing that there are certain areas where a university should not venture, certain positions a university should not take.

Despite these differences, the ivory tower and activist models share the view that the university exemplifies the best of society. Both models stress the importance of the university's role as social critic. The service station model accepts society's view of the world.

What are the strengths and weaknesses of the models? Must universities choose among the three models presented here? Is a new model for university service possible? In the following chapters I will explore and attempt to answer these questions.

CHAPTER II

CRITERIA FOR EVALUATING MODELS FOR UNIVERSITY SERVICE

How ought major research universities to serve society? The three models for university service stand in sharp contrast. How can we evaluate their strengths and weaknesses?

To begin, I offer three criteria:

1. Is the model "true to itself;" that is, is it internally consistent? Do the analytical elements of the model -- the definition of service, values, structure, activities, and clientele -- reinforce each other? Or are the elements in conflict?
2. Does the model suggest prescriptive guidelines for university service activities? Does it tell us which activities are appropriate and which are not?
3. Does the model suggest service activities that enhance the major research university's primary functions: teaching and research?

This chapter considers how well each model meets these three criteria.

CRITERION #1. INTERNAL CONSISTENCY

How well do the elements of the ivory tower model fit together? The ivory tower attempts to serve society by enhancing basic knowledge and offering social criticism. It

exemplifies "basic academic values:" neutrality and independence. Its structure is closed.

The elements lack internal consistency. By holding itself "above and apart from" society and concentrating on basic research, the ivory tower shuts out the world. Proponents of this view argue that the ivory tower's highly constrained relationship with society is necessary to maintain neutrality. But can neutrality be achieved through aloofness? Isn't not becoming involved a political statement? When the ivory tower university refuses to participate in public policy debates, is it neutral, or is it tacitly supporting the status quo?

Wolff argues that "the failure to do something is as much an act as the doing of it" (1970, p. 71). He points to the example of university cooperation with the Selective Service System during the Vietnam War. According to Wolff, many universities felt compelled to cooperate because to do otherwise would violate the principle of political neutrality. But cooperation strengthened the draft and the war effort, hardly a neutral stance.

Ivory tower proponents claim that the university should serve as a "free marketplace of ideas." While individual professors disagree and debate, the university regulates the contest, ensuring a place for every view. Institutional neutrality protects faculty from the assaults of outside

critics. It allows faculty and students to pursue the truth wherever it may lead.

Yet ivory towers systematically exclude points of view. Wolff (1970) observes that few astronomy departments offer courses in astrology; psychiatry departments do not teach dianetics. Until recently, few American universities taught the works of Karl Marx. These decisions are not neutral. They affirm a scholarly doctrine that resists new or controversial schools of thought, that is at its heart conservative.

The ivory tower's role as social critic is also problematic. How can the ivory tower, the "castle without windows," criticize society? Its walls block society from its view. Ivory tower advocates argue that criticism must grow out of pure scholarship. It must be utterly convincing, "shift[ing] the state of opinion about the subject in such a way that other experts in the subject are prepared to concur." (Carnegie, 1973, p. 46, quoting Ashby). Ivory tower advocates admit that criticism is difficult. "It is a very austere form of dissent" (Carnegie, 1973, p. 46, quoting Ashby). Is ivory tower criticism austere -- or impossible?

Is the service station model internally consistent? The service station serves society by advancing "useful knowledge," by solving problems, and by offering educational

opportunity to many. Its values reflect society's: diversity, pluralism, and service. Its structure is open.

The service station, exemplified by Kerr's term "multiversity," is many things to many people. It is loosely organized. One end of the campus may devote its energies to weapons research while the other may pursue peace studies. One year the service station may work closely with DOW Chemical Company developing new types of plastic. The next it may assist environmental groups opposed to production of the very chemicals DOW manufactures.

While the elements of the service station may appear inconsistent, inconsistency is not problematic. Internal contradictions are part of the nature of the service station, which serves at the bidding of a complex and heterogeneous society.

The activist university serves by advancing knowledge, searching for truth, and being a social critic. It is partisan, independent, and has an open structure. Unlike the ivory tower, the activist university is self-conscious about its political affiliations. But the model is problematic in another respect.

Critics of this model assert that direct institutional political action is inconsistent with the free pursuit of knowledge (Carnegie, 1973; Bok, 1982; Ashby, 1971; Brooks,

1968). If a university takes a political stand, it will attract scholars who share its view. Scholars with divergent views may stay away. But disagreement and debate among scholars is essential to the process of "ferreting out" knowledge.

Partisanship constrains research. By taking a stand, critics argue, the activist limits the types of questions it asks, the range of answers it finds acceptable. For example, if a university makes known that it supports incineration of hazardous waste, how can its researchers assess the environmental impacts of incineration? The university's position implies that it knows, before research begins, that impacts are insignificant. Partisanship stands in the way of objective inquiry.

CRITERION #2: CLEAR DEFINITION

The ivory tower requires that faculty concentrate on basic research, that administrators remain above the political squabbles of the outside world, that students strive to master the scholarly traditions. Advancing the "frontier of knowledge" requires scholars' full attention. Problems of the day are an unwelcome distraction. Applied research and intervention in policy lie outside the ivory tower's domain. These prescriptions sound more precise than, in fact, they are. The line between basic and applied research is not always clear. When does the study of the

physical properties of a chemical, or the sociological characteristics of a community, become "useful knowledge?" Nevertheless, many areas of inquiry are clearly off-limits. While not precise, the ivory tower model offers guidelines for conduct.

Clark Kerr (1982) has observed that no one created or planned the service station university. It "just happened" in response to public demand. The service station is indiscriminate; it accepts virtually any activity the public wants and is willing to pay for. Service stations tend to accumulate a vast array of functions and activities. They administer government laboratories and operate food services and housing facilities. They offer advanced degree programs in hotel management and television communication.

The service station's tendency to accumulate functions has been cause for concern among academic theorists. For example, the Carnegie Commission on Higher Education recommends that universities periodically survey their functions to be sure that none "contradict[s] the ethos of academic life" (1973, p. 73). Universities should eliminate any activity that could be "performed as well or better" by other institutions (p. 73). Bok argues that every service station activity should enhance the university's teaching and research work (1982, p. 77).

These writers have found it necessary to offer their prescriptions; the service station imposes few of its own.

The activist university creates its own vision of society and tries to shape society to conform to that vision. It offers the public what the university believes it needs, not necessarily what it wants. Activities that do not support university goals are inappropriate. This prescription is difficult to put into practice. Whom does the activist university serve? Usually we think of the activist helping the disadvantaged of society. But what if a university decides to serve large corporations? What if a university supports nuclear proliferation? Are these policies acceptable? Are all forms of public service to be encouraged? Who will make these choices?

CRITERION #3. SUPPORT FOR TEACHING AND RESEARCH

Teaching and research are the ivory tower university's sole concerns. It concentrates its energy in these areas. But by strictly limiting its public service role, ivory tower research and teaching may suffer.

The Carnegie Foundation for the Advancement of Teaching calls the relationship between knowing and doing "symbiotic" (1967, p. 5). "Hands on" experience invigorates instruction and learning. Direct experience of social problems can motivate teachers and students to work hard to find

solutions. Interaction between the university and society can direct university work to areas of critical social need, which may also be areas of great intellectual interest. Examples from the real world can clarify abstract concepts.

Luria and Luria assert that when the ivory tower shuns public policy work, it displaces the "active, creative market place of ideas" to the world outside university walls (1970, p. 80). Critics of the status quo use groups committed to social change as their forum for expression. The absence of political dissent within the ivory tower lends a sterile quality to its work.

Interplay between university and society is itself instructive. It clarifies the university's position in the world and the special role that faculty and students hold in society. Without such interplay, the university's role becomes ambiguous.

In the service station university, public service strengthens teaching and research. Medicine cannot be learned in the abstract; it requires practice in the research hospital. Many law schools offer clinical programs where students provide legal services to indigent clients. Such work complements students' classwork, adding an important dimension to concepts described in books and lectures.

However, many argue that public service competes with the university's primary functions. Whiting (1968) argues that service can be an "irritant" (p. 95) that works against educational efforts. Service takes too much time, forcing the university must reduce teaching assignments to accommodate the busy schedules of "prestige professors." Professors who consult with government and industry miss faculty meetings and neglect students. Fame and fortune, made possible through service station contracts with government and industry, are seductive. The chance to advise a mayor or to appear on television is often more compelling than sitting alone in a laboratory, running and re-running an experiment.

Activist public service also shifts the university's time and energy away from on-campus work toward practical, community-oriented tasks. Critics argue that teaching and research often suffer as a result.

The Carnegie Commission on Higher Education (1973) argues that political positions taken by universities are often issued in moments of crisis. In the rush to take a stand, the activist may produce work that is below academic standards. Positions lack "scholarly reflection or...operational accountability" (p. 45). They lower the standards of academic work generally.

By applying the three criteria, the models' strengths and weaknesses become apparent. While ivory tower universities claim to be neutral, they are in fact conservative. By blocking out the world and shunning controversy, ivory towers fail to serve as social critics. The ivory tower's limited public service role weakens the "symbiotic" relationship between learning and practice. Creative energy is displaced to non-academic institutions, and teaching and research suffer.

The ivory tower's strength is its clarity regarding what is and is not "appropriate" public service. Clarity allows the ivory tower to concentrate on "pure scholarship."

Service stations are, by their nature, flexible. They adapt to fill the needs of their clients. They are consistently inconsistent. The service station's chief weakness is its inability to say "no" to requests for assistance. Service stations tend to accumulate a vast array of activities, some of dubious merit. While service may enhance teaching and research, it may also draw faculty members away from the university, causing them to neglect their primary responsibilities.

The activist model fails the test of internal consistency. Institutional partisanship undermines the free pursuit of knowledge. The activist only undertakes activities that further its goals, a prescription that clearly limits public service. However, the question of who

sets these goals is difficult to answer. Activism shifts university energy away from academic tasks and may result in work that lowers academic standards.

CHAPTER III

PUBLIC PERCEPTIONS ABOUT THE UNIVERSITY'S SERVICE ROLE

In previous chapters I have raised several questions. Should major research universities serve society by advancing knowledge through basic research, as ivory tower proponents claim? Or by working with government and industry to solve complex problems, as those who support the service station model argue? Are academics more "objective" than others? What should students be learning -- knowledge "for its own sake," or specialized skills? When administrators become activists, do they undermine "the search for the truth?"

I have considered how academic theorists such as Derek Bok, Clark Kerr, Harris Wofford, and others answer these questions. But what is the public's view? To investigate public attitudes about university service I interviewed university leaders, state officials, representatives from industry, and the directors of citizen groups. (See Appendix I.)

Methodology

I selected a small, non-random sample of 21 leaders to participate in the research. Many of those I contacted work in the environmental arena: they direct government agencies or lead citizen groups. They confront, on a daily basis, problems such as cleaning up Boston Harbor and managing hazardous waste.

Environmental issues offer fertile ground to test attitudes toward the three models of university service I have elaborated. These issues typically involve complex technical information as well as sensitive political issues. A clean-up plan for Boston Harbor must address technologies for sewage treatment; it must also address who will pay. A program for waste disposal must consider the chemical reactions that take place when wastes are burned; it must also determine acceptable levels of risk to human health and safety. Environmental disputes often evoke intense conflict. Thus, the environmental arena offers opportunities for each type of university -- ivory tower, service station, and activist -- to contribute.

Prior to the interviews I mailed participants a brief questionnaire in the form of eight statements about university service. (See Appendix II.) I intended the questionnaire to get people thinking about how they felt universities ought to contribute. Without mentioning the ivory tower, service station, or activist models for service, I designed the questionnaire to elicit people's

attitudes toward the types of activities the models imply. During the interviews, which I conducted in face-to-face meetings of approximately 30 minutes, I asked participants to elaborate on their answers to the questionnaire. Seventeen people completed the questionnaire, and of these, 14 agreed to be interviewed. Two people, both university professors, found the questionnaire "too general" to respond to in writing but were happy to speak with me about my research. Altogether, I interviewed 16 people.

Research findings

The sample is too small to be statistically significant. Thus, my findings are exploratory and impressionistic.

Initially I tried categorizing people's views about university service according to their roles. I assumed that people working for government would share a view about university service, as would people from industry, citizen groups, and academe. However, when I began to analyze the data, I found that this assumption was erroneous. People's views about service are individualistic; they appear to spring from individual experiences and perceptions. Views cut across the categories I initially had imposed. For example, several government workers felt that university administrators should take stands on public policy issues; an equal number from government objected strongly to university activism. The four university professors I spoke

with all held different opinions about what constitutes "appropriate" service.

All of the leaders from government, industry, and citizen groups value university knowledge and would like to work more closely with faculty and students. They feel universities have much to offer, but that assistance as it is currently provided often falls short. They hold strong opinions about the kinds of service that would be most appropriate and useful.

On the whole, people reacted negatively to the ivory tower's concept of service: basic research. When I asked people if they felt professors would serve society best by concentrating on basic research, half said "no."^[1] While recognizing that "you need the facts," and that universities

1. I base this portion of the discussion on responses to two statements:

"University professors serve society best by concentrating on basic research, that is, by developing fundamental theory and facts."

Strongly disagree	2
Disagree	6
Agree in part; disagree in part	4
Agree	4
Strongly agree	0

"By working closely with government and industry, university faculty can solve complex problems, thereby helping society."

Strongly disagree	1
Disagree	1
Agree in part; disagree in part	5
Agree	5
Strongly agree	5

are "set up to do basic research," people maintained that "the biggest problem" is "bring[ing] basic research into our everyday lives."

Those in government, in particular, felt that their agencies "desperately needed" help from faculty trained in toxicology, epidemiology, and chemistry. They would welcome faculty assistance, particularly in risk assessment and risk management. Said one government worker, "risk assessment is more important than the study of chemical compounds and reactions. It's a long pipeline between basic research and decision-making. We need decisions now."

Many were dissatisfied with their interactions with university people, however. When faculty work in the "real world," they should "show up on time" and "dress appropriately." Most important, they should "talk in plain English," "break the technical code language," and "come down out of the tower." An industry representative related his experience at a university-sponsored seminar concerning the clean-up of Boston Harbor. The seminar was intended to "inform the public:"

A group of very well-informed professors talked in scientific code language to one another...They talked as if they were working the problem out right there on the spot. I couldn't hear and I couldn't understand a thing they were saying. I couldn't stay awake.

Others complained that faculty research is often inconclusive. After studying a problem for years, academics

typically issue "wishy-washy" reports that end with statements like "we just don't know" or "we have to do another study." Explained an industry representative, "we need scientists who will come out and tell us, 'yes this is dangerous,' or 'no this is not.'"

Many disputed the notion that faculty are "objective" seekers of the truth.^[2] Attitudes fell into three clusters. The largest group, nearly half of those with whom I spoke, said that faculty are neither more nor less objective than anyone else. The reason, several explained, is that objectivity "does not exist." One said that "he didn't know what objectivity meant anymore." Others argued that some professors strive to be objective, while others do not. Objectivity is "a personal thing."

One quarter said they "would put more credence" in university research than research done by private consultants, who are driven by the profit motive. Academics are "relatively free from the constraints of the marketplace." A professor who is viewed as a "pawn" of a private interest will lose his or her stature in the

2. I asked people's opinion of the statement: "Professors who offer advice to government or industry as usually more objective than consultants from private firms." Responses were as follows:

Strongly disagree	1
Disagree	4
Agree in part; disagree in part	8
Agree	3
Strongly agree	1

academic community. This stigma does not apply to consultants from private firms, who, people felt, are expected to support their sponsors' views. In private firms, once a decision is made "everyone must fall into line."

Several distinguished between "personal biases" and "institutional biases." Universities have no overt institutional bias. Explained the director of a government agency:

If you went to a management consultant you can bet what you'd get. If you went to a corporation for advice, you'd get the corporate line. When you go to a university, you encounter the personal bias of the professor, but not an institutional bias.

In contrast, one quarter argued strongly that the idea of university objectivity is "overblown." "I have yet to meet an expert who didn't reflect the views of the person who hired him," explained a citizen activist. "Both industry and academia are involved in advocacy," said an environmental commissioner.

But even those who disputed the idea of university objectivity admitted that the public "perceives" academics as "neutral, unbiased sources of information." Professors have "more credibility" than others. The manager of a waste disposal firm explained that he agreed to meet with me because he hoped more academics would become involved in waste management issues:

The business we're in suffers because we don't have credibility... When I saw this questionnaire I thought, 'here's an avenue to bring in reality...' Involving technically oriented people will create credibility rather than imposing politics.

Yet, if they aren't careful, universities may lose the public's trust. "It won't be long before the public catches up to all the extra things faculty do," warned one government worker. "Universities will be in the same mess as the rest of us."

Many reacted negatively to the idea that education should be either "detached" or "dispassionate," hallmarks of ivory tower teaching.^[3] People interpreted "detached and dispassionate" to mean "learning in a vacuum." "A dispassionate education is a cruddy education" one person said. For students in technical fields like engineering, knowing how to build dams, bridges, and nuclear power plants is not enough, explained another. Students must learn how the public perceives risk. They must learn how to negotiate with angry citizens who oppose their plans.

3. People responded to the statement, "In graduate professional programs, students learn to look at problems from a detached, dispassionate perspective," as follows:

Strongly disagree	2
Disagree	4
Agree in part; disagree in part	6
Agree	4
Strongly agree	0

One person maintained that students must be "attached" and "passionate" in order to learn. People learn by questioning arguments, tearing them apart, and developing opinions. Professors with strong, radical views are the best teachers.

A university professor argued that a "dispassionate perspective" does not exist. We are all conditioned by who we are, by what we believe in. "Instead, I think graduate students learn to look at problems from many perspectives," he added.

In contrast, several people argued that the best analysis comes from researchers who are dispassionate. But, once a researcher reaches a conclusion the passion must return, for without passion, students will accomplish little. "Convincing people" is an essential part of environmental work. "Whatever we do," explained the commissioner of a state environmental department, "we have to believe in it to make it work."

While people feel basic research is an "appropriate" and "necessary" university function, people want more from academic institutions than ivory tower service. Some hold that universities and their faculties are less biased than others, but most are suspicious of the notion of faculty "objectivity." Most dispute the idea that students, or anyone, can or ought to be "detached and dispassionate."

But neither are people completely satisfied with the kind of service offered by service station universities: problem solving on behalf of paying clients. While nearly everyone welcomed the chance to work more closely academics, several argued that environmental problems cannot be "solved." "Solutions" are always short-term and must be periodically reassessed. One person gave the example of Boston Harbor, explaining that the next twenty years will require "going back and re-thinking what the cost/benefit relationships are."

I asked people if they felt financial support from government or industry compromised faculty research.^[4] I heard three kinds of responses. Approximately one-third said "no," claiming that most faculty "do good, basic, unbiased research, and let the chips fall where they may." One-third answered "yes," explaining that while "some brave souls" will say what they think no matter what the consequences, in general, "those who pay get what they pay for."

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4. People responded to the statement, "When faculty members accept financial support from government or industry, their findings usually support the views of their sponsors," as follows:
- | | |
|---------------------------------|---|
| Strongly disagree | 1 |
| Disagree | 5 |
| Agree in part; disagree in part | 5 |
| Agree | 5 |
| Strongly agree | 1 |

Others felt that while faculty research findings usually do support sponsors' views, faculty are not "bought." Funders hire faculty who share their views to begin with. Faculty apply for grants to corporations who appear supportive. "It's a two-way meeting of the minds."

An MIT professor emphasized that the relationship between a sponsor's views and faculty research findings is "very complicated." When he asked colleagues to respond to a talk given at MIT that criticized a government project, several declined. They said it would be "indiscrete" to comment publicly. He asked me, "does this mean that faculty were 'silenced?'" He then answered:

I don't think so. People may choose not to speak out because of corporate loyalty. They may feel that, if they were privy to all the behind the scenes negotiations, they are committed not to discuss what they know in public. Or they may feel they can accomplish the most by 'working on the inside.' If they disagree publicly, they won't be able to disagree internally. Or they may simply be friendly with their sponsors and want to honor that personal relationship.

While faculty are rarely subject to "arm twisting" by their sponsors, relationships affect what faculty say and how they say it.

Most people felt that graduate students should learn more than specialized skills, the standard fare of the service station education.^[5] While acknowledging that some

5. I asked people's opinion of the statement, "The primary reason students should attend graduate school is to acquire (continued...)"

fields require specialized training -- law and medicine, for example -- people maintained that skills are "necessary but not sufficient." In addition to specialized skills, students must "learn how to learn." Students must learn to think, to communicate effectively in writing and speaking, "to separate strong from weak arguments," and "to deal with theoretical issues."

A leader from a citizen's group asserted that graduate students should learn "advocacy skills." When I asked her what she meant, she said:

the ability, once you've come to a decision, to convince others. I mean translating technical stuff into lay terms. I mean knowing how to strike a balance between the need to come to legitimate scientific results, and the need to advocate policy.

Several said that specialized skills have short lives. "When you're a student, you don't know what skills you'll need," explained one person I spoke with. "The chemistry I learned in school...is now hopelessly out of date."

People respond positively to service station model, yet support is equivocal. While some contend that faculty are "above" being influenced by corporate or government sponsors, others maintain that support from outside

5 (...continued)	
specialized skills."	
Strongly disagree	1
Disagree	4
Agree in part; disagree in part	2
Agree	7
Strongly agree	2

inevitably corrupts faculty research. Many feel that sponsors' influence is subtle, but still apparent. "Specialized skills" are essential, but students must also learn the underlying principles of their discipline.

People's attitudes toward the activist university public service were sharply divided, evoking the strongest responses.^[6] Opinions fell into two distinct clusters: half supported the activist model; half rejected it. Those who argued for administrators taking positions on public policy asserted that, as "public entities," universities have a "moral obligation" to stand up for "what's right." In addition, administrators have a "responsibility" to bring issues to public attention:

There's a class of issues dealing with the future -- like the greenhouse effect -- where university researchers may be the only ones who are knowledgeable. It's not acceptable simply to do the research and leave the pieces scattered in scholarly journals.

Proponents of this view held that universities should take positions in areas where they have substantive knowledge.

6. I asked people's opinion of the statement, "University administrators (presidents, deans) should show the public where the university stands by taking positions on public policy issues."

Strongly disagree	3
Disagree	4
Agree in part; disagree in part	1
Agree	9
Strongly agree	0

Several people, noting that many MIT faculty are active in "Star Wars" research, called upon MIT President Paul Gray publicly to support or oppose this weapons system.

Many said they saw no reason why universities should not take political stands. "Industry takes positions, environmental groups take positions, why not universities?" was a frequent response. I asked people if they thought advocacy might threaten academic freedom. If a university takes a political stand, will those who disagree stay away or feel constrained? People answered "no." Tenure guarantees that faculty can freely express their views, even when they differ from the university's stated position. The only constraint on academic discourse is that it must "follow the rules of the intellectual game:" it must be coherent.

Those who argued against administrators taking stands on public issues pointed out that universities are made up of individuals with diverse views. "Universities rarely stand in one place;" faculty rarely agree. When administrators take stands on behalf of their institutions, universities "become corporations:"

[A university] is not a monolith...If a university took a stand it would be saying that it didn't care about the views of individuals. Let individuals speak their voice, but not the institution.

Some said that, by advocating policy, a university would

lose its objectivity. The director of a university research center explained:

One reason why our center is so successful is because we are objective. If we state an opinion, we lose our ability to be objective...Our responsibility is to inform on the issues. We bring all perspectives together. We stop short of saying, "therefore do that."

Yet some issues, like the right of free speech, may be too important for administrators to ignore. Administrators should take stands on public issues that directly affect life at the university. "If the government started locking up people with a certain eye color, the university should probably speak out," explained a person generally opposed to administrators' involvement in public policy. "But in American society today, there are not many issues like that."

In contrast, nearly everyone endorsed student participation in public controversies.^[7] The "real world" offers puzzles and paradoxes that challenge students and force them to "grow." By facing the world and coming to grips with it, students "fine tune" their knowledge. Most important, students learn how policies and practices taught

7. Responses to the statement, "By participating directly in public controversies students gain valuable "real world" experience," were as follows:

Strongly disagree	1
Disagree	0
Agree in part; disagree in part	3
Agree	3
Strongly agree	10

in the classroom affect people. "In practice, a policy may hurt the people it's intended to help," explained one person. Experience teaches students to broaden their view of what knowledge is. Those who are ignorant of "book learning" may be experts on local politics, geography, and sociology. Interaction with people who are not university trained helps students recognize that "you don't have to be an 'A' student to be important."

Sixteen interviews do not provide sufficient data on which to base firm conclusions. However, interviews with leaders in state government, industry, citizen groups, and a major research university suggest that the public finds each model for university service deficient. Working people, faced with complex problems on a daily basis, want more from universities than ivory tower service. Many of those I spoke with expressed ambivalence regarding university "objectivity." While acknowledging that the public perceives academics as more objective than others, environmental leaders are skeptical. Most do not expect or want academics to be "detached and dispassionate." But neither do they welcome government and industry influence on campus. The activist model is attractive to some, but deeply troubling for others who feel it turns universities into "corporations" that do not value individual views.

Activism is beneficial for students, but not for institutions.

In Chapter 2 I found that each of the models for university service fall short in terms of three criteria: internal consistency, clear definition, and support for the basic university functions of teaching and research. Through interviews with public leaders, I find that the models' flaws are generally perceived.

CHAPTER 4**APPLYING THE MODELS TO A CASE**

In this chapter I will consider how each type of university -- ivory tower, service station, and activist -- might respond to a specific planning problem: the siting of a hazardous waste incinerator.

Hazardous waste facility siting is an example of a class of disputes called "distributional" disputes (Susskind and Cruikshank, 1987): conflicts over how tangible gains and losses are distributed throughout society. Distributional disputes arise over "the allocation of funds, the setting of standards, or the siting of facilities" (p. 17). When a prison, low-income housing development, or heavy industry is proposed:

[N]earby residents consider themselves potential losers. They fear a decline in property values, increased risks to health and safety, or both. Although the region as a whole may benefit, they stand to lose (Susskind and Cruikshank, 1987, p. 18).

Conflict drags on, often for years. Societal needs, such as the need for waste disposal, are often not addressed.

Understanding incineration impacts requires knowledge of chemistry, toxicology, and epidemiology. Yet few of the actors in the case I have chosen -- a conflict over a proposed waste incinerator in Braintree, Massachusetts -- have any formal training in science. Since no facilities for hazardous waste incineration exist in Massachusetts, neither state government nor industry has experience to draw upon. Most people living near the proposed site have never participated in public decisions of this kind. Yet, participants hold strong, conflicting views. They distrust one another intensely. They perceive that the stakes are high and are ready to "fight to the finish" for the outcome that they think is correct.

For Clean Harbors, Inc., the company that has proposed to build the incinerator, the facility represents a business opportunity. State government agencies' major concern is managing hazardous waste disposal. Existing disposal sites are reaching capacity; the incinerator may represent the best disposal option available. Residents are concerned about the health and vitality of their community. They maintain that the incinerator will cause sickness and possibly death, and will reduce property values.

Each of the models offers service of value to those involved in the Braintree dispute. The flaws in each model, however, become clearer as we consider how each type of university would address the problem of facility siting.

On April 30, 1987 Clean Harbors, Inc. (CHI) announced plans to build and operate a hazardous waste incinerator in Braintree, Massachusetts. The incinerator would replace a small pathological waste incinerator operated at the site for several years. It would burn 45,000 tons per year of waste oils, solvents, PCBs, and pesticides, approximately one-third of all the waste generated in Massachusetts.[8]

Public reaction to CHI's proposal was swift and strong. Hundreds of citizens turned out at meetings and

8. The proposed technology -- rotary kiln incineration -- is innovative and technically complex. The incinerator will have two main components: a rotary kiln combustion chamber and a secondary combustion chamber or afterburner. The rotary kiln is a rotating cylinder which is set on its side at a slight angle. Wastes will be continuously tumbled, allowing maximum exposure to heat. Temperatures in the kiln will be 1200° to 1400° C. Gases will remain in the kiln for at least two seconds; solids will be subject to the kiln's heat for approximately 30 minutes. As wastes are converted into gases they will be sent to the secondary chamber for further destruction (CHI, 1987, Chap. 6, pp. 7-9).

To control air pollution from the incinerator CHI plans to use a four-step process of flue gas treatment. First, CHI will cool gases in a quench chamber. Second, it will scrub gases to remove hydrogen halides in a counter current acid scrubber. Third, it will further purify gases in an ionizing wet scrubber, which CHI asserts removes finer particles than dry electrostatic precipitators or bag-house filters. Finally, in order to ensure rapid dispersion of gases into the atmosphere, CHI will install a flue gas heater between the ionizing wet scrubbers and the stack (CHI, 1987, Chap. 6, pp. 10-13).

CHI estimates it will produce 10 to 30 cubic yards of residue from wastewater treatment daily. The rotary kiln will also generate one to five cubic yards of ash each day which CHI will ship to a hazardous waste landfill (CHI, 1987, Chap. 6. p. 34).

demonstrations to protest the incinerator. In early September, 1987, a group of residents chained themselves to the plant gates. They blocked the entrance to the plant with a rented Hertz truck. 10 people were arrested.

Interviews with key actors in the Braintree dispute reveal four factors that sustain the conflict.^[9] Universities wishing to help resolve distributional disputes such as this one must offer assistance that address these factors:

1. People want certainty from science, but science cannot provide certainty.
2. Whether a facility is needed, will be safe, or is fair depends upon one's point of view.
3. Once interested parties formulate their positions, their ability to assimilate contradictory information diminishes.
4. Participants perceive a dispute as a battle in which a "winner" or a "loser" will be designated.

Each of these factors warrants further examination.

9. To investigate public attitudes about CHI's proposal I interviewed key actors in the dispute during October and November of 1987: six community opponents of the plant; a coordinator for Greenpeace, a group dedicated to halting all incineration; two CHI staff members; and the directors of two state government agencies responsible for reviewing CHI's proposal. I also spoke with two MIT research associates who have served as consultants to government and industry on incineration projects. I asked each person approximately 10 questions designed to draw out their concerns about incineration, the strengths and weaknesses of the process currently used by government and industry to site incinerator facilities, and suggestions for how the process could be improved. Each interview lasted approximately one hour.

People want certainty from science, but science cannot provide certainty.

Despite tremendous work in the last decade by government, industry, and environmental groups, hazardous substances are poorly understood. Critical questions remain unanswered. What pollutants are produced when wastes are burned? What is the impact of these pollutants on human health and the environment? These questions are exceedingly difficult, requiring knowledge that is simply not available.

The products of combustion are carbon dioxide, water vapor, and inert ash. In practice, however, what appears to be a straightforward, simple process is actually extremely complex:

[Incineration] involv[es] thousands of physical and chemical reactions, reaction kinetics, catalysis, combustion aerodynamics, and heat transfer. This complexity is further aggravated by the complex and fluctuating nature of the waste feed to the process. While combustion and incineration devices are designed to optimize the chances for completion of these reactions, they never completely attain the ideal (Oppelt, 1987, p. 570).

'Imperfect' combustion produces a multitude of air pollutants, depending upon the chemical composition of the waste and incinerator operating conditions. For example, waste with a significant plastics component will generate hydrogen chloride gas in the exhaust (Brunner, 1985, p. 108). Sulfur present in the waste produces sulfur dioxide and sulfur trioxide. Phosphorus pentoxide, a highly corrosive chemical, forms when organophosphorous compounds

are incinerated. In addition, oxides of nitrogen are produced by fixation of nitrogen from nitrogen compounds in the waste stream. Incineration also generates particulate emissions including mineral oxides and salts. A wide range of organic compounds, including dioxins, may also be formed from incomplete combustion of organic compounds in the waste (Oppelt, 1987, p. 570). Finally, a portion of metals in the waste stream will be emitted from the stack. The five most frequently detected metals are barium, cadmium, chromium, lead, and nickel (Wallace, 1985).

The cause-effect relationship between incinerator emissions and human health is highly uncertain. A chemical's toxicity is usually assessed through tests on animals: rodents are almost always used. Extrapolation to humans is problematic. For example, humans are 700 times as sensitive to the effects of thalidomide as hamsters. Male guinea pigs are nine thousand times more sensitive than hamsters to the effects of dioxin, a toxic chemical produced when wastes are burned (Elliott, 1984, p. 80).

Usually rodents are subjected to much larger doses of a chemical than humans would ever experience, even under "worst case" conditions. Scientists use models to extrapolate how humans would respond to lower doses. Several extrapolation models are currently in use. The choice of a model can make enormous differences in estimates of low dose toxicity.

The complex combinations of chemicals found in most hazardous wastes are even more difficult to evaluate. Chemicals may interact synergistically, causing toxic "multiplier effects." Background chemicals in the air and water may enhance or diminish the health impact of incinerator emissions.

Whether a facility is needed, will be safe, or is fair depends upon one's point of view.

Parties' concerns can be broadly grouped under the headings Need, Safety, and Fairness. Industry, government, and community representatives hold starkly different views. Each group has its own concept of "reality."

Need

CHI argues that incineration is the only technology that reduces both the volume and toxicity of hazardous waste. Currently, less than one-third of the hazardous waste generated in Massachusetts is disposed of in-state. The remainder is trucked to Connecticut, New York, New Jersey, and Alabama, at considerable expense. Transporting waste by truck is a risky business and accidental spills are not uncommon.

State officials acknowledge that Massachusetts disposal facilities cannot handle even half of the state's hazardous refuse. Even if industry adopts "the most aggressive source reduction efforts" to reduce the volume of waste it

produces, an incinerator of the size proposed for Braintree is needed (DEM, 1987, pp. 86-87).

Residents argue that incineration "will rule out real recycling." Once the Braintree incinerator comes on line, industry and government will abandon waste reduction programs. Incineration is an "end of the pipe" solution; it treats the symptoms of our disease (lack of disposal facilities), but does not offer a cure (waste reduction). Incineration is unnecessary and unwise.

Safety

CHI representatives argue that the plant will pose risks no greater than a small industrial facility or a shopping mall. Emissions from the plant will be "harmless" (CHI, 1987, Chap. 6, p.3).

State government has developed regulations controlling the generation, transport, storage, treatment, and disposal of waste. Massachusetts Department of Environmental Quality Engineering, the agency responsible for administering waste management laws, will only permit incinerators that meet "stringent" safety requirements and will operate "with an adequate margin of safety" (DEM, 1987, p. 72).

Residents contend that incineration has been "proven unsafe." They say, "we don't want to be guinea pigs." Residents point to CHI's poor performance record and argue that the company is unfit to manage a high-risk operation like waste incineration. They claim that they cannot count

on government to come to their aid if and when CHI violates the law. Explains Frank Toland, a community activist:

There are no standards, no regulations. You remember when we were kids and we'd play basketball and we'd make the rules up as we went along? That's the process here...DEQE and CHI are changing the rules together...This is a ball game with no rules to play by, but at the end of the game there will be a loser.

Fairness

CHI feels it has bent over backwards to accommodate community concerns. In May, 1987, it published a 300-page report describing the incinerator proposal in detail. It has subjected itself to repeated, intensive questioning from opponents at public hearings. While willing to comply with the state's siting law, CHI representatives feel it tips the balance of power in favor of the community. Carolyn Russ, Director of Government Relations for CHI, explained that "[with the siting law] there are lots of stoppers locals can put in front of you."

Joan Gardner, Director of Massachusetts' Hazardous Waste Site Safety Council, stressed that Massachusetts' siting law gives community residents authority to review, and if not satisfied, oppose, CHI's proposal. The law provides funding to community opponents to use as they wish, even to hire an attorney to oppose the plant in court. Clearly, the process is fair.

Residents express outrage at CHI's and government's apparent decision to "ram [the incinerator] down our throats." Community members use strong, violent images to describe the decision process. "It's a case of rape," one woman said. According to Vincent Martino, a resident and reporter for a local newspaper, the town of Braintree had voted three times against the incinerator.

If the facility is built, waste from surrounding states, as well as from many Massachusetts towns, will be trucked to Braintree and burned. Residents argue that the incinerator will make Braintree the "waste disposal capital" of the Northeast. Shouldn't each community take care of its own waste problem? Concentrating the risks of incineration in Braintree is unfair.

Opponents argue that key decisions have already been made. They point to recent amendments to federal laws that create strong incentives for states to develop incineration capability. These amendments, Toland explains, "really put the pressure on. They've got a gun to our heads."

Parties' competing views of incinerator "reality" can be summarized as follows. Parties tend to state their positions in absolute terms:

Proponents contend that:

- * Incineration is the only technology that will reduce the volume and toxicity of waste.
- * Incineration is a "proven technology."
- * The siting process gives opponents "lots of stoppers they can put in front of you."

Opponents maintain that:

- * Incineration will "rule out real recycling."
- * Incineration has been "proven unsafe."
- * "They're trying to ram [the incinerator] down our throats."

Once interested parties formulate their positions, their ability to assimilate contradictory information diminishes.

Residents vow that "nothing would change [our] position" against the plant. They will fight incineration "until Hell freezes over."

CHI representatives are adamant that the plant will be built, that they "know" it will "work." Carolyn Russ, CHI's Director of Government Affairs, explains that public opposition is irrational, based on emotions, not facts:

People want all this magical stuff...People just say "don't make waste." There's no relationship between the factual issues and the emotional issues.

Russ felt there was little reason for her company to try to work with the community to make the incinerator more palatable:

The disputes will be there. [The residents] hate the shopping centers and they hate the industry.

They hate us most of all...It comes with the territory.

The fact that community opponents have not been convinced by scientific arguments showing low risk from incineration has led Daniel Golomb, a research associate at MIT, to conclude that scientific analysis will probably not help to resolve the community's concerns:

I think you won't solve the problem on the basis of science...Even risk assessments, which try to make risks understandable to people, don't seem to persuade people at all.

However, Joan Gardner has found that intensive education on the scientific and technical questions involved in incineration can help to open opponents' minds to points of view different from their own. According to Gardner, the process of community education is slow and difficult, but in her experience, can be effective. "It'[s]...like water wearing away stone," she says.

Gardner has directed her educational efforts to members of Local Assessment Committees (LAC), established under Massachusetts' hazardous waste facility siting law. The key question for Gardner is whether the LAC members she works with will be able to share their understanding with others in their communities:

That's the toughest part. If you concentrate on the [LAC members], and get them to the level where they understand the problem, their constituencies feel they've been bought out by the process.

Those who learn may be discredited by the community.

Parties perceive a dispute as a battle in which a "winner" or a "loser" will be designated.

The very process by which siting decisions are made aggravates conflict. CHI's decision to build the plant last April took the community by surprise. Residents responded defensively, chaining themselves to the plant gates and organizing mass protests. CHI's resolve to build the plant triggered residents' resolve to oppose it.

People I spoke with described the dispute in terms of a battle in which parties would emerge as victors or vanquished. For the parties involved, the essential question is "which side are you on?" Are you "for us" or are you "against us"? A conflict over need, safety, and fairness has become a conflict over who will "win" and who will "lose."

How would each university model -- ivory tower, service station, and activist -- address this conflict? In the discussion that follows I will consider the kinds of activities each university might undertake in the Braintree dispute and will suggest strengths and weaknesses of each approach.

Ivory tower faculty, administrators, and students would work to reduce uncertainty and thereby to advance the "frontier" of knowledge. They would pose research questions

such as: "if waste x is burned under conditions y, is pollutant z generated?" or "if species a is exposed to chemical b under conditions c, are tumors produced?" Researchers would qualify their conclusions. Researchers might find, for example, that under a particular set of conditions, with a 95% level of confidence, exposure to a chemical causes liver cancer in laboratory rats.

Faculty would select research topics based on their understanding of the gaps in research. For example, a major concern among residents is the health impacts of dioxin emissions. But because dioxin has been the subject of numerous studies, faculty research might overlook this area.

Students would help faculty with research, investigating questions faculty selected. They might search the scholarly literature to find relevant studies or help to draft articles for publication.

Faculty, and their student assistants, would submit papers to scholarly journals for publication. They would present papers at research seminars. Remarks would be directed to a scholarly audience. If disagreements arose, faculty or administrators might recommend that research continue in particularly puzzling areas.

Academics would not participate in public hearings required under state law concerning CHI's proposal. Such forums typically attract large crowds of angry citizens.

Scholars would not be able to present data their in full. Furthermore, the lay-public might misinterpret research findings, taking statements out of context and jumping to conclusions. Consequently, most decision-makers would be unaware of ivory tower research.

Thus, faculty, administrators, and students in the ivory tower university would work to chip away at scientific "unknowns." By staying out of public discussions and shunning financial support from proponents of any "side," they would produce "objective" research.

But, in the Braintree dispute, the question on people's minds is not "if waste x is burned under conditions y , is pollutant z generated?" People want to know, "will the incinerator be safe?" "Will it break down or explode?" "Will cancer rates increase as a result of facility emissions?" Ivory tower research cannot answer these questions. Ivory tower science can only tell us that, under prescribed operating parameters, emissions will equal specified concentrations. To answer the question, "is this level safe?", parties must draw their own conclusions.

State government officials are faced with a critical decision: they must accept or reject CHI's proposal. They cannot wait for the "frontier" of knowledge to advance; state law requires that they act in accordance with rigid deadlines. In the face of incomplete and contradictory

information, how should decision-makers choose? Ivory tower researchers do not concern themselves with this question.

"Objective" knowledge offered by ivory tower researchers has little relevance to parties in dispute. As explained above, parties hold very different views of incinerator "reality." Proponents argue that incineration is needed, opponents claim it is unnecessary and unwise. Proponents claim health effects are insignificant; opponents contend the incinerator will cause cancer. Each side maintains that it holds the only "rational" perspective, that it alone is "objective." Disputants have no interest in research that contradicts their views; they reject such studies on the grounds that they are biased.

Those within the service station university would work to advance "useful knowledge" by answering questions posed by the parties. What percent of the waste stream is recyclable? How much dioxin will be produced by the Braintree plant? What level of risk do people face? Is the facility safe?

Service station researchers would develop "state of the art" equipment for monitoring emissions. Administrators would organize education and training programs for state and local government workers responsible for facility oversight. Faculty would consult with elected officials or other decision-makers in need of "expert" advice. Students would

design a model recycling program or compile a report on citizen participation in waste management decisions in other states.

State government workers or CHI representatives might seek out service station assistance, or faculty and administrators might approach government or industry with ideas for programs. No matter who initiated research, work would respond to public, not academic, needs and interests. Faculty would work on a fee-for-service basis. They would present research findings in public hearings or other forums deemed appropriate by their sponsors.

Thus, the service station would increase people's understanding of the complex technical and social issues involved in hazardous waste disposal. Many of those involved in the Braintree lack the specialized knowledge needed to make wise decisions. Faculty, administrators, and students would supply parties this information.

But when the service station researcher answers the public's questions, when he says, "yes, the facility will be safe," he steps out of the role of "objective" scientist and into the role of policy-maker. When a faculty member, at the request of a citizens group, reviews scientific evidence and concludes that polyvinylchloride creates dioxin when burned and should be banned, she becomes an actor in the political process. When the researcher and the faculty member appear at a public hearing to express their view,

they participate in public policy. The service station university is not apolitical; it advocates action.

"Advocacy science" is problematic in several respects. First, advocacy science causes confusion. When a faculty member asserts at a public hearing that a chemical should be banned, those listening do not know the basis of the statement. Has the professor reached his conclusion based on overwhelming scientific evidence? Or has he decided that, since the costs of a ban are far less in his mind than the risk of potential exposure, a ban is the best policy? Scientific analysis may mask value judgments "beneath a veneer of technical rationality" (Ozawa and Susskind, 1985, p. 23). Decision-makers may fail to "unmask" values; they may confuse politics with normal science.

Second, advocacy science may fail to advance the "frontier" of knowledge. As service station faculty conduct research, prepare arguments, and present information on behalf of CHI, government, or residents, they may overlook or even obscure information that does not bolster their client's case. Instead of examining and seeking to resolve scientific differences, researchers may exaggerate them.

Third, advocacy science may exacerbate conflict. Assume that CHI hires a well-respected academic who asserts at public hearing that the risk from incineration is insignificant, no greater than riding a bike. Assume that residents hire an equally renown faculty member who declares

that the risk is potentially much greater, equivalent to living one mile from Love Canal. Those hearing from both sides may conclude that science can support any argument. Susskind and Cruikshank (1987) have observed that when experts disagree, they tend to "cancel each other out" (p. 30). When this happens, decision makers may omit scientific knowledge from their considerations, altogether a dangerous position.

The service station adopts its clients' points of view; it adopts their version of incinerator "reality." If it works for CHI, it takes the view that incineration is needed and is safe. If it works for the community, it takes the opposite view.

In the words of Dan Golomb, a research scientist at MIT, "one scientist versus another won't resolve anything in the public's mind." CHI's technical reports that "show" that the facility is safe, developed by reputable technicians, have done nothing to reduce community opposition to the plant. Residents perceive the studies as biased, as one more attempt by CHI to undermine their position. Service station service may help to strengthen parties' positions, but will not help them to resolve their differences.

The activist university would serve by advancing its own view of appropriate waste management. For example, if the university took the position that CHI's proposal were

seriously flawed, it would work to see the proposal defeated. Faculty, administrators, and students would oppose the plant. Faculty would develop an alternative plan for waste management in Massachusetts, calling for ambitious waste reduction programs. They would come to the aid of community opponents, helping to develop a strategy to fight the plant. They would refer to the Braintree case in lectures and problem sets, encouraging students to become informed and to develop a point of view.

The university's center for technology policy would issue a report condemning incineration. The center would release the report to the news media and participate in press and television interviews, warning the public of the dangerous chemicals released when wastes are burned.

Administrators would write letters to friends in government, urging them to deny CHI's operating permit. They would speak out at public hearings in opposition to the plant. They would invite facility opponents to participate in university forums or conferences, giving attention and prominence to their point of view. They would institute programs for waste reduction within the university, by way of example to the community at large.

Students would draft legislation prohibiting the manufacture of highly toxic wastes. They would work for community and environmental groups as interns and write

research papers about the dispute, educating themselves and their classmates.

Thus, faculty, administrators, and students would serve society by taking an active role, by pursuing goals they deemed worthy. University opposition to CHI's plan might lead CHI to withdraw its proposal or government to rule against it.

In its service role, the activist university encounters the same problems as the service station, but for different reasons. The service station participates in advocacy science in accordance with its clients' demands for "relevance." The question on people's minds, "will the facility be safe," is not amenable to scientific analysis; answering requires the researcher to step into the non-objective realms of public policy. When the activist university professor argues against the Braintree plant, she advocates policy not because her client has asked, but because she believes her position is right and should be heard.

While different concepts of service motivate the service station and activist, service often achieves the same end. Service station faculty strengthen their clients' positions; activists further their own. But neither type of university helps parties reconcile their different views. If anything, university service polarizes disputants, providing each side with "ammunition" that may convince it of its rightness.

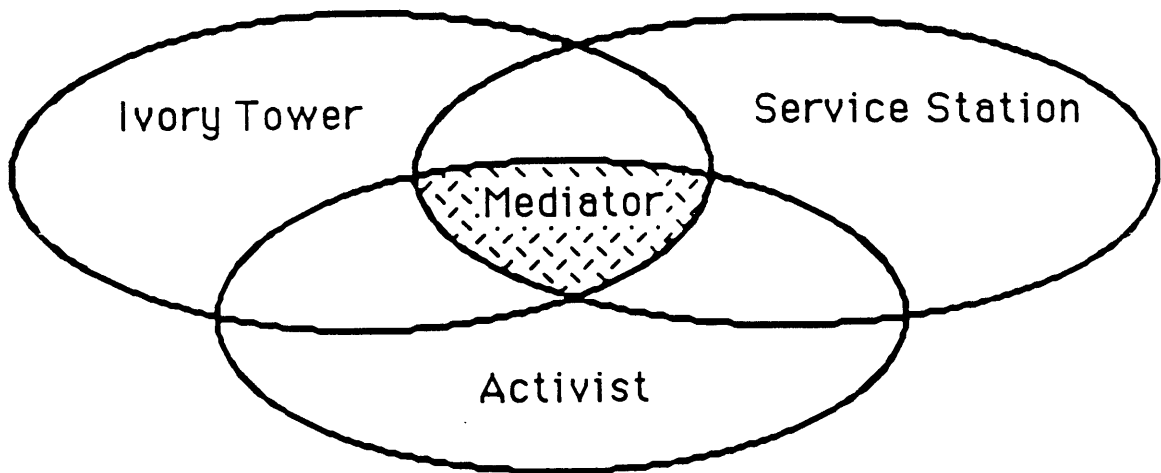
Neither type of university helps parties to respect and learn from one another. Neither helps them to look beyond a "fight" that will be won or lost and to focus on the problem at hand, which must be addressed.

To return to the question posed several times in this research, "How ought major research universities serve society?" In light of the deficiencies outlined above, I propose a new model for university service: the university as mediator.

CHAPTER V

THE UNIVERSITY AS MEDIATOR

I propose a fourth model for university service: the university as mediator. This model integrates functions included in the ivory tower, service station, and activist models. Conceptually, I think of the university as mediator as a model in which the others overlap:



This fourth model evolves from recognition that conflict is a fact of life in the public sector. Service means involvement in politically-charged situations. Politics must not be a signal for the university to withdraw.

Technical complexity, especially in the environmental arena, means that university knowledge is needed. Standing "above and apart" is no longer an alternative for universities that wish to serve society.

By "mediation" I mean engaging all the disputants in a search for an "all gain" solution that all sides agree is fair, efficient, stable, and wise. Discussions among people representing divergent points of view, assisted by a facilitator, is mediation. Mediators may focus only on the process of consensus building, or they may contribute to the substance of decisions by suggesting solutions to problems. Susskind and Madigan (1984) describe the range of mediation techniques as a "continuum" that is "defined by the 'activism' [the degree of involvement] of non-partisan intervenors, ranging from unassisted negotiation to adjudication" (p. 180).

All types of mediation share a number of elements:

1. Interested parties participate directly in negotiation. CHI's conduct in the Braintree case study exemplifies what Dennis Dusick has called the "Decide-Announce-Defend" approach. CHI decided what type of facility would be most profitable and appropriate and where it should be located. When it announced its plans and encountered stiff opposition, it defended its decision. CHI's actions are typical of the way government and industry often make decisions. The public is relegated to the role

of pointing out what's wrong with a decision that has already been made. This approach directs the public's energies to picking proposals apart. Government and industry are often unable to re-direct the public to thinking about how legitimate problems could be better addressed.

Mediation calls upon all those interested in the outcome to take part in decision-making. Government, industry, and the experts they commission are not the only ones with valuable knowledge and experience. Residents know the most about their community. For example, in the Braintree case residents watched CHI's operation of its pathological waste incinerator carefully and probably knew more about the company's environmental problems than government enforcement officers. Information about CHI's past problems would be useful in anticipating its future difficulties with the hazardous waste incinerator.

2. Communication is open and information is shared.

Environmental decisions often involve complex scientific and technical information. "Advocacy science" encourages participants to withhold information that may not be consistent with their interests. "Advocacy science" means that parties monopolize information that might be valuable to all. They emphasize the areas of disagreement. Science becomes a mere "instrument for legitimating political demands" (Ozawa and Susskind, 1985).

But turning over technical decisions to "the experts" is also undesirable. In the Braintree dispute, uncertainty made it impossible for experts to render "purely" scientific judgments. If we ask scientists to make decisions for us, we ask them to impose their own values; in effect, to become political decision-makers. We "place power in the hands of the scientists to which they are not entitled" (Ozawa and Susskind, 1985, p. 36).

In mediation, disputing groups pose research questions jointly. In Susskind and Cruikshank's words, parties "ask and attempt to answer a major question: 'What do we know, and what don't we know about the issues, contexts, and experiences relevant to this dispute?'" (1987, p. 115). Citizens, government, and industry work together to find the answers they need. They bring all relevant information to the table. They use knowledge to solve problems, not to advance the bargaining power of a "side."

Parties seek to understand the sources of their disagreement; they work to uncover the value judgments imbedded in advocacy science. Parties ask researchers to explain their assumptions. When the researcher concludes that the facility will not significantly increase residents' risk of cancer, has she assumed a worst case scenario? Or has she based her predictions on her assessment of the most likely case? Once parties identify assumptions, they can, as a group, decide which are acceptable to them and which

are not. Participants in the dispute make political choices; they guide the scientists.

3. Parties' interests, rather than their positions, are the focus of discussion.

In the Braintree dispute, parties' positions appear irreconcilable. Residents want CHI to close up shop and leave town. CHI wants to be left alone to build and operate its incinerator.

The theory of mediation holds that interests -- "needs, desires, concerns, and fears" (Fisher and Ury, 1981, p. 42) -- motivate people to take the positions they do. Interests are revealed by asking the question "Why?" (p. 45). Why do residents oppose CHI's proposal? Because their homes represent their greatest investments and the incinerator may drive down property values. Because they resent the idea of Braintree becoming known as a "dump." Because cancer is widespread and any increase in cancer risk, no matter how small, is unacceptable.

While people's positions may appear irreconcilable, their interests may not. CHI's reputation is on the line. If it can site the facility in Braintree and establish a good performance record, it may be able to build and operate other incinerators in other states. It has an interest in accommodating residents' concerns -- perhaps by insuring the value of the homes near the plant, or by contributing to

economic development and public works projects -- and in limiting the plant's adverse impacts.

4. Parties invent options for mutual gain.

As Fisher and Ury (1981) point out, people in dispute usually believe they know what's right. They are not predisposed to think creatively about new ways to solve problems. They want their view to prevail. But resolving conflicts often requires parties to "invent options for mutual gain."

Inventing requires parties to "think about things that are not already in [their] mind" (Fisher and Ury, 1981, p. 62). Fisher and Ury suggest that parties go to a secluded place removed from day to day pressures. They urge disputants to open their minds, to be open to all possibilities. Cut off from the world, removed from the pressures of "business as usual," parties create a setting not unlike a university.

5. The mediator is "outcome-neutral."

Disputes generate personal antagonism. People come to view their adversaries as evil, as the embodiment of all that is bad. Often animosities are self-fulfilling; since parties do not trust one another, they have little incentive to behave in a trustworthy manner.

In order to win the trust of parties, in order to bring them to the table to share information, divulge their interests, and create "options for mutual gain," a mediator

must be neutral. A mediator who favors any side will likely be rejected by the disfavored parties.

But how is "neutrality" to be achieved? Everyone has opinions and beliefs. Mediators are not blank slates. The process of mediation establishes the mediator's neutrality. For example, Susskind and Ozawa (1984) relate a case in which a Congressman, well-known to favor a water-treatment plant, served as mediator for parties in conflict over facility construction. The Congressman "established his nonpartisanship by the way he handled himself throughout the negotiations" (p. 13). Delli Priscoli (1988) documents two cases in which parties accepted Army Corps of Engineers personnel as "neutral facilitators" in delicate negotiations over Section 404 permits, despite the Corps' "nonneutral" conduct in other areas:

Since the Corps...play[ed] a role that looked neutral and acted neutrally, they were accepted as neutral, even though they play nonneutral roles in other arenas often involving the same parties. These cases indicated that the imperatives of role can, in certain circumstances, overcome historical perspectives (p. 76).

Good mediators recognize that agreements are only possible if all parties' interests are represented fairly at the bargaining table. Favoritism might tip the balance of power to one side and force others to "give in," but such an agreement would not last long. The "imperatives of role"

establish the mediator's neutrality, at least for as long as the negotiations last.

The university as mediator would participate in the Braintree dispute by putting into practice the five elements outlined here. Successful mediation would require substantial time and resources, as well as specialized skills. Given these requirements, support for mediation would have to come from high-level administrators and senior faculty. Before the university could assume its mediating role, university leaders would have to make the necessary commitments.

Administrators or senior faculty would organize a university Center for Public Service, which would have as its primary activity dispute resolution. They would select a faculty member respected inside and outside academe to direct the Center's activities. The director would be knowledgeable in scientific and technical matters as well as public policy, and would be familiar with the techniques of mediation. He or she would report to the provost or other high-ranking administrator with responsibility for overseeing a large number of departments.

A group of senior faculty from diverse academic departments would supervise the work of the Center: civil and chemical engineering, biology, chemistry, management, urban studies, and planning. Faculty would participate on a voluntary basis. The Center would rely on faculty

cooperation and would not embark on projects that appeared threatening to them.

The Center would work closely with faculty members skilled in mediation. If no one at the university had these skills, or was available, faculty search committees would look for one or more people qualified to serve in this role. Thus, the university's commitment to mediation would require it to broaden its criteria for hiring. Excellence in teaching and research would no longer be the only considerations. Those responsible for hiring decisions would also take into account a person's potential contribution to university service, that is, a person's competence in mediation.

Mediators would also hold academic credentials. They would be hired as full-fledged faculty members, eligible for tenure. Crosson (1983) has observed that many universities hire full-time specialists to handle public service responsibilities, just as they hire research specialists. This practice has created a professional "subclass" of service professionals (p. 105). But mediation would be most effective faculty considered it an extension of, rather than distinct from, university teaching and research functions.

The Center's structure would be flexible, designed to adapt quickly to current problems and the increasingly complex set of disciplines that are needed to handle public sector disputes. For example, if the Center mediated a

dispute involving complex scientific information, the Center's director would call upon faculty scientists for assistance. If a dispute concerned the economic impacts of a proposal, the director would turn to university economists. Again, faculty would provide assistance in accordance with their interests and availability. University administrators and senior faculty could encourage faculty, students and staff to participate in mediation activities by recognizing public service in promotion, tenure, and salary decisions.

While some of the costs for mediation would be borne by the parties involved in disputes mediated by the center, additional support would be necessary to sustain the center's programs. The Center would seek funding from government and industry. Principal funders would be represented on an advisory board that would help to establish the Center's agenda. The board would also include leaders from citizen groups that may lack financial resources but are committed to the Center's work. Thus, decisions would be made jointly by the Center's director, involved faculty members, and the advisory board.

The Center would select disputes for mediation carefully. It would intervene only in disputes that exemplified intractable and pervasive conflicts. The Braintree incineration dispute would be a good candidate. The factors that sustain the conflict in Braintree are

common to many siting controversies (Susskind, 1985; O'Hare et al, 1983). If the Braintree conflict were resolved to the satisfaction of all the parties, the agreement would be a model that others could follow.

Having decided to intervene, the Center would ask a faculty member skilled in mediation to initiate the consensus-building process. If the faculty member's time allowed, and he or she felt the dispute was amenable to mediation, he or she would accept the job. Alternatively, a faculty mediator would approach the Center, recommending that it support an attempt to mediate a particular conflict. Or, one or more of the parties in a dispute might ask the Center for help.

Faculty mediators would meet with each of the parties -- CHI, government, and residents -- and explain what might be gained by addressing problems jointly. Both the Center and the parties in dispute would have to feel comfortable with the mediator. If parties perceived that the mediator was biased, mediation would almost certainly fail. If the Center felt the mediator was not competent, the university could not commit its support.

The Center's director would call a meeting of all the parties, offering university facilities as a "neutral" place to convene. At the meeting, faculty mediators would encourage each party to express its concerns and listen to others'. They would establish groundrules, requiring

participants to speak directly to one another, to give examples, and to refrain from personal attacks.

Having listened to the parties' positions, the mediator would ask: What are the points of conflict? If disagreement focuses on scientific information, what are the sources of the disagreement? Have scientists used different sets of data? Have they asked different questions? Is the disagreement over facts, or does it concern the method of analysis?

To help unravel scientific arguments, university scientists would serve as technical consultants to the group. University scientists would serve only if their participation were acceptable to all the parties, and would answer questions posed by the group. They might explain, for example, the various models analysts use to extrapolate, from experiments with rats, how humans will react when exposed to incinerator emissions. Scientists would explain the assumptions embedded in each of the models. If scientists worked for pay (as would be expected if work was substantial), money would come from the "kitty" established by all the parties.

Mediators would meet with each party to explore options that would be better for all concerned. Could CHI impose a sliding scale for waste disposal, charging higher rates for "recyclable" wastes? Could community opponents be given access to all information on plant operating conditions and

emissions, and have authority to shut the facility down if pollution limits were exceeded? Could CHI build several, smaller plants in communities throughout New England, rather than one large plant in Braintree? Faculty mediators would encourage parties to be creative, to think of new, mutually-acceptable alternatives to CHI's initial proposal or residents' steadfast opposition.

Parties would utilize the wide-ranging expertise typically found in major research universities. For example, they might, as a group, call upon faculty knowledgeable about destruction of hazardous wastes, processes to avoid the generation of hazardous substances, movement of chemicals through the environment, toxicology and human health effects, risk assessment, monitoring and inspection techniques, regulatory law, and economics. The work would give faculty from diverse fields a central focus for joint research, coordinated by the Center.

Faculty mediators would work with the parties to reach agreement. This would involve "packaging" (Susskind and Cruikshank, 1987, p. 120). The key to packaging is that parties "value the same things differently" (p. 120). Faculty would meet with the parties to discover which interests are most important to them -- and cannot be traded away -- and which are relatively unimportant. In Braintree, residents' number one concern may be risk of explosion; avoidance of this risk may be their primary interest. CHI

may be willing to forego incineration of wastes with low flash points, which pose the greatest danger of explosion, if residents accommodate CHI's concern about profitability and allow the company to build a larger incinerator.

Like "inventing options," "packaging" demands that faculty and other university-based helpers think creatively. Residents' interests are manifold, as are CHI's and government's. Faculty would juggle many concerns, trying new approaches until they discovered the one that offered the parties the most.

Faculty would help the parties draft written agreements. Faculty would ask one person to prepare a single text spelling out the precise terms of the consensus. The group would then edit the agreement until everyone felt satisfied. Alternatively, faculty and students would draft the agreement themselves and ask residents, CHI, and government representatives to amend and approve the text. In either case, the agreement would represent the parties' own words.

No one at the university would be entitled to dictate the terms of the agreement. However, the university could influence the outcome of the negotiations in several ways. First, the university-based mediator could seek out unrepresented interests that have not previously "come to the table." For example, if the faculty, students, and staff affiliated with the Center wanted to strengthen support for incineration, the mediator might encourage

parties to allow industries that generate hazardous waste to participate in the negotiations. The mediator would argue that these industries have legitimate interests that the group needs to recognize. Industry participation would strengthen the chances that the facility would be built.

Alternatively, mediation could strengthen the bargaining position of citizen and environmental groups. Knowledge is a source of power. Joint fact-finding and information-sharing help disadvantaged groups to improve their bargaining positions. Parties that cannot afford to hire their own experts can reap the benefits of the open inquiry afforded by mediated negotiation. Faculty affiliated with the Center would review the tentative agreement and tell the mediator their opinion of it. If they felt that one side appeared to be losing out, they would suggest that the mediator share this view with the group and offer other, more appropriate ways of proceeding. The long-term viability of the university's mediation program would require each agreement to be the best possible, given the parties' interests. No university would want to be associated with exploitative or unworkable agreements.

Parties would utilize university expertise to ensure that each side honored its commitments. If CHI promised to shut down the incinerator if dioxin levels exceeded a specified level, parties might ask university engineers to devise techniques whereby they could monitor CHI's

compliance. Engineers would take into account the parties' need for easy-to-understand, readily-available information as they developed the monitoring equipment.

Faculty would also help the parties formalize their agreement. Parties might desire to convert their agreement into a legally-enforceable contract between CHI, government agencies responsible for issuing the company's operating permit, and residents. Faculty with legal expertise would advise the group on the options available to them.

Faculty would urge the parties to agree to reconvene, under specified circumstances. Faculty would offer to call parties back "to the table" if any party failed to honor its commitments. Faculty would also reconvene the group if important new scientific information came to light. CHI estimates that the "life expectancy" of the incinerator is 20 years. Over this period, understanding of incineration and its health impacts will evolve. The "frontier" of knowledge will advance. Scientists might discover that a chemical assumed to be harmless is in fact highly toxic at low levels, for example. By meeting periodically to assess the agreement, faculty would help the parties take new knowledge into account.

To sum up, mediation offers a workable alternative to the ivory tower, service station, and activist models for service. It offers service that is consistent with the university's basic values.

I began this paper with the observation that while some scholars see public service as an essential university function, nearly as important as teaching and research, others feel service is inappropriate or even inimical to what universities are about. We can now see why some hold such a negative opinion. The ivory tower, service station, and activist models for service are inconsistent with the basic values of the university: the commitment to advance knowledge, neutrality, and independence.

The primary purpose of all universities is to record and disseminate knowledge. But the Braintree case shows that the prevailing models for service bring little knowledge to bear on public policy-making. Ivory tower universities shun direct participation in public disputes. Consequently, most decision-makers are unaware of ivory tower research; they benefit little from ivory tower knowledge.

These flaws were apparent to the people I interviewed. People want universities to help them understand the scientific and technical issues they encounter in their day-to-day work. They want information to be clear and factual. But many said their encounters with faculty failed to meet their needs. Faculty talk in "scientific code." Reports are "wishy-washy," ending with statements like "we have to do another study." University knowledge is not getting through to the people who need it most.

Service station and activist universities intervene directly in public decisions. But they do not help decision-makers to examine and understand underlying scientific and technical issues, as the Braintree discussion makes clear. Their ability to bring knowledge to bear is limited by their roles as "science advocates." Service station and activist universities strengthen the positions of those they represent, but do not help disputing parties understand why they disagree so strongly on matters of fact.

Universities value neutrality. Neutrality is essential, ivory tower advocates claim, in order to ensure "free and open inquiry." Ivory towers try to achieve neutrality by staying out of public debates. But I have argued that indifference to pressing matters of public policy is not a neutral stance. An indifferent attitude is a tacit endorsement of the status quo.

Those I spoke with also did not find universities and their faculties to be neutral. Some argued strongly that the idea of university objectivity was "overblown." "Those who pay get what they pay for," was a prevailing sentiment.

Universities value independence. But maintaining independence is problematic for universities that serve at the behest of paying clients. This problem, evident in the Braintree case, was underscored by the people I interviewed who pointed out that while faculty are rarely "bought" by their sponsors, contractual relationships affect what

faculty say and how they say it. It won't be long before "the public catches up with all the extra things faculty do," one person warned. When this happens, the public will no longer trust universities and their faculties. Universities will be in the "same mess" as government and industry; they will have lost the qualities that distinguish them.

No wonder scholars cannot agree about which model for service is best. The prevailing models prescribe service activities that undermine what universities profess to be.

Unlike the other models, the university as mediator is consistent with basic university values. As the Braintree case illustrates, the university as mediator helps to advance knowledge by encouraging parties to pose research questions jointly. Parties work to uncover the sources of their disagreement. They call upon scientists and technicians to explain the value judgments imbedded in the analysis. Parties come to understand the limits of science and where further research would be helpful.

For the mediator, knowledge is not limited to scholarly research. People possess knowledge about their lives, their communities, their jobs and businesses. The university as mediator incorporates this knowledge into the decision process. It recognizes that when we leaves these views out, analysis suffers.

Like the service station university, the university as mediator is a problem-solver. But the mediator adds a creative element. For the mediator, problem-solving requires invention of new options, finding new ways to accommodate the interests of all parties. Problem-solving requires the mediator to understand how people value their interests and to creatively "package" people's concerns. The fact that there is no "best" solution means that parties are free to invent solutions that meet their needs. Understanding people's interests -- why they feel the way they do -- can be a stimulus to creativity.

The university as mediator values neutrality. Like the ivory tower, the mediator maintains that knowledge is "ferreted out" when people question, argue, and debate. But unlike the ivory tower, the mediator does not stand "above and apart from" the political fray. The mediator stands in the middle, seeking out and drawing in divergent interests, hearing from all sides. The mediator's "imperatives of role" establish his or her neutrality.

The university as mediator is consistent with what people I talked to said they want from a university. People say they "desperately need" university assistance, but they are concerned that close ties between universities and outside clients will stifle free inquiry. As mediators, universities work to advance the interests of all the parties, thus remaining independent from the demands of

industry and government clients. If funded by all sides in a dispute, universities are beholden to no one.

People I spoke with want "the facts," but they object to the idea that faculty and students can or ought to be "detached and dispassionate." Passion motivates students, faculty, and staff to work hard. People should care about the outcome of their research; not to care means that research is unimportant to them. Passion and ideology are necessary to getting the job done.

The university as mediator recognizes that people's political views are essential to who they are and what they do. Rather than try to strip away ideology, the mediator encourages people to express their views and opinions. By revealing why they feel the way they do, people can discover areas of agreement.

Finally, the university as mediator responds to the reality of disputes in the public sector. It seeks the wisest possible agreement, given what is not knowable. For the mediator, truth is not "absolute." In distributional disputes and other conflicts, "truth" has many meanings. In the Braintree case, scientific data are incomplete and conflicting. The problem is not that the community is "right" and industry is "wrong," or vice versa. There is no "objective" way of determining the "best" resolution of incineration disagreements.

I am now able to offer answers to questions I have posed throughout this research. How ought universities to serve society? By becoming directly involved in public controversies. This is where the public needs help most, particularly when controversies involve complex technical information.

How can universities participate without sacrificing the qualities that distinguish them -- neutrality and independence? Mediation offers a way for universities to maintain neutrality while participating in the conflict. Mediation offers a way for universities to serve without subservience to any party.

Whom should a university serve? Industry, government, and citizens. Everyone who stands to gain from university knowledge and expertise. Those who have money to hire faculty, and those who do not.

What is the relationship between university as mediator and the university's other roles, teaching and research? Faculty, students, and staff can learn from the parties in dispute. They can learn to see the world from many different perspectives. They are exposed to people who know their communities, their institutions, and their problems first-hand.

For universities wishing to help society confront its most complex and intractable problems while remaining true

to their basic nature and functions, the role of mediator offers promise.

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APPENDIX I

PEOPLE I CONTACTED TO ASSESS PUBLIC PERCEPTIONS
ABOUT THE UNIVERSITY'S SERVICE ROLE

I contacted 21 leaders from MIT, state government, industry, and citizen groups for their opinions about the service role of major research universities. I asked each person to complete a questionnaire designed to get them thinking about the university's service function. I also asked to meet with each participant to discuss his or her views.

The following list includes the name and position of each person I contacted. I have designated those who completed the questionnaire with the letter "Q;" those I interviewed I designate with the letter "I." I have also indicated the date the interview took place.

I. MIT

Ann F. Friedlaender, Dean, School of Humanities and Social Sciences. (I) - April 5, 1988.

Kenneth Keniston, Professor, Science, Technology and Society Program. (I) - April 8, 1988.

Tunney Lee, Department Head, Urban Studies and Planning. (I,Q) - April 4, 1988.

Daniel Roos, Director, Center for Technology Policy and Industrial Development. (I) - March 24, 1988.

James M. Utterback, Director, Industrial Liaison Program, School of Engineering. (No response)

Gerald L. Wilson, Dean of Engineering. (Q)

II. GOVERNMENT

Michael S. Brown, Director, Office of Safe Waste Management, MA Department of Environmental Management. (I,Q) - April 4, 1988.

Joan N. Gardner, Executive Secretary, MA Hazardous Waste Facility Site Safety Council. (I,Q) - April 6, 1988.

James Gutensohn, Commissioner, MA Department of Environmental Management. (I,Q) - March 28, 1988.

Kenneth A. Hagg, Acting Commissioner, MA Department of Environmental Quality Engineering. (I,Q) - March 19, 1988.

James S. Hoyte, Secretary, Executive Office of Environmental Affairs. (I,Q) - March 29, 1988.

Elizabeth Kline, Assistant Secretary for Water Resources, Executive Office of Environmental Affairs. (I,Q) - March 21, 1988.

Paul S. Levy, Executive Director, Massachusetts Water Resources Authority. (Q)

David O'Connor, Director, Massachusetts Mediation Service. (Q)

Steven Roop, Assistant Secretary for Waste. (I,Q) - March 29, 1988.

III. INDUSTRY

Joseph Duggan, Director of Metropolitan Affairs, Boston Chamber of Commerce. (I,Q) - March 23, 1988.

Debra Sanderson, Environmental Coordinator, Clean Harbors, Inc. (No response)

Arthur F. Watson, Vice President of Marketing, American Refuel. (I,Q) - March 22, 1988.

IV. CITIZEN GROUPS

Michael DeChiara, Assistant Director, Greenpeace. (I,Q) - April 13, 1988.

Daniel S. Greenbaum, Director of Education and Public Policy, Massachusetts Audubon Society. (I,Q) - April 13, 1988

Stephanie Pollack, Staff Attorney, Conservation Law Foundation. (I,Q) - March 30, 1988.