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Michigan State University PH.D. 1983

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THE IMPACT OF TECHNICAL EXPERTISE IN A NONMETROPOLITAN SITING DISPUTE: A CASE STUDY OF THE HERSEY WFPP CONTROVERSY

BY

Frederick Frankena

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ABSTRACT

THE IMPACT OF TECHNICAL EXPERTISE IN
A NONMETROPOLITAN SITING DISPUTE
A CASE STUDY OF
THE HERSEY WFPP CONTROVERSY

BY

Frederick Frankena

During the last decade the environmental problem and the social movement it inspired served to define technology as a social problem. Controversies have persistently surrounded the siting of large-scale energy production facilities, particularly nuclear and coal-fired power plants. This research study further illuminates public response to the scale of energy resource development by examination of a case involving a renewable energy technology -- a 25 MW wood-fired electric power plant (WFPP) to have been sited in the remote nonmetropolitan Michigan community of Hersey.

The controversy began late in 1978 shortly after the three prime sites were announced and concluded in 1980 when the proposal was withdrawn in the face of a local hazardous and toxic waste ordinance. Offers followed from other communities while opposition continued to develop throughout the region.

Using a case history approach that relies on a variety of data sources complemented by a content analysis of the Hersey site hearing and accounts from the local newspaper, this study focuses on

a number of the salient issues of power plant siting. Foremost among these is the social and political impact of technical expertise. Expertise is evaluated in terms of facts/values and local/cosmopolitan orientations. Content analysis was also applied to the issues in the controversy.

The Hersey controversy follows the pattern of technical disputes observed by Nelkin and others. The analysis supports the finding of a shift toward values when experts disagree on grounds of fact, a relationship that holds true for proponents and opponents alike. Proponents made greater use of cosmopolitan arguments, whereas opponents began on a cosmopolitan note but soon utilized locally-oriented arguments to promote their cause. The analysis of issues reveals a change in emphasis from the prospective impact of the WFPP on forest ecosystems and the area economy to the likelihood that waste would be burned in the plant and the threat to local autonomy. This trend reflects the enhanced role of values in the evolution of the dispute.

Policy implications are discussed for scale and centralization in energy development, the concomitant distribution of costs, and the use of technical expertise as a tool to depoliticize issues. This study suggests that public concerns relative to the scale of energy development may not be allayed by continued resort to expertise alone.

To the memory of

Olive Harwood Frankena

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I owe a debt of gratitude to each member of my committee -- Marilyn Aronoff, J. Allan Beegle, Peter Kakela, and my major professor, Harry Perlstadt -- for their moral support and very thoughtful treatment of this interdisciplinary dissertation. I am especially indebted to Professor Harry Perlstadt for the intellectual rigor and well-measured encouragement he brought to each stage in the development of this research study. I find it very difficult to imagine writing a Ph. D. thesis without him. Documentary resources and critical thinking provided by Professor Denton Morrison made a significant contribution to this effort. Professor J. Allan Beegle deserves a special note of thanks for his patience, financial support, and an enduring interest in my academic progress. This dissertation is largely a spin-off from a study he directed on the impact of the population migration turnaround in Osceola County. This U. S. Department of Agriculture field study helped support acquisition of the data and searches of computerized bibliographic data-bases. Daverman and Associates of Grand Rapids and the Osceola County Herald, in particular Mrs. Virginia Cartier, generously provided materials analyzed in this study. Marco Menezes was most helpful of those interviewed regarding the controversy. His excellent memory and unwavering interest in this study have left their mark.

After a fruitful life and an all too brief reprieve from her struggle with cancer, my mother passed away in January 1982. I take a special satisfaction in dedicating this work to her. Finally, I must acknowledge the inspiration provided by my young sons, Mark and Roy. Beholdng the future in flesh and bone has, for me, made the practical consequences of knowledge a sweet obsession indeed.

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LIST OF ABBREVIATIONS

CRUF	Committee for the Rational Use of Our Forests
DNR	Michigan Department of Natural Resources
EIS	Environmental Impact Statement
MW	Megawatt - a measure of power equivalent to 1 million watts or 1 thousand kilowatts
NRC	Michigan Natural Resources Commission
OCH	Osceola County Herald
PBB	Polibrominated biphenyl, a complex organic chemical used as a fire retardant
RDF	Refuse derived fuel
WFPP	Wood-fired power plant

CHAPTER 1

INTRODUCTION

Environmental quality and the social movement it inspired were essential to defining science and technology as a social problem during the last decade. The number of controversies surrounding technological change in particular has grown dramatically. Prominent among these have been disputes over the siting of large-scale energy facilities. One of the problems most often cited (Nelkin, 1979d), especially in connection with siting controversies, has been the role of experts and the growing demand for public participation in technical decisions. This dissertation is about such a dispute but one with a number of new wrinkles.

In response to the general rise in public concern about science and technology, the Society for Social Studies of Science was organized in 1976. It brought together scholars from a variety of disciplines in order to deal better with problems neglected within the confines of the traditional disciplines. The present study is consistent with the spirit of this group as well as a number of the problem areas it has served to identify. Its purpose is to illuminate further the role of experts and technical information in community controversies. The case selected involves a modern application of a technology used some years back, namely the wood-

fired power plant (WFPP). The dynamics of controversy is, of course, worth studying on its own merits. However, the wider socio-environmental implications of technical controversies provides more compelling justification for study of this case.

Industrial society has been undergoing developmental change in connection with its resource base and the nature and impacts of its technologies. As fossil fuels are depleted, the search for alternatives portends a transition in energy-base. Wood energy is one alternative source. However, development of wood energy resources is being heralded at a time of rising public disenchantment with large-scale energy-producing technologies. Concerns about risks and environmental hazards have virtually halted nuclear power development since the 1979 accident at Three Mile Island. Air pollution from coal-fired electric power plants remains a significant source of public concern. Although wood energy presents risks and hazards of a lower order of magnitude, centralized schemes for wood electric power production are also being carefully scrutinized for their prospective community impacts. The choice has been posed between large-scale, centralized ("hard" path) technologies on the one hand, and small-scale, decentralized ("soft" path) technologies on the other. Although hypotheses directed at this policy choice are not treated in this study, the value positions of the actors do reflect the ideological debate. The underlying resource and environmental quality issues as well as the existence of an emergent ideological debate lend justification to this effort.

Regardless of the scale of development, wood appears to be

benign compared to nuclear or even coal-fired electric power plants. Indeed, that the wood-electric alternative was proposed in the first place implies the desire to increase our energy supply without added threat to the environment. There is, however, a quantitative difference in scale between wood and conventional power plants that derives from economies of scale. Fuels for conventional power plants are concentrated and thus can be economically transported to a central location. Economies of scale exist under these circumstances, making power production cheaper for larger power plants. Wood is a less concentrated energy source that must be harvested from a relatively large geographic area. As a result the economic scale of WFPP's is of a much lower order of magnitude. There are qualitative differences as well. The radiation hazard of nuclear power plants and the risks of system failure set it apart from power plants that rely on combustion processes. The virulent opposition to nuclear power stems from recognition of this difference. There is another qualitative difference, however, that goes to the heart of the energy problem. Wood is a renewable energy source. Coal and nuclear are both depletable, nonrenewable energy sources. At the same time there is an important qualitative similarity. The mining of coal and uranium often cause environmental degradation. Wood-electric power generation involves large-scale removal of the standing stock of nutrients in forest ecosystems, a potential environmental problem. On the whole wood's relatively low pollution and its renewability make it a prospective improvement on conventional fuels.

Wood, in effect, is solar energy. Forests are the energy net

that collect it. Location of a WFPP to minimize transport costs dictates a plant site near the center of the area to be harvested. For obvious reasons this location is likely to be rural and remote. Wood energy development is certain to be more problematic for rural communities.

The site choosen for the demonstrational WFPP in this study was Hersey, Michigan, a remote nonmetropolitan community in the northern half of the Lower Peninsula. The controversy that attended the effort to site the plant there is the focus of this dissertation. The fact that it is rural and remote points to some important aspects of the controversy. Hersey is precisely the sort of town one would expect to welcome the project with open arms. Ordinarily such a community lacks the kind of diversity that gives rise to citizen protest. The appeal of additional jobs and growth in tax revenues would seem to be the overriding interest in an economically disadvantaged community such as Hersey. Ironically, the fact of itslocation among scenic and recreational resources is essential to understanding the community response to the WFPP proposal. The population migration turnaround, a change clearly related to these amenities, greatly increased pluralism and, accordingly, injected the influence of a cosmopolitan orientation in the community. A protracted controversy was the result.

In this milieu of resource and sociological factors the controversy shook this rural community to its foundation. The two-year controversy appears to have made a lasting impression on the whole region. How did a controversy arise over such a seemingly benign development? Why did it follow the general pattern for

public opposition to large-scale technologies in pluralistic communities? What does this suggest about resource development in general and the development of renewable resources in particular? This study is designed to begin answering these basic questions. The factors just discussed and the growing body of knowledge about the sociopolitical dynamics of technical controversies provide the conceptual framework for this effort. The central concern is the impact of experts and their role in social change.

Two innovations are offered for the study of expertise and its impact. First, this study examines the relative importance of value and factual claims in a technical controversy. Facts and values respectively refer to assertions about "what is" and "what ought to be." A more thorough definition will be attempted further along. Second, the relative effects of cosmopolitan and local orientations are observed in conjunction with the use of expertise in the controversy. Orientation refers to the means of achieving the purposes chosen. Local orientation would be concerned with the interests of the local community while cosmopolitan orientation would focus on the interests of a larger group, such as the State or society as a whole.

Controversy is social conflict. Any social situation contains positive and negative aspects as well as their synthesis. Synthesis -- the reconcilation of opposing tendencies -- constitutes the core of the situation. A useful definition here for social conflict is a struggle over values and claims to scarce status, power and/or resources in which the aims of the opponents are to neutralize, injure, or eliminate their rivals. Conflict is a form of

interaction involving communication, reciprocal influence, and the development of a new unity (Caplow, 1968; Coser, 1956). This sociological conception derives from the thought of Georg Simmel (see Wolff, 1950) and provides a foundation for this dissertation.

With regard to the relative importance of facts and values, the following generalization were proposed to effectively focus this case study:

(i) Technical controversies generally focus on factual claims, even though the underlying concerns are political and ideological values.

(ii) The impact of technical expertise in a controversy depends less on its validity or the competence of the experts involved than on the extent to which it reinforces existing values.

(iii) Although it can serve to clarify technical issues, technical expertise in effect stimulates conflict predicated on existing values.

(iv) Notwithstanding a general focus on factual matters [generalization i], a rise in controversy tends to shift the focus of the disute -- either explicitly or implicitly -- from technical issues to value issues.

The issues in technical controversies are increasingly seen as involving choices between competing sets of values and not just between technical alternatives. In this context, it is important to note at the outset that technical knowledge is utilized as a tool and exploited by divergent interests to establish their claims (Nelkin, 1975). Futhermore, where values conflict and experts are found to disagree, a political solution inevitably is required; policymakers have little option but to fall back on ideology, interest, group pressure, and the like for making decisions (Nelkin,

1975; King and Melanson, 1972; Jopling et al.,1973).

Generalizations regarding cosmopolitan versus local orientations were formulated to serve the same basic purpose:

(v) In technical controversies, project promoters ignore local interests and, based upon a perceived cosmopolitan mandate, seek to define decisions as technical and to impose these decisions on the local community.

(vi) In technical controversies, local opposition groups advocating a cosmopolitan orientation utilize local interests to resist the plans of project promoters.

Treating the level of the issues in these terms should aid in understanding the dynamics of technical expertise in controversies.

Several principles of cosmopolitan/local orientations in siting disputes are worthy of mention here. First, resistance to technical change implicit in siting disputes arises at least in part from concern for local autonomy (a response to the powerlessness inherent in the pervasive influence of expertise) as well as concern for global questions of value (a reaction to the abrogation of values epitomized by reductionism in science). Second, local orientation in siting disputes stems from a single overriding issue -- that the local community may be called upon to bear the social costs of a project that will benefit a much broader constituency. Both principles are prominent in the Hersey controversy.

The dissertation uses the following format. The multidisciplinary literature bearing on this study is reviewed in Chapter 2. Evaluation of the six propositions is intended to supplement and extend the case description in Chapters 3 and 4. The

literature more directly related to the analyses of facts/values and cosmopolitan/local orientations is reviewed in the introductions to Chapters 5 and 6. The nature of facts/values and cosmopolitan/local orientations, respectively, as well as the particular array of each that characterize the controversy, are then taken up in these chapters. The case history and the analysis to differing degrees rely primarily on documentary sources, including transcripts of public hearings, local environmental reports, newspaper and magazine accounts, and records of meetings. The study concludes with an assessment of the social and political impacts of technical expertise. In the process the findings of this case are compared and constrasted with the conventional wisdom about technical expertise.

Having briefly described the "what" and "how" of this study, a few remarks on the matter of "why" occupy the remainder of the Introduction. The major review of the literature on community response to energy facility siting (Cluett et al., 1979) finds that the focus of attention has been objective indicators of social change, in part because data are not easily obtained for such subjective considerations as public attitudes and values, community cohesion, social and political networks, preferred lifestyle, social diversity, and sense of community. At the same time analyses of responses have usually entailed a cross-sectional look at what in reality is a dynamic, unfolding process. Seldom is the analytic approach applied longitudinally in these studies. The authors of this review specifically call for case studies that cover a variety of site conditions and different facility types in order to judge

how "generalizable" findings may be to other sites. The study of the Hersey case proposed here is fully consistent with their prescription.

CHAPTER 2

ENERGY, ENVIRONMENT, AND EXPERTISE

Energy and Environment: The Sociopolitical Synergy

The response of industrial society to monumental environmental and energy problems encompasses the subject of this dissertation. The emergence of each problem area and their interaction are briefly described in this section. The ensuing sections treat successively more specific aspects of energy, environment, and expertise.

The environmental movement is often regarded as beginning with Earth Day in the Spring of 1970.[1] However, the "environment" became a major political issue somewhat earlier in the mid-1960s (Nelkin, 1977). The movement's greatest success in mobilizing public opinion occurred in the 1970's (Council on Environmental Quality, 1980). This success largely stems from a growing recognition that negative environmental impacts of substantial proportions have accompanied the rapid escalation of U. S. energy consumption. These impacts result from resource extraction, e. g., strip mining of coal, as well as from the pollution associated with energy conversion. Concern for both categories of impact is a basic factor in this case study.

Several concepts relevant to the man-environment relationship

underlie the approach taken in this dissertation. First and foremost is the notion that this relationship is necessarily holistic (Caldwell et al., 1976). The synthesis that obtains in this relationship is analogous to the synthesis in any social situation, although the natural environment presents constraints on the social system that have no parallel within the social system per se. Resulting limitations of analytic approaches, particularly where basic qualitative aspects are ignored, have been noted by scholars of the subject (Cluett et al., 1979; Cortese, 1979). Experts usually do not cultivate a holistic attitude, a problem to be explored in part later in this review. Consequently they are skeptical not only about public involvement in decision making but also about the participation of other professionals (Sewell, 1971; Hoos, 1978). The historical failure to recognize and properly manage the man-environment interaction within a holistic framework has become painfully evident (Caldwell et al., 1976).[2]

By contrast, the present study adopts the recommendations of Cluett et al. (1979) with regard to a broader conception of the problem and a concomitant methodology. This approach also squares with Caldwell's exhortation for a holistic framework. The method selected for the major analyses of the dissertation -- namely content analysis of newspaper articles -- lends itself to holistic study of social dynamics (Motz, 1977).

A salient and paradoxical feature of environmental relationships is that although characteristically holistic -- never being less than the aggregate of their complex parameters -- means for treating environmental problems are generally atomistic

(Caldwell et al., 1976). The likelihood of conflict is therefore increased by the essential nature of the problem.

The energy problem presents similar complexities. The abrupt revelation of a problem with continued exponential growth in U. S. energy projection shocked the nation in 1973. The Arab oil embarago lucidly brought out what lone government geologist M. King Hubbert had accurately predicted a decade earlier -- the peak of U. S. petroleum production. Energy producers had consistently bandied about optimistic estimates, lulling the nation into complacency. The October 1973 embargo drew attention to the fact that petroleum reserves on this continent were not without limits. This event also brought home forcefully the fundamental role of energy in industrial economies (Caldwell et al., 1976). The repercussions are still being felt. The so-called energy crisis in now widely regarded as a long-term challenge.

Alternatives to nonrenewable energy resources are capturing the interest of industrialized countries. Energy policy is increasingly drawn to renewable energy resources and, for the short term, energy conservation. At the same time some of the more exotic proposals for utilizing nonrenewable energy supplies, for example synfuels (i. e., the conversion of coal to oil) have met with a cool reception by the public because of their prospective environmental impacts.

Public opposition is now a common response to proposals for the large-scale development of energy resources. At the heart of this opposition is concern with maintaining quality of life. The environmental movement has been instrumental in turning this

sentiment into effective political action. It is well worth noting that public caution over the effects of large-scale energy technologies on environmental quality preceded the energy problem.

Rural areas are an important part of this picture. Industrialization of nonmetropolitan areas has been ongoing in U. S. development. The experience is not new, and its advantages and disadvantages are generally appreciated. Nevertheless, the size and rate of recent energy resource development represent a qualitative social, political, and economic discontinuity for rural areas (Albrecht, 1978). Given the holistic nature of the problem noted earlier, it should come as no surprise that value issues would arise to supersede those of technical and economic feasibility.

Changing Opinions about Science and Technology

The ascendance of science and technology as the basic means for achieving social goals dates from World War II (Nelkin, 1977). The unprecendented growth of science and technology remained largely unquestioned during the ensuing period of rapid economic growth (Nelkin, 1979a). The transformation of this optimistic faith began during inevitable periods of social crisis. The mid-1960s were a time of ferment in public attitudes that produced political pressures to direct and control science and technology (Nelkin, 1977).

Public attitudes toward technological progress have become more problematical with the passage of time. The year of the accident at the Three Mile Island nuclear reactor - 1979 - marks the beginning

of widespread public doubt about the unmitigated benefits of technology. This event riveted worldwide attention to a technological failure of potentially catastrophic dimensions. Soul searching, and to some extent buck passing, occurred in the scientific community (Marshall, 1979). Nevertheless, pollsters continued to find bedrock support for science and technology (Marshall, 1979; Nelkin, 1979a). Beneath this overall trend lay changes well worth noting. An earlier study pointed out uneasiness about technology among the young, a group ". . . whose mood it behooves science policymakers to watch " (LaPorte and Metlay, 1975). More recent polls have shown an abiding skepticism of the promise of technology among the young (Marshall, 1979).

Notwithstanding these survey results, there is reason to suspect that the public, by virtue of the proliferation of disputes about science and technology, grows ambivalent toward science as a source of legitimacy. It is no longer seen as the authoritative standard of rational decision making that it once was (Nelkin, 1979c). The experiences of the past decade have been particularly hard on large-scale technologies (Cluett et al., 1979). The policy choice, as previously mentioned, has been formulated as a soft path (small-scale, decentralized) versus hard path (large-scale, centralized) in technological development. Environmental impact statements and protracted litigation now characterize large-scale energy projects, greatly extending lead times. Although numerous attempts have been made to cut the red tape, the pressure to assure public health and safety remains unabated. Environmental issues have become a perennial social concern (Council on Enviornmental

Quality, 1980).

Mazur (1975) points out that belief about the larger issues is consistently the motivation for opposition leaders. One general finding of national polls deserves mention in this regard. Such surveys have unanimously found that environmentally benign energy choices, specifically solar energy and conservation, are the foremost selection for increasing energy supplies.

On the face of it a WFPP such as the one proposed for Hersey would seem ideal for the times. Wood is renewable and characteristically of a lower order of environmental impacts than conventional fuels. Its lower threat to environmental quality should meet with greater public acceptance. Accordingly, this case study provides an unusual opportunity to test indirectly some of the general survey findings on public acceptance of technology.

Scale and Centralization in Energy Development

The "two paths" ideological debate over future energy development appeared full fledged following publication of a paper by environmentalist Amory Lovins in the journal Foreign Affairs (1976).[3] Extensive congressional hearings on the merits of the debate have served to point out the efficacy of arguments against headlong development of conventional energy technologies, and to reinforce and diffuse the controversy.[4] In view of the widespread interest in this ideological debate, it is fair to assume that energy policy will increasingly defer to the terms of the debate. Lovins argues that there are two mutually exclusive routes to

solving the energy problem -- the hard path versus the soft path. The hard path is characterizd by large-scale, centralized, capital-intensive, technologically advanced supply systems. By contrast, the soft path relies on alternative energy sources and technologies that are small-scale, decentralized, not capital intensive, relatively simple, and environmentally benign. The United States and other industrial countries have been on the hard path since World War II. Policies such as subsidizing and promoting the use of nuclear power have engendered movement along this path. Lovins believes that the soft path is the correct policy choice. The transition to soft energy technologies that utilize primarily solar energy will, according to this view, entail energy conservation as well as all-out development of renewable energy resources.

As in any ideological debate questions of epistemology and values inevitably crop up. Such questions are at least as important in this particular debate as the technical issues. The choice between the two paths is therefore as much political as scientific. Purely technical argumentation cannot bridge the gap between the viewpoints in the debate. Furthermore, it is reasonable to assume that the role of expertise in this controversy, or in any technical controversy, can only be understood by considering the interplay of value issues. One of the two major analyses in this dissertation treats value effects in order to gain a proper understanding of this role.[5] A more extensive review of social science literature on facts and values in controversies appears in the introduction to Chapter 5.

Recognition of the basis for the two paths debate and its

prospective impact has prompted several social scientists to set out an ambitious research agenda on the subject (Wolf, 1979; Morrison and Lodwick, 1981). The present study is something of a test case for the impact of the debate itself. The WFPP proposed for Hersey utilizes an inherently soft-path energy energy source by means of a hard-path technology, i. e., a centralized, relatively large-scale energy facility. This novel instance of renewable energy development provides an opportunity to document the impact of the ideological debate. Specifically, it can show public reaction to the negative features of scale and centralization denounced by exponents of the soft path. Although this is admittedly not the major interest of this research study, it is an undeniable element to which some attention is due. After all, both proponents (Sells, 1979) and opponents (e. g., CRUF, 1979b) in the Hersey controversy explicitly recognized the ideological debate and used familiar arguments to promote their side in the dispute.

The environmental impacts of the soft path versus those of the hard path can, in summary, legitimately be imputed to the Hersey controversy. The general concern for environmental quality and its formalization in the two paths debate is reflected in the myriad of local disputes over large-scale energy developments.[6] The debate suggests there is an important connection between local disputes and cosmopolitan concerns.

Siting Disputes

The focal point of public opposition to technology is without

question the siting of large-scale facilities. In general the recipient community must bear the costs of a project that will benefit a different or much broader population (Nelkin, 1979a; Tichenour et al., 1980; Mazur, 1975). When called upon to accept this burden communities increasingly refuse to sacrifice local interests (Nelkin, 1977; Caldwell, et al., 1976). A diversity of facilities has generated this kind of response, including airports (Milch, 1979), high-voltage power lines (Tichenour, et al., 1980), facilities for nuclear waste disposal (Fallows, 1979), coal-fired electric power plants (Mack and Aldrich, 1979), and most especially nuclear power plants (Jopling, 1973; Nelkin, 1971, 1979b; Hudgepeth, 1965; Deal, 1975). Defense facilities such as the proposed MX missle deployment in rural areas of the western U. S. and the ELF submarine communication grid planned for upper Michigan and Wisconsin have been opposed on similar grounds.

Power plant siting disputes are most representative of this type of public response.[7] However, public reception depends in large measure on the kind of technology. Opposition has less frequently attended the siting of fossil fuel power plants, perhaps due to long experience and familiarity with them (Council on Environmental Quality, 1980; Mazur, 1975).[8] Public reception of nuclear power plants provides a sharp contrast. Controversy started soon after the start of domestic nuclear power development in the U. S., building to a fever pitch, with a few ups and downs, after the infamous accident at Three Mile Island in March 1979.[9] The obvious policy relevance of power plant development commends social science research on the public reception accorded different kinds of power

plants to make findings more generalizable (Cluett, et al., 1979; Krannich, 1981).

Nelkin (1971, 1974, 1975, 1979b) specifically studied the impact of technical expertise in an early power plant siting dispute, touching on some of the aspects considered in the present study, in particular facts/values and cosmopolitan/local orientations. Once again, facts and values denote what "is" as opposed to what "ought to be." Orientations are related to whether the means used to achieve social and political goals are directed inwardly or outwardly with respect to the local community. Nelkin's evolving case study is something of a model for the present effort.

The basic element of siting disputes mentioned at the outset, i. e., that of local reticence toward technologies benefiting a larger group, underlies the second major analysis in this study -- that of cosmopolitan and local orientations. Loss of local autonomy is a concern for rural communities under development (Cluett et al., 1979). The forces generating this concern are both public and private (Tichenour et al., 1980). Centralization of decision making is the apparent unrelenting tendency. Federal and state governments have increased their involvement in local affairs, largely due to the fact that many problems supersede local boundaries, or that solutions do, or both (Tichenour et al., 1980). Environmental problems typically require attention by higher levels of government.

The task of energy facility siting has become more problematical due to a demographic trend that is effectively adding to the complexity of rural social change. That trend -- the population migration turnaround -- was first observed in the 1970s.

The recent gains in rural population resulting from net in-migration appear to be directly related to the existence of environmental amenities in these areas. Traditional, homogeneous rural communities are, as a result, in the midst of changes that are blurring the distinction between urban and rural (Caine, 1979). To cite a relevant example, rural in-migrants have been instrumental in preventing power plant siting in nonmetropolitan communities (Cluett et al., 1979; Aldrich and Mack, 1979b, 1979c).

In this context a cosmopolitan/local orientations analysis would appear to be useful for plumbing the depths of this change and its effect in nonmetropolitan siting disputes. A more extensive review of the literature of cosmopolitan/local orientations can be found in the introduction to Chapter 6.

The Political Impact of Technical Expertise

Much of the work on the political impact of technical expertise has been accomplished under the auspices of the Science, Technology, and Society Program at Cornell University and the tutelage of Dorothy Nelkin. At the same time study on this subject is relatively recent. Most of the studies and statements in this review are dated after 1975, with a substantial portion reaching print in the last three years. The subject was sufficiently timely for an international conference to be convened in 1979. Apparently the first of its kind, the conference "Scientific Expertise and the Public" was held in Oslo, Norway (Skoie, 1979).

Understanding the role of technical experts and technical

information in public controversies becomes a more important research question as the number and diversity of such controversies increases. Technological innovations are created with little concern for their social impact or public reception. As a consequence of the rising anxiety over the hazards and risks of such technologies as recombinant DNA and radioactive waste disposal, technical expertise is increasingly used to challenge as well as promote controversial decisions (Nelkin, 1979c). Science and technology thereby serve as a political resource exploited by various interests to justify their claims. This trend has eroded the success of proponents in depoliticizing political controversy by mobilizing technical experts. Put differently, promoters of technical innovations have sought to institutionalize technical expertise in order to cope with controversy (Nichols, 1979; Nelkin, 1975). But this approach often fails because the public is interested in matters of value as well as matters of fact. Technology creates problems that are both technical and nontechnical (Consumption. Location, and Occupational Patterns Resource Group Synthesis Panel, 1980, Chapter 7; Holdren, 1976). Narrow definition of issues as "technical" has been central to public hostility toward technical experts and public apprehension about technology (Nichols, 1979). Not surprisingly, the credibility of experts has become an issue (Hoos, 1978).[10] Those calling for increased public participation as a remedy are too numerous to cite here.[11] Suffice it to say that short of full public participation lies the use of counter-expertise. Citizen opposition groups have learned that if expertise can serve as a weapon for social manipulation in the name

of rationality (Benveniste, 1972), then it can be used to create conflict to serve their ends (Primack and Von Hippel, 1974; Jopling, 1973).

Two aspects of technical expertise occupy the rest of this review. First, the concept of expert is defined and related to other roles, namely consultant, advocate, and adversary. Second, the dynamics of expertise in controversies is elaborated. This review of the literature is used as a base for focusing the case history in Chapter 4.

What, then, is an expert?[12] The concept of expert is social, and usually associated with controversies because they involve complex problems that must be intepreted. The expert may be employed by one party to a controversy or s(he) may be acting as a committed volunteer. In any event, expertise involves special skill or knowledge in a particular field or specialized discipline (Nichols, 1979). Although the expert is expected to make an honest presentation, s(he) is understood to be liable to systematic influence in coming to opinions on technical matters. Ravetz believes that this understanding is more often applied to less developed disciplines where honest opinions can differ radically, e. g., risk analysis and energy-use projections.

This conception of expert clearly diverges from the popular idea of the independent, objective scientist/technician. The traditional scientist fits the role of consultant. S(he) gives advice on a problem defined by a client. Those accepting this role do not choose the problem, but they are understood to act independently in their investigation. The consultant is expected to

let the cards fall where they may, even if the findings differ from the client's opinions. The proliferation of controversies suggests that the role of consultant is, in reality, difficult to achieve. Human nature (Mazur, 1973), the ideology of science and technology (Consumption, Location, and Occupational Patterns Resource Group Synthesis Panel, 1980; Hoos, 1978), and the dynamics of controversies (King and Melanson, 1972) make this a difficult model to attain.

The expert and the consultant are both considered to be scientific; their role in debates is closely tied to scientific/technical discussions. Toward the other end of the continuum of possible roles lies the advocate, who acts as a skilled debater futhering the interests of one party. The advocate is not regarded as someone either competent in the scientific/technical aspects or committed to the truth. The procedures for advocacy are highly stylized and technical, and occur in traditional forums of advocacy such as courts of law. Confusion can result if the advocate touts professional or academic credentials.

The adversary is the polar opposite of the consultant. S(he) is there to win. Only prudence and efficacy constrain the adversary in pursuit of his or her goals.

The intepretation of any scientific/technical statement is subject to influence accorded the roles accepted by the actors and audience in a dispute. It is by no means certain that special credentials cast an actor in the role of consultant. Ravetz cautions that ". . . those who are assessing statements which purport to be scientific in such situations must judge the person

well." Whether a person is an adversary, advocate, consultant, or expert depends on how s(he) interacts in an actual controversy. These roles are not defined a priori, nor by the interest groups in the debate. It remains for the public to assign these roles and the dispassionate observer to sort them out.

Nelkin, in her presidential address to the Society for Social Studies of Science (1979c), surveyed the changing relationships between science and the polity, identifying their research-worthy consequences. She rejects a shopping list of explanations often given for the growing conflict, arguing instead that the main undercurrent is a rising ambivalence in the public perception of science as a source of legitimacy. Value issues are fundamental to this change. The overriding question, according to Nelkin, is "who controls?" Such controversies ". . . express both an ideological resistance to the reductionism epitomized by science and a political resistance to the powerlessness implied by the pervasive influence of expertise" (Nelkin, 1979c).

Nelkin argues on this basis that the scientist/technician as expert has become a political resource, a tool. Technical expertise is viewed to be the only way to challenge controversial decisions, whatever the political or moral objections. Her suggestion that science and technology should be studied not only as an activity of exclusive elites but as a resource commends the present effort (Nelkin, 1979c).

Technical expertise is a crucial political resource in controversies because access to knowledge and the resulting ability to question the data and information used to legitimize decisions is

an essential basis for power and influence (Nelkin, 1979a). Citizen opposition groups have found it both necessary and fruitful to use this tool in opposing policy decisions. The complex data supporting a particular development cannot effectively be challenged without resort to counterexpertise (Benveniste, 1972).

With regard to siting controversies, concern about the quality of life in the community is the source of opposition but the debate centers on technical issues. According to Nelkin (1979a), to be effective tactically opponents must seek to manipulate knowledge, emphasizing areas of uncertainty that are open to conflicting scientific intepretation. In this way citizen opposition groups can seek to justify their political and economic views. Political values and scientific facts consequently become difficult to distinguish in controversies.

What happens when expertise is marshalled by both sides in a controversy, that is, when it becomes a weapon in both of their arsenals? The result is usually further polarization of the conflict, firing up the controversy and often ending in the defeat of the proposed project (e. g., Fallows, 1979). The scientists and technicians in the dispute are revealed to be fallible, demystifying their special expertise and calling attention to nontechnical and political assumptions that influence technical advice (Nelkin, 1975). Disputes between experts invariably lead to public confusion, reducing their political impact. In the end controversy pushes public opinion toward opposition rather than acceptance (Mazur, 1975; Crain et al., 1969).

Concurrently the public is usually less interested in the

technical facts under dispute than it is in the choice between different political and social values. This is an especially important feature of environmental controversies (Nichols, 1979; Nelkin, 1974). Controversy highlights the need for a political solution in these terms. In fact, controversy encourages the decision maker to revert back to his or her original normative predisposition or simply to avoid a decision (Nelkin, 1975; Sabatier, 1978). During the course of a controversy acceptance of technical advice increasingly hinges on the extent to which it reinforces existing values. In this context opponents find easier sailing because it is often sufficient to raise questions that undermine technical expertise. The quality and quantity of the opposing evidence need not match that of the promoters.

The few studies turned up in the literature search that deal with the impact of technical expertise in nonmetropolitan siting disputes were all done in Minnesota (Aldrich and Mack, 1979a, 1979b; Tichenour et al., 1980). Aldrich and Mack (1979b) note the strong influence of the population migration turnaround in the local politics of siting. Their findings on technical expertise are therefore especially germane to study of the Hersey controversy. One seemingly insignificant difference in terminology is their use of "local expert." This term implicitly recognizes the role of counterexpertise. Local experts turned out to be recent migrants from urban areas. The study by Tichenour et al. (1980) is useful because it compares and contrasts urban and rural differences in the use of technical information and expertise, a contribution fleshed out in the introduction to Chapter 6.

A brief description of the Hersey community, the project, and an important environmental case that affected the area are taken up in the next chapter, followed by the case history of the Hersey controversy.

CHAPTER 3

THE LOCAL CONTEXT

Osceola County

Osceola County lies within a scenic and recreational region in the northern half of Michigan's lower peninsula (see Figure 1). Manistee National Forest borders it to the west, while Chippewa State Forest occupies much of its central portion (see Figure 2). Numerous lakes, streams, and rivers are found within its boundaries. Three major highways provide easy access to or from any part of the state. The nearest major city is Grand Rapids some 75 miles directly south.

The county contains only six towns and villages, all of which report at last censuss under 2,500. During the 1970s its population virtually exploded, rising from 14,838 in 1970 to 18,929 in 1980. The gain of 4,090 equates with a growth rate of 27.6 percent. Most of this growth has been due to in-migration. Newcomers have generally settled in open country areas of the county. Only 6.5 percent of the growth is accounted for by the six small villages and towns. The experience of the population migration turnaround here is typical of that in many remote nonmetropolitan areas of the U. S.

The turnaround in general has been oriented to quality of life

Fig. 1. Michigan Counties

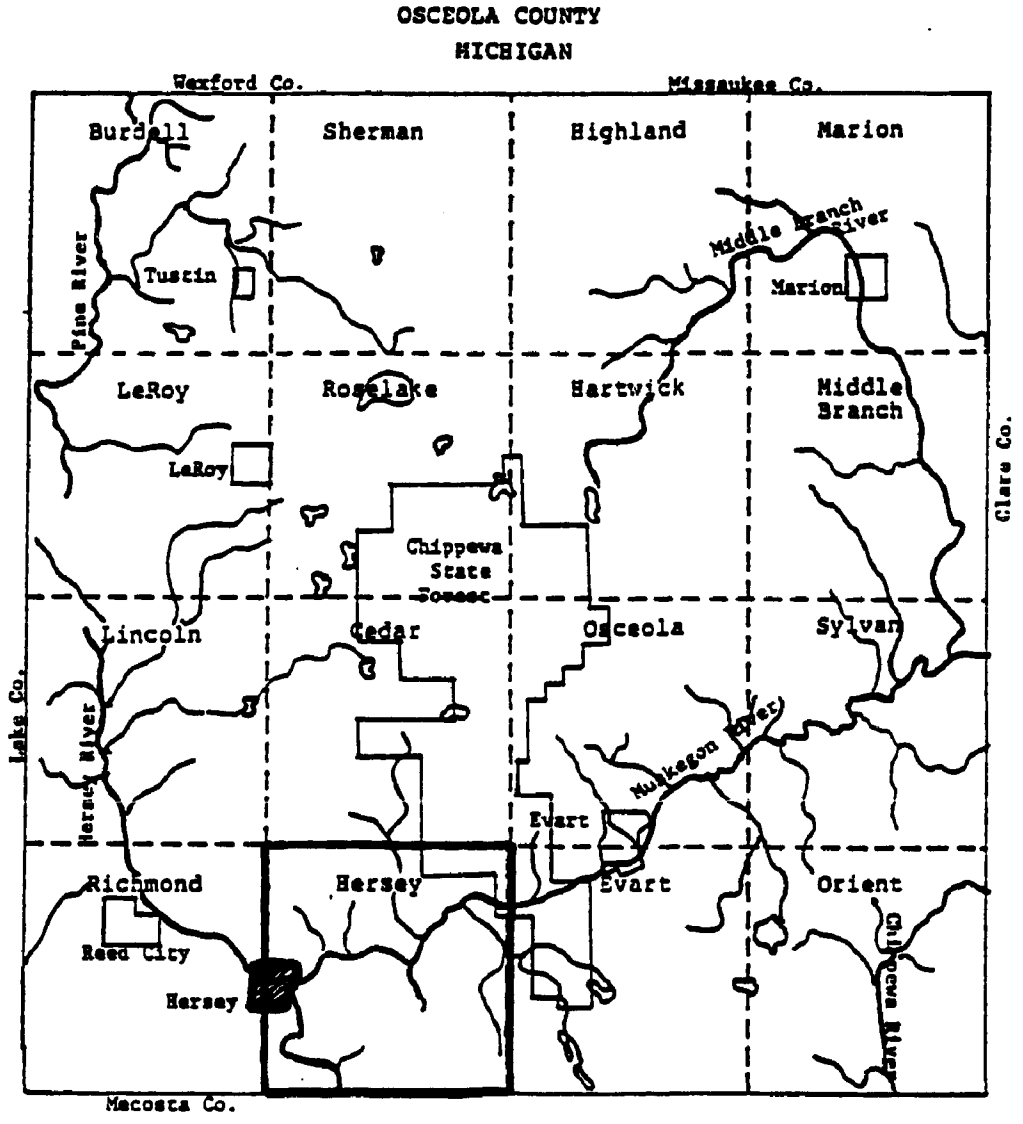


Fig. 2. Study site: Hersey Township

(Ploch, 1978). The environmental values of newcomers are implied by their residential preferences. The existence of bodies of water and adequate road accessibility are the major locational factors in the resettlement of the Osceola countryside (Kobernick and Frankena, 1980). The foremost example is the subdivision of land along the Muskegon River, which flows a significant distance in southern Osceola County including Hersey township (see Figure 2).

Although many of those migrating to the county are retirees, an important component of the turnaround there has been the young and well educated. A factor promulgating in-migration is the growth of small-scale manufacturing. Increased job opportunities have helped to retain the county's crop of youth as well. About four-fifths of the migration stream can be attributed to urbanites, most from downstate central cities, especially Detroit and Grand Rapids (Rathge, 1981).

The newcomers in the population migration turnaround are distinguished by their noneconomic motives. As a consequence they are a more diverse group than the relatively homogeneous families who migrated to the suburbs. The newcomers include much younger dropouts from urban society, middle class families with school-aged children, and a substantial number the affluent (Sokolow, 1981). Retirees often number among the latter. The mobile poor are also part of the picture. The population migration turnaround field study mentioned in the Acknowledgements made use of the following categories of newcomers -- elderly retirees (seasonal and year-round), young professionals, transient workers, voluntary simplicity persons, and welfare clients. Among the elderly many were found to

be returning to their birthplace after retiring from their jobs in large cities.

The influx of newcomers has entailed qualitative changes that are often not addressed in assessments of the impact of nonmetropolitan growth (Cortese, 1979). Such qualitative changes, most notably in local politics (Sokolow, 1981), are evident in the northern lower Michigan region (ISR Newsletter, 1978). Newcomers are injecting new values and capabilities into local politics. The region-wide influence of the opposition after the project was shelved underlines this point.

The Hersey Community

Hersey township has the longest history of settlement in the county. Hersey village was the county's first central place. Figure 2 shows the location of the town and township of Hersey. In this study the Hersey community is identified with the township. Political activity in the controversy occurred largely at this level since the proposed site for the facility was three-quarters of a mile southeast of Hersey village.

The turnaround connected with environmental amenities has been felt by the Hersey community. A cursory look at a plat map book for the county shows extensive subdivision along the Muskegon River in the township. An analysis of county applications for septic tank permits (which signify new homesteads) reinforces the perception that this has been an area under development (Kobernick and Frankena, 1980).

Census data provide a quantitative picture of this growth (refer to Tables 1 and 2). Environmental values apparently generated growth in Hersey township much earlier than in other parts of the county. Its growth rate of 41.5 percent was phenomenal for the decade of the 1950's. No other township grew by as much as 4 percent. In fact, 13 of the 16 townships lost population in that decade, 5 by more than 10 percent. During this time period the county population decreased by 1.5 percent. Very little of the township growth (only 6 percent) occurred in the village of Hersey. The population of the countryside in the county as a whole declined.

All 16 townships grew in the 1960s. Hersey edged down slightly in rank, with a growth rate of 35.1 percent, second to Orient township at 44.5 percent. The relative share of growth in the village to that in the township increased from 6 to 21.4 percent. Nevertheless, most of the growth still took place in the outlying township. During this period growth in the county as a whole took place almost exclusively outside the villages and towns (i. e., 98.4 percent).

In the 1970s Osceola's villages and towns increased marginally more than in the 1950s. The absolute growth of Hersey village was more than twice as great in the 1970s compared with the 1960s, respectively 88 more people versus 30, but its share of the growth in the township fell to half that of the 1960s, from 21.4 percent down to 12.8 percent. This means that the very rapid increase in Hersey township (128 percent) continued primarily in open country. The county grew during the 1970s by 27.6 percent, up from 9 percent the previous decade. The continuing trend in Hersey was reflected

TABLE 1

POPULATION TRENDS FOR HERSEY VILLAGE, HERSEY TOWNSHIP, AND OSCEOLA COUNTY, 1950 to 1980

	Population 1950	Population 1960	Percent Change	Population 1970	Percent Change	Population 1980	Percent Change
Hersey Village	239	246	2.9	276	12.2	364	31.9
Hersey Township	282	399	41.5	539	35.1	1,229	128.0
Osceola County	13,797	13,595	-1.5	14,838	9.1	18,928	27.6

SOURCE: U.S. Bureau of Census, Census of Population, 1950, 1960, 1970, 1980.

TABLE 2

RELATIVE GROWTH IN TOWN AND VILLAGES TO THAT OF OPEN COUNTRY FOR HERSEY TOWNSHIP AND OSCEOLA COUNTY, 1950 to 1980

	Population Change 1950-1960	Percent	Population Change 1960-1970	Percent	Population Change 1970-1980	Percent
Hersey Township, excluding Hersey Village	110	94.0	110	78.6	602	87.2
Hersey Village	7	6.0	30	21.4	88	12.8
Hersey Township, Totals	117	100.0	140	100.0	690	100.0
Osceola County, excluding towns and villages	-411	—	1223	98.4	3825	93.5
Osceola County Villages and towns	209	—	20	1.6	265	6.5
Osceola County, Totals	-202	—	1243	100.0	4090	100.0

SOURCE: U.S. Bureau of Census, Census of Population, 1950, 1960, 1970, 1980.

in the larger community; open-country in the country accounted for 93.5 percent of total growth during this decade.

Demographic changes are an indirect cause of the controversy that engulfed the proposed WFPP. The qualities of in-migrants , most significantly their values and orientations, gave rise to the oppostion and must be considered to understand the controversy.

The Wood-Fired Power Plant

The use of wood for the production of steam and/or the generation of electric power is not new. The practice was common early in the century when wood represented a much larger proportion of U. S. energy consumption. One elderly county resident, who became an opponent of the WFPP, reported that his grandfather operated a WFPP in Evart, a town just northeast of Hersey, in the early 1900s (Grand Rapids Press, 1979a).

Wood energy today is described by the term "biomass," an indication, perhaps, of the rise of technical expertise (see Burwell, 1978). Biomass is any energy source that relies on living (organic) materials. The modern use of wood biomas for power production has largely occurred in the forest products industry of the western U. S. to provide industrial process steam. The municipal utility of one of the towns in the region, Eugene, Oregon, has made use of surplus forest residues to generate electricity and steam since 1941 (Grace, 1980).

More recently a private utility in Burlington, Vermont experimented with a mixture of 75-percent wood chips and 25-percent

oil in three 10-MW power plants, reducing cost per kilowatt hour of electricity from 3 cents to 2. Encouraged by this experience the utility proposed to build a 50-MW plant. In 1978 Burlington area voters overwhelmingly approved the $40 million bond issue to finance the project (Harris, 1978). Interestingly enough, Harris cites the Michigan Public Service Commission report (Hiser et al., 1977) on the great potential for Michigan in this article promoting the concept of wood energy. With respect to the Burlington proposal his favorable prognosis turned out to be wrong. On November 15, 1979, just as the Hersey controversy was coming to full throttle, the Osceola County Herald (OCH)[13] carried a front page article bearing the title "Vermont Wood Chip Plant Shelved." Officials of the Burlington Electric Department had instead decided to buy a 25-MW block of power from Ontario Hydro. It is very likely that this report appeared on the front page of only two newspapers in the U. S. -- the Burlington Free Press and the OCH. The article in the latter points out that a petition protesting the proposed Burlington WFPP had been submitted to the Vermont State Energy and Public Service Board. An organizer in the opposition at Burlington was quoted as saying ". . .A lot of people are concerned about the effects of this" (OCH, 11-15-79).

The demonstrational plant proposed for Hersey was to be somewhat more modest initially, a site-specific 25-MW facility. It would provide enough electricity for 25,000 to 30,000 homes (Lansing State Journal, 1979). None of the technology involved in the power plant would be innovative. The utility partners decided not to take any risks in order to improve on the first generation hardware of

WFPP's (Sells, 1979).

The voluminous $300,000 feasibility study completed by Daverman and Associates of Grand Rapids estimated the annual fuel requirements for the WFPP at 285,000 tons of green wood. About half (150,000 tons) was expected to come from State land. The forest base for the generating plant was put at one-half of one percent of the forest within a 25-mile radius of the facility (Sells, 1979), a claim that became a lively source of technical debate. Enough wood was deemed available in the surrounding six counties to sustain the plant, although later a 75-mile radius was established for wood to be auctioned from state land. The feasibility study notes that the maximum economic distance for hauling wood chips is less than 50 miles (Daverman and Associates, 1979, Appendix F). Whole-tree harvesting would be accomplished with the use of equipment manufactured by Morbark Industries. If completed by 1983 as planned, the WFPP would have been the first totally wood burning power plant in the country (Grand Rapids Press, 1979b).

Initially a 10-30 MW plant was considered for the purposes of developing estimates of capital and operating costs. The analysis of scale established increasing economies with unit size, making a 30-MW unit the most economic choice within this range. The feasibility concluded, however, that

> . . . since the site selection and preliminary design are based on an ultimate plant size of 50-MW gross output, it was determined that a demonstrational plant will initially have a 25-MW unit which could ultimately be duplicated (Daverman and Associates, 1979, Executive Summary).

Economies of scale may exist for WFPP's up to 50-MW, but

economic limits on wood harvesting and transport quickly constrain feasible plant size. By comparison, coal and nuclear plants are larger by a factor of at least 10. Their economies of scale are not dependent on available harvest and transport distance for a biological resource having a low ratio of volume to economic value (an indicator of energy concentration). Accordingly, the sizes of the WFPP's proposed for both Hersey and Burlington, Vermont are tiny by conventional standards (Hiser et al., 1977). Consider as well that Lovin's distinction between soft and hard path technologies is relative not absolute. Even though a WFPP is small by conventional standards it nevertheless is a large-scale use of wood energy resources.

The direct environmental impact of burning wood has only recently become an issue.[14] Previously the cleanliness of burning wood was unquestioned, especially relative to coal-fired power plants (Hiser et al., 1977; Sells, 1979). Recent research has shown, however, that more than 100 chemicals are produced by incomplete wood combustion, some of which are known to cause cancer (American Council on Science and Health, 1981). The growing popularity of woodstoves accounts for some of the concern. Incomplete combustion may be more of a problem in domestic woodburners than under the controlled conditions of a WFPP. In any event, the feasibility study did not foresee problems with meeting all applicable air-quality standards. Particulates would be removed by electrostatic precipitators.

Wood burning was no novelty for the Hersey community at the time the WFPP was proposed. The use of wood for residential space

heating had become commonplace. Perhaps because of the low density of settlement, this use of wood was not regarded as a problem. The prospect of pollution from burning wood in WFPP was rarely alluded to during the controversy.

Influence of the Michigan PBB Contamination

An important development in the public perception of environmental hazards in Michigan was the PBB contamination of 1973-78.[15] There is good reason to suspect a connection with the Hersey controversy. The political fallout from the handling of the PBB problem by public institutions appears to be related to the opposition to the Hersey WFPP.[16] Certainly the potential danger of the chemicals being manufactured by modern industrial societies was riveted into the consciousness of those affected by the contamination. Hersey was one of the contamination sites.

Although the relationship between the PBB contamination and the response of the Hersey community to the proposed WFPP is not explored here in detail, some attention is given this subject based on mention of PBB in media accounts and in post-hoc interviews with selected participants. The following is a brief summary of the PBB incident and its legacy. Emphasis is placed on direct effects encountered by Hersey.

Two journalistic case studies have been written about the effects that the accidential mixing of PBB with cattle feed had on Michigan and the U. S. beginning in 1973.[17] The chemical worked its way through the food system with catastrophic effects on the farms

and farm families who inadvertently used the feed. The resulting controversy peaked between 1975 and 1978, just prior to the Hersey WFPP proposal (see Coyer and Schwerin, 1981).

Almost all Michigan residents now have measurable levels of PBB in their bodies. The long-term health effects have not been established. It is clear, however, that agriculture in Michigan has been transformed by the experience with the PBB contamination. Attitudes and perceptions about toxic chemicals and the need for institutional mechanisms to protect the environment lie at the core of this change.

Both case studies document the magnitude of the environmental impact and political haggling that resulted from the contamination. Osceola County (especially the Hersey community) and adjacent Oscoda County contain concentrations of farms affected by PBB. The map in Egginton (1980) names Hersey among several dozen heavily affected sites referred to in the study. Chen (1979) also gives a high profile to Hersey. It is a reasonable assumption that residents of Hersey were aware of the PBB contamination and its effects on local farms. They also must have been aware of the belated state attempts to shore up the problem. In any event, it became a major issue in the gubernatorial campaign of 1978 (Egginton, 1980). The Democratic challenger was given a good chance of winning because encumbent William Milliken had been so slow to give priority to the problem. Egginton notes that many outstate farmers were so incensed that they were prepared to vote Democratic for the first time in their lives. Despite setbacks in the courts for victims of PBB, the issue persisted in the political arena. Governor Milliken was re-elected

but Republicans lost some of Michigan's rural vote and a few legislators who had supported the politics of the vested interests were ousted. The director of the Michigan Department of Agriculture resigned under pressure (Egginton, 1980).

Experts were solicited to decide if PBB was the cause of the problem and, when causation was established, what effects could be attributed to it. Experts from state government and the universities quickly lost credibility because they served and vigorously defended the regulatory institutions involved in various stages of the contamination. Egginton examined the role of experts, devoting several chapters to it, i. e., "What the Experts Knew" and "Politicians versus Scientists." Dr. Irving Selikoff, a medical researcher from New York and pioneer in the field of chemical contamination, was hired as an outside consultant to conduct an independent investigation.

The disposal of contaminated cattle carcasses became a hotly contested proposition in the northern Michigan community selected for the burial. Mio, a town in Oscoda County just to the north and east of Osceola County, bitterly opposed the disposal that eventually took place there. Oscoda residents fought the measure in court and, when that failed, took such actions as scattering nails on the road to the clay-lined disposal pit. They displayed effigies of Governor Milliken, Howard Tanner (DNR Director) and Dale Ball (Agriculture Director) hung from a gallows at a nearby road junction. This demonstration lasted for months (Egginton, 1980). Eventually the burial took place by court order. The state subsequently had the remaining barreled, frozen carcasses of

contaminated cattle shipped to Nevada for disposal. Ironically, the 3500 or so animals buried at Mio contained an estimated two ounces of PBB among them. Earlier an estimated 269,000 pounds of the chemical had been dumped without protest into a Mio landfill between 1971 and mid-1973! The community of Mio had obviously shifted into high gear in coming to terms with chemical contamination.

When the Hersey proposal was debated at a public meeting late in the controversy, a disturbance that almost halted the meeting followed the answer from plant promoters to a question about whether or not PBB-tainted cattle would be burned in the facility (OCH, 4-17-80). Some of the residents of Hersey had been radicalized by the handling of the PBB contamination.

CHAPTER 4

THE ACTORS AND THE ACTION

Early Planning and Site Selection

The search for alternative energy sources as a substitute for a portion of the fossil fuels imported by Michigan, and for which dollars must be exported, does not seem, in retrospect, to have been overly aggressive. Consistent with public opinion on the subject, state government took at face value the term "crisis." Perhaps it would soon pass. Whatever the future might hold, most of the action was taking place at the national level in assuring continued supplies of conventional energy resources. That it was not viewed as an enduring problem is revealed by the short-term, emergency remedies in connection with gasoline allocation and home heating assistance for the poor.

The persistence of rising real energy prices, beginning with a "modest" quadrupling in 1973 (for imported oil), prompted consideration of alternative energy development in Michigan. One of the results was the introduction of a renewable energy tax credit in 1979 to encourage the small-scale development of solar, wind, and low-head hydro. The potential of another renewable energy resource was also recognized -- the abundant supply of wood biomass in the

cut-over area of northern Michigan. Wood from Michigan's extensive forests suddenly was seen as a promising source of energy for something other than fueling a rennaisance in space heating. The Michigan Public Service Commission surveyed the possibilities and concluded that northern Michigan was capable of producing more electricity from wood than that region consumed in 1976, and that proper management techniques could greatly expand the potential supply (Hiser et al., 1977). In November 1977 Michigan Governor William Milliken convened a national conference on wood energy development (Hiser, 1978) at the University of Michigan. In a speech to the conference the Governor suggested that a demonstrational WFPP be built in Michigan (Frazier, 1977).

Private interests leaped into the breech. Morbark Industries, Inc. of Winn, Michigan took a special interest in the proposal, for it stood to gain financially by the expanded market for its whole-tree harvesting equipment. Parenthetically, Morbark was featured as a model of private initiative in energy development on then presidential candidate Ronald Reagan's national broadcast, a fact reported in a local newspaper at the beginning of the Hersey controversy (Evart Review, 1979). Morbark Industries joined with Consumers Power Company, the largest utility in the state (serving most of the state outside of the Detroit metropolitan area) and Wolverine Electric Cooperative, a rural electric cooperative based in Big Rapids, to undertake the venture. On June 5, 1978 they issued a special news release marking their agreement to pursue construction of a pilot electric generating plant in Michigan "to be fueled by wood and solid refuse" (Hale, 1978). This partnership

subsequently contracted with Daverman and Associates, Inc. of Grand Rapids to do the feasibility study of a demonstrational waste wood-fired generating plant which could have an ultimate rating of 50-MW (Daverman and Associates, 1979).

Table 3 shows the network of groups involved in planning the project. Members of committees and groups total 48, including 18 from Consumers Power (38%), 7 from Morbark Industries (15%), 6 from Wolverine Electric Cooperative (13%), and 17 (35%) from Daverman and Associates and W. P. London and Associates, the two consulting firms. The most influential individuals would appear to have been J. N. Keen, manager of Wolverine Electric, and W. H. Sells of Morbark Industries, who served on four committees each, and Peter Ratcliffe of Morbark Industries and A. J. Hodge, J. L. Schautt, and H. C. Wayman of Daverman and Associates who served on three committees each.

The scope of activities considered in drafting the feasibility study are listed in Table 4. Twelve sites were evaluated using the six selection criteria in Table 5. On this basis three sites were provisionally selected -- Harlan, Hersey, and Whitehall. A special meeting was held in Big Rapids "to obtain input from individuals and organizations with particular environmental interests" (Daverman and Associates, 1979). Public meetings were then held near each of the final three prospective sites during October 1978 in order to gauge public sentiment toward the proposal. The public meetings were summarized and evaluated as follows:

> In general, the public meetings appeared to establish overall public acceptance of the possibility of installing a waste wood-fired electric generating plant at each of

TABLE 3

VENTURE PROJECT STAFF AND OUTSIDE PARTICIPANTS

PROJECT MANAGER

C. H. Illingworth - D

EXECUTIVE COMMITTEE

R. E. Albrecht - C
J. N. Keen - W
W. H. Sells - M

SITE SELECTION COMMITTEE

R. C. Arnold - W
R. M. Gerzetich - C
A. J. Hodge - D
P. Ratcliffe - M
J. J. Rochow - C
H. C. Wayman - D

FUEL SUPPLY COMMITTEE

K. B. Carter - C
H. E. Holmes - C
L. C. Newell - C
P. Ratcliffe - M
J. L. Schaut - D
R. E. Schepers - C
H. C. Wayman - D

POLITICAL COORDINATION COMMITTEE

J. N. Keen - W
A. W. Land - C
W. H. Sells - M
C. Wondergem - D

PUBLICITY COMMITTEE

S. L. Irish - C
J. N. Keen - W
W. H. Sells - M
C. Wondergem - D

FINANCING AND OWNERSHIP COMMITTEE

C. E. Bayless - C
A. J. Hodge - D
J. N. Keen - W
W. H. Sells - M

PLANT DESIGN COMMITTEE

C. A. Botting - D
R. M. Gerzetich - C
G. T. Lawton - L
T. E. McElroy - C
L. Turcotte - L
H. C. Wayman - D
J. O. Wood - W

PERMITS COMMITTEE

P. C. Hittle - C
D. L. Stowe - C
H. C. Wayman - D

ECONOMIC ANALYSIS COMMITTEE

E. W. Browning - C
A. J. Hodge - D
J. L. Schaut - D

REPORT PREPARATION GROUP

R. Fishman (Ms) - D
C. H. Illingworth - D
J. L. Schaut - D

ENVIRONMENTAL CONSIDERATIONS COMMITTEE

G. A. Dawson - C
B. W. Rasher - C
P. Ratcliffe - M
J. J. Rochow - C

SPECIAL ADVISORS

L. Biederman
R. J. Daverman - D
N. Morey - M

GOVERNMENTAL LIAISON REPRESENTATIVES

M. L. Hiser - Michigan Public Service Commission
W. K. Mann - U.S. Dept. of Agriculture Forest Service
G. A. Rose - Michigan Dept. Natural Resources

INDUSTRY LIAISON REPRESENTATIVES

D. J. Elliott - Packaging Corporation of America
T. Anuskiewicz - Michigan Energy and Resource Research Association

SPECIAL CONSULTANTS

E. A. Bourdo - Michigan Technological Institute
W. H. Hudson - Remote Sensing Project Michigan State University

C - Consumers Power Company
D - Daverman Associates
L - W. P. London & Associates
M - Morbark Industries
W - Wolverine Electric Cooperative

SOURCE: Daverman and Associates (1979).

TABLE 4

SCOPE OF ACTIVITIES FOR THE
WFPP FEASIBILITY STUDY

A. Determination of the adequacy and usability of a wood and/or a wood and RDF fuel supply.

B. Determination of fuel handling and ash-disposal methods.

C. Determination of equipment availability, optimal sizing, and conceptual design, including the determination of the mode of cooling and source of cooling water.

D. Production of schematic drawings of the fuel handling, boiler and steam turbine of the wood and wood/RDF-burning electric generating plant.

E. Determination of the optimum locations for a wood-fired and a wood and RDF-fired plant.

F. Preliminary plan view of the major facilities of the plant.

G. Determination of the regulatory permits and approvals necessary for the entire Project. The appraisal of the likelihood of success in obtaining the necessary regulatory permits and approvals.

H. Determination of the estimated capital and operating costs of the electric generating plant.

I. Determination of the estimated cost of the design, and cost of the regulatory approvals and permits phase of the Project.

J. Determination of financing options available to carry on the Project and explore possible owner/operating arrangements.

SOURCE: Daverman and Associates (1979).

TABLE 5

SITE SELECTION CRITERIA FOR THE
DEMONSTRATIONAL WFPP

1. Minimal environmental impact.

2. Location within service territories of Consumers Power and/or Wolverine Electric Cooperative.

3. Proximity to electric transmission facilities.

4. Transportation of fuel.

5. Adequate supply and availability of waste wood and/or RDF [for southern lower Michigan sites considered].

6. Availability of sufficient land for development of a 50-MW site.

SOURCE: Daverman and Associates (1979).

> the sites, provided that impact on the environment would be minimal. There was some opposition. There was also some apprehension as to possible odors at the Harlan and Hersey sites which might result if RDF is burned as a supplemental fuel (Daverman and Associates, 1979, Executive Summary).

This summary of the meeting oversimplifies the concerns expressed at the hearings. Those who would soon serve as experts for the opposition at Hersey (see quote, top of p. 73) honed in on the motives and methods of the proponents, stating, for example:

> 'It seems to me like it's the same old thing. The large power companies are just willing to take all our resources, make their money and run off with them and leave us with a barred looking place' [followed by applause] . . 'What I'm concerned about is, once you get started on something like this, then it's hard to stop. Just like the nuclear power plants are hard to stop; once they get going on them, they've got all this money invested in them and they just continue.' And: 'What I'm saying is the large power companies generally have more obligations to their stockholders than they do to the residents of the area where the plants exist' (Daverman and Associates, 1979, I-106-7).

The opponent then clearly articulated the case for a different technology for utilizing the resource:

> 'You're here to find out what our options are too. Now, we have other options that Consumers doesn't have because Consumers is a large-scale operation. The private citizen in this country has the option of going to small-scale operations, wind power, solar power, all the coming technologies. . . And also burning wood for heat which is another small-scale thing' (Daverman and Associates, 1979, I-108).

The exchange that ensued brings out the philosophical (cosmopolitan, as it were) differences between the promoters and the opponents of the WFPP.

> Proponent: 'We're not adverse to that' [i. e., small-scale use of wood for home heating].
>
> Opponent: 'One place is making a decision

between your large-scale operation and . . the option of trying some small-scale thing.'

Proponent: 'But [there are] problems with all those, and this is part of my job with Consumers . . is looking at various options.' [He then recited some problems with the technical feasibility of small-scale alternatives using wind power as an example].

Opponent: 'What you're finding out is that things like solar and wind technoogy are small-scale technologies and they really don't pay off for something like Consumers.'

Proponent: 'No, they would pay off for Consumers if they'd pay off for the small individual. I don't think there's anything that says we couldn't form a subsidiary that didn't promote solar energy and we would do that, I would think, if it were a feasible option. We're in the energy business' (Daverman and Associates, 1979, I-109-10).

Hersey was selected as the proposed site "primarily on the basis that it will have, along with reasonable economics, the lowest environmental impact of all three sites" (Daverman and Associates, 1979, Executive Summary). Technical aspects of the Hersey site and of the WFPP hardware were analyzed and reported in the feasibility study. It lists seven immediate socioeconomic benefits of installing the WFPP (Table 6). Final recommendations suggested authorization of final design, financing, and construction, contingent on wood supply committment from the Michigan Natural Resources Commission.

The first Osceola County Herald (OCH) account of the proposal summarized the first public meeting in Big Rapids (OCH, 9-28-78). The two issues upon which the controversy would hang -- impact on

TABLE 6

SOCIOECONOMIC BENEFITS OF THE
DEMONSTRATIONAL WFPP

1. The impact on local merchants and service industries during construction when the labor force could approach 200 workers.

2. A resulting increased employment opportunity for construction trades in Western and Central Michigan during construction.

3. A permanent increase of about 80 new jobs represented by the plant staff and wood gathering personnel.

4. Increased income to private property owners through sale of waste wood from what are now marginally productive woodlands lacking a market.

5. Increased forest yields and improvements to wild game habitats resulting from selective harvesting of waste woods.

6. Additional revenues to the State of Michigan from the sale of waste woods under its forest management program - waste wood that the State must now pay to have removed.

7. A demonstration to the remainder of the Michigan electric utility industry of the benefits to be derived by the concerted efforts of the private and consumer-owned sectors of the industry in conjunction with private industry accomplished without the expenditure of governmental funds.

SOURCE: Daverman and Associates (1979).

area forests of large-scale harvesting and the burning of solid waste in the WFPP -- were evident in that account. The article carried the semiaccurate and somewhat provocative headline "Hersey Site Chosen for Chipping Plant." Final selection would not be made until February 1979.

The Initial Local Response

The public meetings had revealed enough about the project to give citizens, who conceiveably might see things differently than the experts from Daverman and Associates, the opportunity to consider a response. Although Hersey was not the unequivocal site until the feasibility study was released four months later, the fact that it was in the running proved sufficient to arouse some Hersey area residents. By the time a meeting was held on the Hersey site a relatively large group of citizens took an interest in the proposal. "Approximately 100 people, mostly from the Hersey area, attended the fourth and final public hearing concerning the plant at the Osceola Inn [Reed City]" (OCH, 10-26-78). The OCH headline tells the story: "Opinions Split on Plant Near Hersey." Three weeks later Hersey village President Bion Jacobs, a lifetime resident of the area, convened a public meeting in the Hersey township hall for the purpose of letting local citizens express their views on the proposed WFPP (OCH, 12-14-78). In doing so, he responded to a petition which asserted that the issue had not been fully aired in Hersey. Approximately 50 people attended that meeting. The newspaper account documents the formal response of the Hersey

community:

> The outcome of . . the meeting was the appointment of a four member committee to 'keep on top of the situation and to investigate the matter further.' Appointed to the committee were Fred Cole, Dave Springer, Ken Ford, and Marco Menezes (OCH, 12-21-78).

Interestingly enough all were relative newcomers. During the discussion Jacobs articulated the doubts of many in the community:

> It was pretty one-sided in Reed City. They gave some very vague answers. You'd think they'd have some concrete answers if they're going to spend that kind of money (OCH, 12-21-78).

One could easily assume from this statement that the dispute was about to be thrashed out on the technical aspects of the project. Jacobs then made the most quotable statement in the controversy:

> When I first heard about the plant I thought it was the greatest idea, but I'm getting tired of reading in the newspapers how other people are saying that they want the plant in Hersey. They don't live here. We do. Don't we have any say? We want to make our own decision (OCH, 12-21-78).

The issue of the threat to local autonomy represented by the WFPP had been joined.

Members of the committee formed at that first Hersey meeting gathered at Henry's Bar in Reed City several weeks later to discuss the problem. Over drinks they decided to initiate an opposition group, agreeing on the name Committee for Rational Use of Our Forests, CRUF for short. During the next two years CRUF would incorporate, sollicit funds, aid other opposition groups in the region, and oppose the Hersey WFPP in every available forum. A rising tide of opposition, spearheaded by CRUF, awaited the decision to site the WFPP at Hersey. Several articles favorable to wood-

electric power detailing the Burlington, Vermont experience (OCH, 1-25-79; 1-31-79) did not quell community apprehension. Both dealt with a visit to Morbark Industries in Winn by Robert Young, General Manager of Burlington.

When the feasibility study was released and the Hersey site announced in early February 1979, the opposition was already well established. A meeting held in Hersey Elementary School on February 6, 1979 was reported even in the distant Detroit newspapers (Detroit Free Press, 1979). That meeting overflowed the facility and was estimated at 200-250 people. The Detroit Free Press article assessed the situation as follows:

> Most of the audience showed some hostility to the project. Their attitude seemed to be that although the corporate representatives and State Department of Natural Resources officials had plenty of facts and figures, a citizen just can't trust government or big business anymore.

The journalist's conclusion in this article is reinforced by the statement of a Hersey resident who was moved to write a letter to Michigan Out-of-Doors magazine (Bolyard, 1979):

> . . . [at the] meeting . . held in Hersey . . a number of knowledgeable men representing the involved companies spouted rhetoric blocking opposition and questions with figures and statements which a person of average intelligence could not dispute . . These are companies and individuals who will gain monetarily in this venture and then leave, while those of us whose needs and life-styles are less complex will be left to pick our way among the stubble and worry about soil conditions. As many in this area heat by wood, we will not longer be able to take our families into the woods to gather firewood.

During the four-hour meeting citizens repeatedly expressed concern about the issues of burning solid waste in the WFPP and the adverse effects of clear-cutting forestland (OCH, 2-15-79).

Walt Grysko, a crusty local columnist, got into the fray on the

side of the opposition. His first column of the dispute -- "Hersey Woodchip Plant Monster!" -- marked a change in the style of the debate (OCH, 2-15-79). He questioned the technical claims made on behalf of the WFPP and the validity of comparisons with Burlington, Vermont. The intense debate at this early stage focused on technical matters despite the evident value preferences.

By the end of February the OCH was extensively reporting the contrasting views of promoters and opponents, e. g., "How and Why: Morbark Ventures Replies to CRUF's 12 Questions Concerning Wood Chip Plant." On March 26, 1979, CRUF released a well-documented position paper attacking the feasibility study (CRUF, 1979a). The Daverman and Associates study had cost $300,000. By contrast, CRUF members volunteered their time and expertise in forestry, engineering, and business to draft the 21-page rebuttal. Knowledge of the technical aspects of wood-electric power and large-scale wood harvesting, a dedication to stopping the WFPP on techical grounds, and a capacity for research and techical writing are all apparent in their report.

The very existence of two feasibility studies, even though one was far more slick and sophisticated than the other, fomented controversy. The promoters were forced to repond at length to the CRUF challenge. In retrospect it is clear that the public, at least the citizenry of Hersey township, found CRUF's analysis credible. CRUF rapidly gained legitimacy in the community to match that of experts from Daverman and Associates and the Michigan DNR. The attempts by project promoters to respond to a barrage of criticism did not reduce public concern or mitigate the effectiveness of CRUF. Indeed, the opposition seemed to gain ground as the debate sharpened.

The Ebb and Flow of Political Activity

A detailed chronology of the Hersey controversy is provided in Table 7. A number of its salient events are explored in the rest of this case history.

The initial period of intense debate in the media and at public hearings culminated in an extensive report in the Osceola County Herald (OCH) written by two reporters from the Big Rapids Pioneer, one of whom would soon be hired as editor of the OCH. The report was preceded by an editor's note setting out its purpose, i. e., to present the issues involved better. Each reporter acted independently in interviewing and summarizing the views of proponents and opponents of the WFPP. The next critical step was noted -- the long-term committment of wood supplies by the state. The incipient debate in "The Wood Chip Controversy" (OCH, 4-12-79) was appropriately subtitled "Pro: Money's a Key" and "Con: Use Is Inefficient." The promoters interviewed emphasized its contribution to the tax base, while the opponents questioned Daverman and Associates' figures on the plants technical efficiency. Ken Ford summed up the case against, pointing out that " . . the plant is the least we can get for this wood. Let's aim for something higher" (OCH, 4-12-79).

A four-month lull in the controversy preceded deliberations by the Michigan Natural Resources Commission on wood supply committment. CRUF hedged its bet on stopping the plant in this

TABLE 7

HERSEY WFPP CONTROVERSY CHRONOLOGY OF MAJOR EVENTS, 1978 - 1980

Month	Promoters' Activities	Citizens' Activities	Relevant Hearings, Meetings and Regulatory Activities
1978			
June	Joint venture to build a demonstrational WFPP announced by Consumers Power, Wolverine Electric, and Morbark Industries.		
September	The three final round sites announced -- Harlan, Whitehall, and Hersey.		Daverman and Associates holds environmental meeting at Big Rapids.
October		Concerned Hersey area residents attend hearing in Reed City.	Daverman and Associates conduct hearings at or near each of the three sites in the final round.
December	Big Rapids Industrial Development Commission endorses Hersey site.	Hersey citizens ask that WFPP proposal be aired in Hersey. Citizens' study committee and CRUF form in wake of Hersey meeting.	Public meeting held in Hersey held in Hersey Township Hall.

TABLE 7 (CONT.)

Month	Promoters' Activities	Citizens' Activities	Relevant Hearings, Meetings and Regulatory Activities
1979			
January	Visit to Morbark by Burlington (VT) utility representative. Proposal presented to State Public Service Commission and DNR. Daverman makes initial request to NRC for commitment of State wood. Sites narrowed to Hersey and Whitehall.	Research begins on CRUF position paper. CRUF holds several meetings and strategy sessions.	
February	Daverman feasibility study released; copies presented to Gov. Milliken and Public Service Commission. Hersey site selected. Reply to CRUF's 12 questions in OCH; reply also distributed at Hersey meeting.	CRUF's list of 12 questions. Columnist Grysko's first opinion --"Woodchip Plant Monster." Bion Jacobs, Hersey mayor, requests that proponents hold hearing in Hersey.	Public meeting convened in Hersey. 200 attend, most hostile to the proposal. State Sen. Engler attends.
March	Morbark drops out of venture.	CRUF counters Daverman feasibility study with a position paper, debates proponents on TV, and holds public meeting to solicit more members.	Osceola County Commission passes a resolution in favor of the project.

TABLE 7 (CONT.)

Month	Promoters' Activities	Citizens' Activities	Relevant Hearings, Meetings and Regulatory Activities
April	"Pro: Money's a Key," slant on WFPP in OCH.	"Con: Use is Inefficient," slant on WFPP in OCH. CRUF presents position paper and petitions to NRC. Sen. Engler does not show for presentation. DNR asked to produce better evidence.	NRC monthly meeting.
May	DNR's Webster and Rose visit Burlington, VT with U. of M. soil scientist Boyle.	Letter writing, data collection, press releases to establish contacts, build membership for CRUF.	
June	Proponents lobby NRC for wood supply commitment.	CRUF rep. attends wood fuel symposium at Central MI U. CRUF attends NRC meeting. "Demoralized" by prospects. Directors of CRUF decide on waste issue as alternative strategy.	NRC monthly meeting.
July		CRUF rep. attends NRC meeting in Ludington. Decision deferred on allocation. Local logger Doyle presents on side of opponents.	NRC monthly meeting.

TABLE 7 (CONT.)

Month	Promoters' Activities	Citizens' Activities	Relevant Hearings, Meetings and Regulatory Activities
July (cont.)		Environmental lawyer Olsen of Traverse City retained to draft waste ordinance.	
August		CRUF rep. attends NRC meeting. CRUF becomes a MI non-profit corporation.	DNR memo recommends sale of wood from State land. NRC monthly meeting. Commissioners vow no decision pending full EIS.
September		CRUF rep. attends NRC public hearing on wood supply commitment.	NRC public hearing on wood supply commitment.
October		CRUF news conference re-affirming its stance despite NRC decision. CRUF reps. interviewed on TV 9/10 Cadillac, "Eye on Michigan" show. Waste ordinance petition drive.	NRC decides to auction wood from State land instead of direct sale to utilities. Hersey Township Board meeting. 330 signatures on petition presented by CRUF favoring waste ordinance. Ordinance unanimously adopted.
November	Utilities threaten withdrawal, urge Township to reconsider ordinance. Enter discussion of amending ordinance.	CRUF rep. attends MI Forest Assn. meeting on wood energy. CRUF lobbes to save waste ordinance.	Burlington, VT WFPP shelved. Hersey Township Board reaffirms its support of WFPP.

TABLE 7 (CONT.)

Month	Promoters' Activities	Citizens' Activities	Relevant Hearings, Meetings and Regulatory Activities
November (cont.)	Letters and press releases against waste ordinance.	CRUF rep. interviewed on WBRN radio. CRUF appeals to Osceola County Commission to oppose WFPP.	Osceola County Commission proposes hearing on WFPP.
December	Consumers, Wolverine announce new Hersey project manager. Utility rep. attends Osceola County Commission meeting.	CRUF rep. and Hersey residents attend Osceola County Commission meeting. Request assurance for wood only in WFPP. CRUF excluded from panel, mounts dissent from audience. CRUF continues fight to preserve ordinance.	RDF burning issue discussed at Osceola County Commission meeting. Commissioners urge legal document precluding use of RDF in WFPP. Attorneys for utilities, CRUF, and Township meet in Traverse City to amend ordinance.
1980 January			Hersey Township Board amends toxic and hazardous waste ordinance to require a permit for burning RDF.
March	Consumers presents contract for RDF test burn to Hersey Township Board pursuant to amended ordinance.	CRUF rep. attends meetings at MI State U. "Farmers Week." CRUF persuades Township Board to hold special meeting on compliance contract issue.	Hersey Township Board considers utilities' bid for RDF burn permit; postpones decision until April. Schedules a special meeting to vote on compliance contract.

TABLE 7 (CONT.)

Month	Promoters' Activities	Citizens' Activities	Relevant Hearings, Meetings and Regulatory Activities
April	Utilities announce decision to re-evaluate Hersey site pursuant to Hersey Township Board vote on referendum. Proponents make presentation at special Township Board meeting.	CRUF excluded from panel at special Township Board meeting. Protests from audience. CRUF proposes referendum on contract issue at monthly meeting of Hersey Township Board.	Special meeting of Township Board to discuss compliance contract. Decision deferred. State Rep. Ostling grilled on WFPP at his town meeting in Evart. Hersey Township Board votes unanimously at regular meeting for referendum on RDF burn permit.
May	Position statement by utilities published in OCH. "Hersey Nixed as Wood Plant Site" OCH headline. Consumers Project Manager Konchar attacks CRUF's credibility in series of letters in OCH.	CRUF replies to each attack by promoters in OCH.	Hersey Township Board votes to withdraw referendum based on withdrawal of project by utilities. Resolves to reinstate referendum automatically should utilities return.
June	Consumers announces receipt of unsolicited offers from ten communities desiring the WFPP. Consumers makes presentation in Evart at request of Chamber of Commerce but declines invitation to present at Farwell meeting.	CRUF excluded from panel at Evart meeting, presents in Farwell on panel with DNR rep. and Boyle from U. of M.	Evart meeting convened by Chamber of Commerce. Farwell meeting sponsored by local environmental groups.

TABLE 7 (CONT.)

Month	Promoters' Activities	Citizens' Activities	Relevant Hearings, Meetings and Regulatory Activities
August	DNR Director Tanner defends the WFPP concept at meeting in Bellaire.		Meeting in Bellaire to discuss Ellsworth site for WFPP.
September	Wolverine Electric withdraws from venture, citing financing problems. Consumers announces a 2-3 year delay because of its financial situation and the withdrawal by Wolverine.		
November		WFPP opponent Bion Jacobs unseats incumbent Township Supervisor Forest Benzing with active support from former CRUF members; two of four Township Board members get elected with similar help. Former CRUF member narrowly defeated in race for Osceola County Commission seat despite carrying Hersey Township by a wide margin.	

forum, soliciting an environmental lawyer in Traverse City in July 1979 for the purpose of drafting a waste ordinance for Hersey township. At the same time CRUF actively sought out other forums for opposing the WFPP, e. g., the wood energy conference sponsored by the Michigan Forest Association held in Lansing November 2-3, 1979. CRUF argued against committing wood from public lands at the meeting of the NRC on September 6, 1979 at Higgins Lake. At first it appeared that the decision would have to await a protracted environmental assessment (OCH, 9-13-79), but on October 12, 1979, a "slightly hesitant" NRC agreed to auction off enough excess state-grown timber to fuel the plant during the next ten years (OCH, 10-18-79).

CRUF held a press conference at the Hersey Township Hall on October 17, 1979. Although unhappy with the NRC decision the group did not concede defeat. CRUF representatives stated that they recognized who they were up against -- "the DNR and Consumers Power, two of the most powerful units in the state," but that they nevertheless put their chances of defeating the project at 50-75 percent. CRUF leaders complained that despite the technical data they had presented the NRC had failed to grant them the recognition [legitimacy] they deserved (OCH, 10-25-79). Although the NRC apparently took a skeptical view of CRUF, the township of Hersey had already formed a different opinion. The frustrating experience in dealing with State agencies was a catalyst for ensuing political action in the local community. CRUF was moving in this arena well before the NRC decision. One of the experts for the opposition group put the transition in strategy this way:

> We urge all local, township, and county officials to consider adopting similar ordinances [to Hersey's Solid Waste and Toxic and Hazardous Substances Disposal Ordinance] to protect themselves from imported environmental degradation. Experience has shown that the most effective, responsive form of government is at the local level. We in rural Michigan will do whatever is necessary to strenghten our hand against Lansing, which has clearly thrown us to the wolves (OCH, 11-29-79).

The focus of interest, then, quickly shifted from forest impacts -- the domain of state regulation -- to local environmental effects -- a domain for local regulation. The waste issue moved front and center. Toxic as well as municipal waste would now be the focus of debate. A petition expressing concern about the prospect of garbage being burned in the plant was presented to the Hersey Township Board on October 16, 1979. It contained 330 signatures, an indication of widespread opposition in the Hersey community. The possibility that the plant might ultimately be rated at 50-MW and the specter of 500 tons of refuse derive fuel (RDF) per day coming up from Grand Rapids prompted columnist Gryso to predict that the WFPP ". . . could even conceivably make Osceola County the state trash disposal area or the state dump" (OCH, 10-18-79; see also Daverman and Associates, 1979, Section 3). The petition called for the adoption of an ordinance to prohibit the burning of solid wastes in the plant. The stated plan of the promoters was for a 90-day test burn of RDF. The petitioners feared that this would only be the beginning.

Walt Grysko and John Keen of Wolverine Electric exchanged barbs in the next several issues of the OCH. Grysko questioned the claims about jobs, recapitulated the RDF issue, and brought up the matter

of local fiscal costs associated with such a development. He urged county commissioners to restrict the burning of RDF in the county. Keen denied Grysko's earlier claim that the plant might eventually be rated at 50-MW. He admitted that RDF would be used in the WFPP, but only on an experimental basis and for no longer than 90 days. Keen asserted that the test was required to determine the effect of RDF on plant equipment. He even suggested that ". . . perhaps Mr. Grysko would . . consent to letting use utilize some of the tripe that he served up in his October 18 article as a portion of the RDF" (OCH, 11-8-79). Claiming that the opposition had over-reacted and trumped up charges against the plant, proponent Keen invited OCH readers "who would like to find out 'factual' information" about the WFPP to contact him.

The luck of the promoters took a turn for the worse after the NRC decision in their favor. On November 13, 1979, the Hersey Township Board unanimously adopted the Solid Waste and Toxic or Hazardous Substances Disposal Ordinance. The new ordinance empowered the township to regulate transportation, burial, or burning of wastes within its jurisdiction.

The tempo of the controversy increased after this decision. The entire concept was at this point called into question when, on November 15, 1979, the OCH gave front page billing to the news that Burlington, Vermont had shelved plans to build a 50-MW WFPP and that instead it would buy power from Ontario Hydro.

CRUF continued to oppose the power plant at every opportunity. At a December 10, 1979 meeting of the Osceola County Board of Commissioners, they considered seeking a legal document assuring

that wood chips would be the primary source of fuel in the WFPP. The three-hour session was well attended and included representatives from the two utilities, the DNR, and Hersey residents and officials.

It is worthwhile to diverge momentarily to cite a concise description of the actors in the controversy as evidenced in this meeting. Grysko, the columnist firmly entrenched with the opposition by this time, observed the following:

> . . . looking over the group, an impartial observer could not help but notice that the opponents to the Hersey plant were with one exception all young people, who would gain very little, if anything, financially from the new plant's construction. These people seemed to worry about the ecological effect this venture would leave on the area and it's health effect on the Hersey township residents. Many of them have studied the 'Feasibility Study' [Daverman and Associates, 1979] which mentions a few of the uncertainties and some of the health hazards with which they are concerned.
>
> On the other hand all of the outspoken proponents were older people, who seemed to think that this plant was a financial cornucopia; that it would help the area tax-wise, would provide new jobs, and would help them sell their wood products at a greater profit (OCH, 12-27-79).

The controversy was now down to just one issue -- the burning of RDF in the WFPP. Pursuant to the exhortations of the township lawyer and a challenge by officials from Consumers Power to rescind or amend the ordinance, the township acted in a conciliatory manner. On December 20, 1979, Hersey Township endorsed the plant and called for an amendment to the ordinance adopted a month earlier. Those attending the meeting called for a referendum on the question of whether or not the citizens of Hersey township also endorsed the WFPP. Several attending that meeting took the opposite stance, holding that the Hersey Township Board should rescind the ordinance.

However, this was clearly a minority position.

The proposed plant was ranked as the third most important story in the county during 1979 by the OCH in its first issue of 1980 (1-3-80). The climax was yet to come.

A public meeting was held on January 10, 1980, to deal with what were described by Bion Jacobs as scare tactics by Consumers Power. The ordinance had been drawn up by the "best environmental lawyer in the state." It was the sixth such ordinance the attorney had drafted. Opponents of the WFPP were therefore skeptical of the criticisms leveled against the ordinance by the project promoters. Moreover, because the state Hazardous Waste Management Act went into effect on January 1, 1980, any local ordinance on the books before that date stood a much better chance of holding up in court. Discussion at the meeting consequently revolved around amending rather than rescinding the ordinance. A conciliatory meeting of the attorneys for all parties concerned that took place several weeks earlier in Traverse City produced a compromise amendment. The Hersey Township Board voted to amend the ordinance, exempting certain categories of operations from having to comply with the otherwise strict law. The amendment also allowed the utilities to apply to the board for a permit to burn RDF for a short period of time.

All seemed well until Consumers Power unexpectedly applied for a permit in March 1980, fully five years before the test burn was to take place. Hersey township officials postponed a decision on the application at a meeting on March 18, 1980, notwithstanding the claim of the township attorney that Consumers Power might back out

if the contract were not signed immediately. A public hearing on the matter was scheduled for April 10, 1980.

The death knell for the WFPP was sounded at that hearing. Recognizing the growth of public disenchantment with the project, the Hersey Township Board voted unanimously to put the question of signing the compliance contract to a vote of the people. "Tempers flared a bit on both sides" at the meeting, to quote the OCH account. One opponent toted a bag of what he believed might be in RDF. Consumers Power officials had their own sample to pass around for inspection. Disturbances ensued when the possibility of burning PBB-contaminated carcasses in the WFPP was mentioned. Township Supervisor Forest Benzing threatened several times to end the meeting if the disturbances persisted. When Consumers Power attorney Jack Shumate said the site would be re-evaluated if the test burn permit was not approved, applause erupted. One resident interjected: ". . . what you want to do isn't the only thing that needs to be done. We need to live" (OCH, 4-17-80).

Having failed in their bid to budge Hersey township on the compliance contract referendum, the utilities announced they would indeed re-evaluate the site (OCH, 4-24-80). Some in the media viewed this result differently, as suggested by the headline in the Detroit News (1980) -- "Tiny Town Beats Power Plant Bid by Two Utilities." The decision of the utilities was reportedly based on their need for "an orderly planning process aimed at minimizing delays and uncertainties." The referendum was the obvious straw that had broken the camel's back. In this atmosphere of mistrust between the Hersey community and the utilities, and in view of the

very successful petition drive calling for the ordinance in the first place, utility officials apparently found little cause to hope for approval of the contract. In May the Hersey Township Board voted to withdraw the referendum, but resolved to reinstate it automatically if the utility companies should decide to to go ahead with the venture. Doug Miller of CRUF confidently asserted that the WFPP would never be sited at Hersey, but not because of the ordinance. Rather, he believed that both the community and the utilities now knew that the wood supply would not be adequate for the plant. Despite its waste ordinance strategy, CRUF thus continued to hammer at the forest resource issue. Another suspicion was forming in the public mind regarding the use of the WFPP, that the desire of the Michigan DNR to have a facility for disposing of the state's toxic wastes was left unstated (CRUF, 1980c).

For the next several months the OCH served as a forum for a plethora of recriminations by both sides in the controversy (refer to Appendix I). In the midst of this exchange the Hersey site was ruled out altogether by the utilities during the second week of May 1980. The fascinating aspect of the belated give and take was the thoughtful presentation of the technical issues in the controversy. Once again utility representatives harped on the "facts" in support of the WFPP. They harangued that theirs were the only legitimate experts. With the experts to establish the facts, the promoters wondered how the Hersey community could reasonably oppose the project. To quote the project manager:

> . . . If the re-evaluation process is an extended one and if Hersey Township voters eventually face the RDF issue at the ballot box, I can only hope that they LOOK CLOSELY AT

> BOTH SIDES OF THE ISSUE -- the factual side presented by Wolverine and Consumer Power Company versus the imagined-emotional side presented by the Committee for the Rational Use of Our Forests -- before casting their vote (OCH, 4-24-80).

In the same article he assailed the opposition as undemocratic, accusing it of "disrupting an orderly democratic process designed to exchange factual information upon which reasoned and intelligent decision making should be based." With the expertise at their disposal utility officials assumed in these exchanges that they had cornered the market on facts, and that facts were what the controversy was really all about.

The response to such remarks was predictable. Yet even the opponents focused presumptively on the "facts."

> It strikes me as almost comical that Consumers Power's Mr. Konchar accuses CRUF of not presenting FACTS in our fight against the wood-chip plant . . Members of CRUF spent six months intensively researching the concepts of whole-tree chipping and wood-fired electricity. We published the results of this research in a 22-page impact statement entitled "Wood Energy in Michigan: An Analysis of Impacts and Alternatives to the Proposed Generating Plant at Hersey, Michigan" [CRUF, 1979a]. Both Consumers Power and the DNR have tried to refute the facts presented in this paper, and have been forced to resort to political manuvering in Lansng and "arm-twisting" of local officials to accomplish their ends. Consumers Power has refused to consider the facts presented in this paper (OCH, 5-8-80).

This statement points up the effective use of expertise by the opposition group in responding to the technical challenge of the promoters' feasibility study. The legitimacy they were accorded by the Hersey community is reflected in this letter by one resident who jumped to the defense of CRUF (OCH, 6-5-80): ". . . were it not for the research efforts of CRUF, this project would have sailed into Hersey on empty promises based on misleading information."

The controversy from the viewpoint of the opponents was summed up by Marco Menezes in an interview with the OCH (7-31-80):

> 'Their [project promoters] attitude was extremely condescending, like, "we're the experts, and we know what's best for you," and that just didn't sit well. Finally, a group of us decided to put our heads together and get some answers of our own.'
>
> To provide the mounting opposition with a cohesive medium, many of the Hersey residents banded together and formed the Committee for the Rational Use of Our Forests. Suspecting that the impartiality of foresters, biologists, and other specialists connected with the venture partners, CRUF members embarked on an extensive research project of their own.
>
> 'It didn't take long for CRUF to develop its own panel of experts . . with credentials every bit as impressive as those of the proponent specialists. Our people found glaring inconsistencies in their feasibility study . . and, for the most part, professed diametrically opposite conclusions to those of the project experts. These differences weren't just on minor issues either -- we weren't interested in splitting hairs or debating fine points -- and the inconsistencies seemed to arise on far more than an infrequent basis.'

This retrospective reads almost like a guide to opposing large-scale energy projects. It is apparent that the strategy of the opponents to counter the expertise of the project promoters proved far more effective than the corresponding attempt of the proponents to depoliticize the social and political issues with the assistance of experts. The nature and method of the opposition experts is explicit in this statement. The outcome demonstrates that credentials alone are not the path to legitimacy.

A number of communities tried to leap into the breech after the Hersey site was dropped (Grand Rapids Press, 1980a). On June 16, 1980, Consumers Power announced that it had received unsolicited offers from 10 communities interested in becoming the site for the demonstrational WFPP (OCH, 6-19-80). At the same time CRUF

advertized its willingness to assist communities in scrutinizing the WFPP (CRUF, 1980c). One of the communities was Evart, a town not more than 15 miles from Hersey. A meeting was held at Farwell, another community not too distant, to consider the proposal. Citizens Against Chemical Contamination sponsored the meeting, inviting representatives from CRUF, Consumers Power, and Wolverine Electric Cooperative. The utilities did not participate. The county commissioners of Ogemaw County endorsed the idea of siting the WFPP in their jurisdiction. However, it was evident in the wording of their endorsement that the issues in the Hersey dispute had not escaped their notice (Grand Rapids Press, 1980b).

The WFPP was debated again at Bellaire in August 1980 in connection with possible siting at Ellsworth in Antrim County. The director of the Michigan Department of Natural Resources (DNR), Howard Tanner, was called upon to defend the idea at this meeting. Consumers Power revealed at that meeting that the list of possible sites would soon be narrowed from 12 to 3 (Grand Rapids Press, 1980c).

Citing lack of capital due to the economic recession, Wolverine withdrew from the venture in September 1980. Almost simultaneously Consumers Power announced that it would put off further consideration of the project for two to three years (Grand Rapids Press, 1980d). The Evart city manager expressed disappointment with that decision, but expressed optimism that Evart would be the prime site when the project is revived (OCH, 9-18-80).

The effect on politics in Hersey extended well beyond the decline of the proposal. The November 1980 election produced a

TABLE 8

STAGES COMMON TO LOCAL DISPUTES [18]

I. Initial plans to introduce the innovation.

II. Proponents submit a proposal to appropriate governmental authorities for approval; the first opposition appears.

III. The opposition gains broad public support; active civic group forms; public meeting, demonstrations, and election-like campaigns, characterize the conflict; the media become attentive; disagreement occurs among experts.

IV. A crucial decision is reached by some governmental authority, or else the proposal is withdrawn. However, the issue is not necessarily settled. The defeated party may appeal against the decision or raise the issue again later on.

SOURCE: Mazur (1975: 41), who relies in part on Jopling (see Table 9).

watershed of changes in the leadership of Hersey township. Of the four candidates elected to the Township Board, two got there with active campaign help from area residents who had participated in CRUF. A very significant change was replacement of Township Supervisor Forest Benzing, who had been perceived as a proponent of th the WFPP, by Bion Jacobs in a very close vote. Bion Jacobs, formerly the President of Hersey village, was known as a staunch opponent of the WFPP. He was one of the candidates who received campaign help from former CRUF members. In a race for the Osceola County Commission, a former CRUF member was narrowly defeated despite carrying Hersey township by a wide margin.

The Stages and Style of the Technical Debate

The Hersey controversy is generally congruent with the pattern observed for local disputes (Table 8), nuclear power plant siting disputes (Table 9), and the pattern of technical debate observed for controversial technologies of speed and power (Nelkin, 1975).[19] The fit with the Nelkin cases is almost uncanny, for example:

> . . . The developers . . contracted for detailed plans of the construction of their proposed facility. As they applied for the necessary permits, affected groups tried to influence the decision. The developer in each case argued that plans, based on their consultants' predicitions of future demands and technical imperatives concerning the location and design of the facility, were definitive, except perhaps to meet federal standards. (Nelkin, 1975: 42).

The Daverman and Associates feasibility study was, in this context, the critical take off stage of the Hersey dispute, just as

TABLE 9

JOPLING MODEL FOR STAGES OF RESISTANCE TO NUCLEAR POWER PLANT SITING

STAGE	1	2	3	4	5	6	7
DESCRIPTION	Public Disclosure	Expert Inquiry	Information Distribution	Citizen Organize	Technical Disagreements	Uncompromising Conflict	Legal Confrontation
TIME	Months	Days	Months	Month or two	Months	Year or more	Unlimited

SOURCE: Jopling, et al. (1973).

the five-volume technical report had been in the Lake Cayuga controversy, and the environmental impact statement in the Boston airport controversy (Nelkin, 1975). Informational meetings, in each case rife with dissent, played an important role in the latter as well as the Hersey case. Furthermore, in the Hersey and Lake Cayuga disputes a critique of the consultants' technical report contributed to the polarization of community views.

In general, the Hersey controversy fits the models in Tables 8 and 9. The stages of disagreement among experts (Table 8, stage III; Table 9, stage 5) marks the turning point in technical controversies. What might be termed the advocates stage (Table 8, stage IV; Table 9, stage 7) -- the period of ajudication -- in the Hersey case involved the passage and amendment of a local toxic and hazardous waste ordinance. The environmental lawyer retained by CRUF to draft the ordinance, the Hersey Township attorney, and legal counsel for Consumers Power all were involved in the compromise amendment. This legal confrontation in the period preceeding the climax of the controversy (December 1979 - February 1980; refer to Table 7) was a short-lived solution to the conflict. Entrenched community mistrust of the intentions of project promoters soon precipitated outright withdrawal of the proposal (Table 8, stage IV; Table 9, stage 7).

The style of the technical debate in the Hersey controversy is very similar to that in the cases observed by Nelkin (1975), i. e., ". . . considerable rhetorical license, with many insinuations concerning the competence and biases of the [experts] involved." Some of the rhetoric was used for the purposes of illustration in

the previous section. Two especially poignant exchanges in the OCH took place during and after the conflict over the application for a permit to experimentally burn RDF in the WFPP. The debate between columnist Grysko and Wolverine Electric president John Keen beginning in November 1979 was quite vituperative, verging on personal attack. The exchanges between CRUF members along with some Hersey area residents and the project managers from the utilities were more low keyed and tied to the issues. The OCH served as the forum for this debate. Of the 17 letters to the editor of the OCH regarding the WFPP, 12 were published during this post-mortem phase of the dispute.[20]

The media debate concentrated on who had the facts. The divergence of opinion on the facts of the matter squares with Nelkin's finding that each party in the disputes used different criteria to collect and intepret technical data. Her conclusion (Nelkin, 1975: 48) on the style of technical debates is appropriate here:

> . . . Both disputes [Lake Cayuga, Boston airport] necessarily dealt with a great number of genuine uncertainties that allowed divergent predictions from available data. The opposing experts emphasized these uncertainties; but in any case, the substance of the technical arguments had little to do with the subsequent political activity.

The criteria applied to intepretation of technical information hinge on the values of the beholder. The interplay of values and facts in the controversy in the subject to which this study now turns.

CHAPTER 5

VALUES AND FACTS IN THE CONTROVERSY

Introduction

Although technical disputes frequently revolve around matters of fact, in the end they entail political choices among competing social values. Conflict predicated upon values is the sine qua non of technical controversies. Obvious as this may seem, social scientists have paid little attention to the interplay of facts and values in controversies. This chapter details one attempt to analyze the dynamics of facts and values in a technical controversy. To this end the fact-value propositions introduced in Chapter 1 will be repeated and embellished in this section. Relevant literature is also reviewed.

The following propositions rest on the distinction between matters of value and matters of fact. Values are ". . . those conceptions of desirable states of affairs that are utilized in selective conduct as criteria for preference or choice or as justifications for proposed or actual behavior " (Williams, 1970). Facts are conceptions that can be objectively verified. They refer to "what is", whereas values concern "what ought to be." Decisions such as the one in this case study have normative as well as factual

content. Indeed, the distinction between facts and values is the basis for the line commonly drawn between questions of policy and questions of administration (Simon, 1961).

Values and facts are first-order concepts, thus better illustrated than vaguely defined. In many siting disputes the prospect of additional jobs becomes a bone of contention. The number of jobs created and their nature (e. g., whether locals or outsiders will get them) are matters of fact. Conflict may occur over whether one or another forecast is accurate, or the extent to which unskilled local workers can be hired -- that is, over the facts -- but in most cases values are part and parcel of the debate about jobs. For example, the good of additional jobs relative to other value concerns may be questioned. However, few would deny that additional jobs represent a positive value, unless the jobs go primarily to outsiders or to transients who depart after a socially disruptive construction phase. In practice the value of the prospective jobs to the community is weighed against the social and environmental costs of the proposed facility. Risks and benefits may also enter the debate as facts, but these concepts as well are increasingly gauged in terms of social and political values (Ravetz, 1978). Evaluations about what is desirable or what the community should do are not subject to the methods that establish the facts.

Experts may help bring forth the facts, but they are not particularly useful in ascribing values. Indeed, experts generally claim their only concern is the facts and nothing but the facts. The review of scholarly work on experts in Chapter 2 suggests that this is a myth. Project promoters very deliberately make use of

expertise to legitimize their plans. They employ experts and rely on command of technical knowledge for the purpose of justifying their (the project promoters) autonomy. Important value-ladden decisions are in effect defined as part of the job to be accomplished by experts. In response counterexperts are often solicited to dispute the establishment experts. Technical knowlege thus becomes a tool exploited by divergent interests to reinforce their respective claims. The hypotheses treated in this dissertation are designed to illuminate the expert's role in terms of fact-value interactions. A summary of each proposition follows.

> PROPOSITION I: Technical controversies generally focus on factual claims even though the underlying concerns are political or ideological values.

Proposition I makes explicit the arena in which the dispute takes place. Experts and counterexperts haggle over the facts on the presumption that they are the "data" for crucial decisions. Beneath this veneer are the value concerns that gave rise to the controversy, the prime factor in the decision-making process about controversial proposals.

> PROPOSITION II: The impact of technical expertise in a controversy depends less on its validity or the competence of the experts involved than on the extent to which they reinforce exisiting values.

Proposition II unveils the incipient hypocrisy just alluded to by offering a preliminary description of how, in fact, experts and expert knowledge affect the controversy. In technical disputes the test for the efficacy of expertise is entirely different than that for "truth" via the scientific method. The sieve through which

expertise must pass is political and social.

> PROPOSITION III: Although it can serve to clarify technical issues, technical expertise in effect stimulates conflict predicated upon existing values.

The ideal outcome for project promoters is acceptance of their experts as legitimate, their expert claims as true, and, accordingly, unqualified acceptance of the proposed project. Historically this has been the pattern, but it became exceptional during the last decade. Use of experts to clarify technical issues only stirs the pot because, as implied in Propositions I and II, the facts are not the essence of technical controversy. Regardless of how straightforward the facts are, factual arguments inevitably educe value concerns. The reverse also is evident in controversies. Proposition III formally states that the very existence of technical expertise is a potential challenge to group values. However well the experts lay out the facts, the act of doing so for a particular interest sets the stage for controversy.

> PROPOSITION IV: Notwithstanding a general focus on factual matters, a rise in controversy tends to shift the focus of the dispute from technical to value issues.

The dispute evolves, according to this proposition. The project is proposed and experts marshalled to reinforce the idea. Based upon value-contingent concerns the opposition asks counterexpertise to examine the facts, dispute them, and reach a different conclusion. Over time latent value issues on either side of the controversy become manifest. The facts continue to be contested as described by Proposition I but values become increasingly evident. Threats to

community autonomy, prospective degradation of the environment, loss to the tax base if the project is rejected, and the like emerge during technical disputes, more or less displacing an evaluation of the facts per se.

A return to the literature at this point is required for two reasons. First, a look at sociological research on values in general is necessary to put this effort into perspective. Second of all, it is important to draw further from the literature reviewed in Chapter 2 in order to reinforce the observations just made.

Sociological attention to values has not been an area of major or persistent enquiry for the discipline (Spates, 1981). Rural values, a significant interest in this dissertation, seem to have been of little interest to rural sociologists (Christenson, 1981; Bealer, 1981). The recent ferment about values in rural sociology produced ideas relevant to the present study. Much of the sociological research on "rural" values is limited to survey data that look cross-sectionally at dynamic social systems, neglecting in particular values in the everyday lives of people (Bealer, 1981). As a remedy Bealer calls for a return to examining human communities and social organizations as whole entities. Christenson (1981) puts the problem differently, pointing out that what we need is ". . . a combination of on-site inductive exploration with sensitivity to existing deductive frameworks." The content analysis attempted here is just such an exploration. Moreover, this technique is well suited to studying a community as a whole rather than as a sum of its parts (Motz, 1977). The technique may be uniquely suited to the task, given the nature of the problem, i. e., that change in a

growing rural community is qualitative as well as quantitative and that it derives largely from increased dependence upon outside units (Cortese, 1979).

Two facets of values are of interest in this study -- first, the rural-urban value continuum and, second, the interaction of values and expertise in technical controversies. The rural-urban value continuum is relevant to the political impact of the population migration turnaround. The unexpressed values of experts invariably enter into their role as such. This review concludes with a look at each facet.

There is little question that urban values are impinging upon rural communities these days. The effects have been well documented (Aldrich and Mack, 1979a, 1979c; Christenson, 1981; Sokolow, 1981; Caine, 1979). It is also true that rural areas contain valued amenities for in-migrants. The turnaround migration is primarily oriented to quality of life (Ploch, 1978). The relatively young and well-educated migrants characteristic of the turnaround seek to realize certain values, in particular environmental values, and they are not shy about participating in civic affairs if these values are threatened (Sokolow, 1981). This phenomenon is somewhat unexpected in view of the traditions of conformity and acceptance in small towns. At the same time newcomer-oldtimer relations in growing rural towns are not as directly in conflict as the application of the suburbanization idea suggests. They frequently join together to achieve common goals (see Lassey, 1977). The newcomers in these coalitions frequently serve to stimulate the awareness and activity of others (Sokolow, 1981). This was precisely the experience at

Hersey. Newcomers and oldtimers shared an image of the countryside that was clearly threatened by the proposed WFPP (see Aldrich and Mack, 1979a, 1979c; Cluett et al., 1979).

Rural values thus increasingly coexist with the urbanite values of in-migrants in remote nonmetropolitan areas as a result of the turnaround (Christenson, 1981). Whether or not the analysis of these values is the key to reconceptualizing rurality, as Christenson proposes, the turnaround provides a laboratory for studying the place of values in social change. The Hersey controversy points up the values of local residents, both oldtimers and newcomers, and of the outside interests promoting the project.

The reference to a rural-urban value continuum requires a brief digression. Clearly, the sharp dichotomization of urban and rural is an approach that ceases to be useful in sociological research. The dynamic interdependence of urban and rural areas has long since made the concept obsolete. In no instance is this more evident than the question of values. This study points up the shared values that bring newcomers and oldtimers in rural communities together. The sociological study of resource development in hinterland areas of industrial societies has emphasized simplistic nineteenth century polarities of traditional versus modern, mechanical versus organic, status versus contract, and gemeinschaft versus gesellschaft (Giddens, 1956). The pursuit of validity dictates that such studies should move beyond these polarities.

Of course values are a pervasive social fact. The analysis of cosmopolitan and local orientations in the next chapter also has an important value component. The interest in this chapter is the

study of values and facts that together constitute the Hersey controversy. Central in this inquiry is the use of technical expertise.

The four propositions summarize the current state of understanding about the role and impact of expertise. They show that despite claims to objectivity by experts, unexpressed values very often motivate them (Consumption, Location, and Occupational Patterns Resources Group Synthesis Panel, 1980). When experts holding different values counter establishment experts, value questions begin to override questions of technical alternatives (King and Melanson, 1972). Fallows (1979) example of the defeat of radioactive waste siting proposals is perhaps the best illustration of this principle. The use of knowledge in the conflict consequently mirrors the contending positions rather than transcending the values at stake (Nelkin, 1975; King and Melanson, 1972). Conflict between experts shifts attention to nontechnical and political assumptions -- that is to say, to values (Nelkin, 1975). Intensely held values lead to a reduced role for "knowledge as an impartial arbiter" (King and Melanson, 1972). By the same token, technical expertise is now widely recognized as the only way to challenge controversial decisions, whatever the motivating political or moral values (Nelkin, 1979c; Primack and Von Hippel, 1974).

Nichols (1979: 38) aptly states the essence of facts and values in technical controversies:

> . . . By seeking to maintain a strict separation between facts and values, especially on issues of great public controversy, government has facilitated the task of

> technical experts, but often at the expense of its own credibility. This is because, rightly or wrongly, the public is usually less interested in the facts of a given controversy -- especially when the facts conflict -- than it is with the choice between different political and social values.

Clearly, choices in technical controversies are not just between technical alternatives, but between competing sets of values. Nevertheless, the presumption is strong that the experts must impartially render decisions on the basis of the "facts." But as just discussed the experts are not neutral; their values influence their assessment of the facts. That the role of expert persists attests to the high premium our society places on efficiency. Experts define political problems as technical problems (Nelkin, 1979a).

The siting of power plants epitomizes yet another aspect of facts and values in technical controversies. Advocates of such projects often contend that "if the people learn the facts" more public support for the proposal will follow (Tichenour et al., 1980). Take, for example, Sells (1979) claim about WFPP development in general, i. e., ". . . we need to get the facts to the people who make the policies and control the money." Parenthetically, Sells headed the branch of Morbark Industries promoting WFPP's. His high profile in the Hersey dispute demonstrates that this assertion is dubious. More is at stake than facts. The acrimonious debate at the end of the controversy demonstrated a similar penchant for the facts" when in reality values were the uppermost concern. Hence, the claim that getting out the facts will increase public support does not stand up to scrutiny. In controversies being highly

informed means an increased awareness of the various positions in the conflict (Tichenour et al., 1980), a condition which arouses uncertainty and enhances consideration of the value issues that inexorably supercede the factual issues.

The ensuing study of the Hersey controversy will, as Nelkin (1977) suggests, attend to the interactions of fact and value in policy decisions in a "consultative commonwealth" in which professional expertise plays the lead role.

Sources of Data and Information

The Osceola County Herald (OCH) -- a weekly newspaper published at Reed City, the county seat -- quickly became the lightening rod for the Hersey WFPP controversy. The media typically assume this role in controversies (e. g., the case of the Santa Barbara oil spill as documented by Molotch, 1970). Using this kind of data permits study of a controversy as a whole. The full range of facts, values, and orientations that influenced public debate are, in principle, accessible in relevant media accounts. The OCH contains a wealth of data for this purpose. A total of 78 feature articles, columns, and letters to the editor about the WFPP appeared in the OCH within the span of the controversy, beginning in September 1978 and concluding in September 1980.

Other newspapers published articles on the controversy but their coverage was less frequent and less detailed. This observation is consistent with the finding of Molotch (1970) that the quality of coverage goes down with increasing distance from the

affected community. Accounts of the Hersey controversy appeared in the Evart Review (a weekly newspaper published in a small town just to the northeast of Hersey), the Big Rapids Pioneer (the newspaper for the nearest town of any size, located just to the south in adjacent Mecosta county), the Grand Rapids Press (a regional newspaper serving West Michigan), the Lansing State Journal (published in the capitol city of Michigan), and the two newspapers from the largest metropolitan area in the state -- the Detroit News and the Detroit Free Press. Table 10 shows the extent of coverage in each, an apparent function of distance. Relevant articles from these newspapers were not analyzed but have been used to check on the validity of findings from the analysis of the OCH accounts. Similar use was made of articles in two Michigan magazines, namely Michigan Natural Resources (a bimonthly, glossy magazine published by the Michigan DNR) and Michigan Out-of-Doors (a monthly magazine of the Michigan United Conservation Clubs, also published in Lansing).

Another data and information source that captures the range of concerns about the Hersey project is the set of public hearings held prior to selection of the Hersey site. Transcripts of each are appended to the feasibility study (Daverman and Associates, 1979: Appendix I, 130 p.). This is a particularly interesting source because of the way the hearings were scheduled. An initial hearing specifically intended to ferret out environmental concerns was held at Big Rapids on September 25, 1978. Hearings quickly followed at or near each of the three prime sites.[21] The last hearing was held at Reed City to discuss the Hersey site. Each of the prior hearings

TABLE 10

HERSEY WFPP ACCOUNTS IN SELECTED MICHIGAN NEWSPAPERS AND MAGAZINES

	N	Brief Description	Approximate Distance from Hersey (miles)
NEWSPAPERS			
Osceola County Herald (Reed City)	77	county weekly	5
Big Rapids Pioneer	45	nearest sizeable city	14
Grand Rapids Press	13	largest city in West Michigan	75
Lansing State Journal	7	state capitol	121
Detroit News	3	largest circulation newspaper in the state, based in its largest city	203
MAGAZINES			
Michigan Out-of-Doors	6	monthly magazine, published by Michigan United Conservation Clubs at Lansing	121
Michigan Natural Resources	2	bi-monthly, glossy format magazine published by Michigan DNR at Lansing	121

TABLE 11

FEASIBILITY STUDY CONCLUSIONS ABOUT
PRIME SITE HEARINGS

A. The environment must be protected. Concern was expressed not only for air and water quality, aesthetics, and the impact of trucking at the proposed plant site, but also the possible effects of wood harvesting on the forests and wildlife therein.

B. The concept of wood as a source of electric energy was generally acceptable although there were objectives.

C. The supplemental burning of refuse-derived fuel (RDF) was generally opposed. With only one or two exceptions, general opposition was expressed to the burning of RDF at all but the Whitehall site. The panel members were quite candid in their responses to the audiences. It was the general opinion of the panel that a plant burning RDF from outside the area would meet subtantial opposition. However, at the Whitehall meeting there appeared to be no major objection to burning RDF regardless of the source.

D. The method of forest harvesting was a concern. Different individuals were concerned over indiscriminate forest clearing and expressed a desire for some type of responsible forest management.

E. The additional income to the community that would result from employment associated with the plant and from wood harvesting was appreciated. discussed in this Report.

F. There were conflicting opinions relative to the aesthetic effects and future growth in managed forests using the types of wood harvesting discussed in this Report.

G. Apprehension was expressed regarding the effect selective harvesting for a wood plant might have on DNR permitted removal of fuel woods from state forests.

SOURCE: Daverman and Associates (1979).

had been extensively reported in the OCH. As a consequence, citizens who attented the Reed City hearing were in a position to know about concerns expressed at earlier hearings. An organized response by opposition leaders was already developing at the time of this final hearing. That interest was waxing is evident in the length of the Reed City hearing transcript (44 p.), significantly longer than the hearings at Harlan (27 p.), Whitehall (26 p.), and the environmental hearing at Big Rapids (30 p.). Many of the issues that cropped up during the controversy, including nearly all of the major issues, were expressed at the Reed City hearing.[22] The soon-to-be experts for CRUF dominated input from the local community. This source constitutes a useful baseline for the main content analysis of the OCH. Accordingly, it is used for this purpose. The hearings also served as an information source for helping to insure the validity of the primary analysis.

In addition to using the above supplementary sources, the veracity (i. e., accuracy of reporting) of the OCH accounts was checked by reference to the feasibility study (Daverman and Associates, 1979), and the CRUF position paper (1979a) and other documents (1979b, 1980a, 1980b, 1980c). These documents also served as a source of examples to complement issues found in the case history. Conclusions reached on the basis of the content analysis were enhanced by the knowledgeable use of these information sources.

Post-hoc interviews with selected proponents, opponents, and newspaper reporters were conducted largely for the purpose of fleshing out the case history. However, this information was selectively used to carry out and validate the analysis. The

interviews employed open-ended questions administered by telephone. Questions were raised about the effect of the Hersey controversy on the local community and its politics, the basic issues and how they changed or evolved, the technical arguments raised for and against the WFPP and the interests of those who proposed them, the effect of these technical arguments in the dispute, changes in public opinion during the controversy, the community perception of the technical experts and their impact, the lessons contained in the controversy, and how the PBB contamination may have influenced the dispute.

Fact-Value Content Analysis

"Content analysis, in its broadest sense, refers to any intepretation of the contents of written materials. Social scientists use the term to mean objective and systematic analysis of the symbols embodied in communications" (Motz, 1977). Sociologists have fruitfully used content analytic techniques to study social behavior (e. g., Banfield and Wilson, 1963; Molotch, 1970). Appropriately, much of the sociological study of values has employed content analysis (e. g., Williams, 1970; Spates, 1976).

Content analysis may involve either of two basic approaches. First is the development and enumeration of categories which isolate specific words, phrases, or sentences. A second approach -- the one used in this study -- is to categorize ideas or themes in a way that permits their quantification. Most essential in this regard are the criteria for identifying ideas or patterns of meaning. Content analysis by this approach can be both qualitative and quantitative.

The content analysis of facts and values in the Hersey controversy is based on two basic units --individual arguments and time. Each of the 721 arguments raised in the accounts analyzed was coded and scored according to the typology in Table 12. The unit of measure is the "string of the argument," which can range from a few words to several paragraphs. A code was assigned to indicate whether an argument was advanced by a proponent or opponent or by an expert or nonexpert. Time units are two month intervals, a total of 12 for the controversy. In most of the tables that follow the time intervals were condensed into two phases. Phase I covers intervals 1-5 and Phase II intervals 6-12. This bifurcation takes advantage of a natural break in the controversy at interval 5. The relationships are more obvious when the data are summarized in this fashion.

For purposes of this research study, argument types in Table 12 are operationalized as a scale, a fact-value continuum if you will. Arguments were evalutated using the scale, and scores were derived from their sum. Scores should be intepreted as follows. A strictly factual argument would rate a 1 on the scale. Its polar opposite, a strictly normative argument, would rate a 4. The median value of the scale is 2.5. This figure would not be "neutral" in terms of facts and values. The median score is assumed to be value-ladden in operation because even highly technical arguments generally reflect values in such terms as efficiency, effectiveness, economy, welfare, etc. Hence the scale is designed to accomodate the apparent distribution of arguments. In any event, the scale is relative and permits a test of the propositions raised in this study.

TABLE 12

FACT/VALUE ARGUMENT TYPOLOGY

1. STRICTLY FACTUAL. Technical argument with no apparent value argument.

2. FACTUAL, NORMATIVE IMPLIED. Technical argument with an ascribable value argument.

3. FACTUAL, NORMATIVE APPARENT. Technical argument conjoined with a value argument.

4. STRICTLY NORMATIVE. Value argument without a corresponding technical argument.

Appendix II gives an example of how an account was coded using the fact-value typology. Examples of each type of argument in connection with a single issue should further serve to indicate the range of arguments in terms of the scale. The issue selected is the efficiency/equity of the WFPP. "The WFPP will be 25% efficient in converting biomass (chemical energy) into electrical energy" is a Type 1 argument. It is a simple statement of fact without comparison, evaluation, or value assertion. "The WFPP is inefficient compared to residential woodburning -- 25% versus 70% for an airtight wood stove" is a Type 2 argument. Although a statement of fact regarding efficiency, it implies that the higher efficiency of residential woodburning makes this technology preferable to the WFPP. The value concern is implicit. A Type 3 argument on this issue might be "The WFPP is the least we can get for this wood; firewood and local logging are a better use of the resource." Factual in asserting alternatives, this argument explicitly comes down on the side of local, small-scale use. "It's wrong to take firewood from poor people so the utilities can make a profit" is a Type 4 argument. It clearly states a value preference.

The Reed City hearing of October 24, 1978 and the 78 accounts in the OCH are the complete data set for the content analysis. The four fact-value propositions are operationalized as follows.

Proposition I predicts that the majority of the arguments raised in the controversy will be skewed toward the low end of the fact-value scale. The controversy as a whole -- that is, the sum of all arguments in the dispute -- is expected to ostensibly favor matters of fact even though value concerns may be evident. A

measure of less than 2.5, the median value on the scale, will be taken as evidence for Proposition I.

To assess Proposition II, expert arguments are analyzed relative to their associated value-based claims or implicit concerns. Support for this proposition will obtain if the use of expertise generally shows a temporal shift toward Type 4 arguments on the fact-value scale.

Proposition III postulates that the injection of expertise by opponents and proponents alike generates a rise in controversy, i. e., in the volume of debate. It predicts that the use of expertise will increase participation by nonexperts. If the activity of nonexperts increases relative to that of experts during the controversy, this will be counted as evidence in support of this proposition.

Proposition IV predicts that during the controversy as a whole there is a shift toward Type 4 (normative) arguments. Observance of such a shift will be seen as affirming this proposition.

Facts, Values, and Expertise

The findings presented here for the analysis of facts and values in the Hersey WFPP controversy largely rely on the derivative set of tables and figures. Some apparent aspects of the use of expertise will be alluded to in intepreting these data.

This analysis of the October 24, 1978 hearing at Reed City on the Hersey site is summarized in Table 13. As a single event in time the hearing is but a cross-section of a dynamic social process.

TABLE 13

FACT-VALUE CHARACTERISTICS OF ARGUMENTS IN THE HERSEY WFPP SITE HEARING OF OCTOBER 24, 1978

	Arguments by Experts			Arguments by Nonexperts			Total		
	n	sum of ratings	score	n	sum of ratings	score	n	sum of ratings	score
Proponents	44	51	1.16	72	158	2.19	116	209	1.80
Opponents	40	95	2.38	24	46	1.92	64	141	2.20
Uncommitted	0	--	-----	26	41	1.58	26	41	1.58
Totals	84	146	1.74	122	245	2.01	206	391	1.90

It therefore does not offer the opportunity to evaluate the propositions (II-IV) that deal with the controversy as a whole. Support is apparent for Proposition I inasmuch as the distribution of fact-value scores falls nearer the low end of the fact-value scale. As will shortly become clear, the hearing is more supportive of this propositon than the OCH data. Values became more important during the controversy. This suggests that the hearing is a special case not capable of being generalized to the controversy as a whole. It is, however, a baseline indication for many of the factors in the OCH analysis. Consider as well that opponent nonexpert scores are much lower in the hearing than in the controversy proper. Nevertheless, the relationship between proponent and opponent experts seems to hold true for both the hearing and the overall controversy. In each case proponent experts have a very low score (skewed toward "facts") and opponent experts have a substantially higher score (skewed toward "values").

A caution is in order here that applies to the entire analysis. Fact-value scores should not be intepreted as value judgements about the worth of the particular approach taken or the specific issues debated. Indeed, just because something was debated in the arena of "facts" did not mean it was factual. Many inaccuracies and deceptions were bandied about with the label 'fact' during the controversy. In short, "fact" does not imply good and "value" bad, and vice versa.

Uncommitted participants were very much in evidence at the Hersey site hearing (n = 26 arguments). The uncommitted played such a small part in the OCH data (n = 12 arguments) that, for practical

and methodological reasons, the decision was made to delete them from the primary analysis. Of these 12 arguments, 5 were reported in the initial OCH account and were made by an explicitly neutral representative of the Michigan United Conservation Clubs. None of the issues raised by uncommitted parties were unanticipated or unrecognized by the proponents and opponents.

Tables 14-16 broadly outline the controversy. Each is discussed in turn below. Table 14 shows the temporal distribution of accounts and arguments. Three peaks in the debate are clearly revealed by these data. The first and greatest peak is in the January-February 1979 interval when conflict enveloped the announcement that Hersey had been selected over Harlan and Whitehall as the site for the WFPP. The flurry of activity on both sides at this time established the watershed for the controversy. The number of arguments raised in this interval is more than double that of other in the dispute. The second peak occurred at the end of 1979. It corresponds to the period of intense citizen concern about the possibility that solid or toxic waste would be burned in the plant. The third peak appeared in the May-June 1980 interval when the utilities withdrew from the venture after failing to get a speedy response to their request for a permit from Hersey township to experimentally burn RDF.

Table 15 displays the overall volume of the debate. It turns out that proponents and opponents are reasonably close in number of arguments but, as the trend in Table 16 shows, proponents dominated the debate early while the opponents gained the upper hand during the rest of the controversy. Also evident in Table 15 is the

TABLE 14

TEMPORAL DISTRIBUTION OF HERSEY WFPP ACCOUNTS AND ARGUMENTS IN THE OSCEOLA COUNTY HERALD, SEPTEMBER 1978 - SEPTEMBER 1980[a]

	1978		1979						1980				
	1	2	3	4	5	6	7	8	9	10	11	12	Totals
Accounts	3	3	13	5	0	1	8	12	7	8	14	3	78
Arguments	52	29	201	77	0	6	57	99	33	58	78	31	721
Percent of All Arguments	7	4	28	10	0	1	8	14	4	8	11	4	100

[a]In this and subsequent tables and figures the 12 intervals are consecutive bimonthly periods beginning with September-October 1978 and concluding with July-August 1980. Note the two major peaks, the first at interval 3 and the other at interval 8. Advantage of the natural break at interval 5 was taken to divide the controversy into Phases I and II for purposes of summarizing the data in the remaining tables.

TABLE 15

QUANTITY AND SOURCE OF ARGUMENTS

	By Experts		By Nonexperts		Total
Proponents	198	57%	148	43%	100% = 346
Opponents	183	49%	192	51%	100% = 375
Totals	381	53%	340	47%	100% = 721

TABLE 16

TEMPORAL DISTRIBUTION OF ARGUMENTS

	Phase I		Phase II		Total
Experts	224	58%	159	42%	100% = 383
Proponents	164	82%	36	18%	100% = 200
Opponents	60	33%	123	67%	100% = 183
Nonexperts	135	40%	203	60%	100% = 338
Proponents	63	43%	83	57%	100% = 146
Opponents	72	38%	120	63%	100% = 192

relatively larger load that experts carried for the proponents. The table shows opponent contributions to be evenly divided between experts and nonexperts.

Table 16 better reveals an important feature of the controversy, that experts for the proponents seem to hold sway at the beginning of the controversy while experts for the opponents move on top as the dispute develops. For both proponents and opponents, nonexperts gradually increased in importance during the controversy. Nonexperts began to carry more of the debate for both in the later stages.

Proposition I is only weakly supported by this analysis as shown in Table 17. The postulated overall emphasis on facts is implied by a fact-value score of 2.38. Table 17 illustrates that, as might be expected, experts are more "fact" oriented than are nonexperts. It also suggests that proponents are more oriented to the "facts" and opponents to "values." Non-expert opponents score reasonably close to their proponent counterparts. In general proponents' arguments more often fall toward the "fact" side of the ledger and opponents' arguments toward the "values" side in the controversy.

Proposition II is supported by the marked tendency for expert contributions to the debate to shift toward the values end of the scale (Tables 18 and 19). Experts of both stripes experienced this shift. In fact the debate as a whole follows this trend. Consider as well that the shift occurs for opponent experts even though they start from a much higher base than proponent experts. Proponent experts seem to wind up where the opponent experts began, relative

TABLE 17

CHARACTERISTICS OF ARGUMENTS RATED ON THE FACT-VALUE SCALE

	By Experts			By Nonexperts			Total		
	n	sum of ratings	score	n	sum of ratings	score	n	sum of ratings	score
Proponents	198	368	1.86	148	366	2.47	346	734	2.12
Opponents	183	471	2.57	192	508	2.65	375	979	2.61
Totals	381	839	2.20	340	847	2.57	721	1713	2.38

TABLE 18

FACT-VALUE SCORES FOR EXPERTS AND NONEXPERTS

	Phase I	Phase II	Total
Experts	1.83	2.70	2.19
Proponents	1.74	2.27	1.84
Opponents	2.05	2.83	2.57
Nonexperts	2.51	2.63	2.59
Proponents	2.51	2.51	2.51
Opponents	2.51	2.73	2.65

TABLE 19

QUANTITY AND QUALITY OF ARGUMENTS BY EXPERTS

	Phase I	Phase II	Total/Mean
Experts Arguments	224	159	383
Percent of Arguments in Time Period	62	31	53
Sum of Fact-Value Ratings for Experts	409	430	839
Fact-Value Scores for Experts	1.83	2.70	2.19

to the scale. Support for Proposition II is enhanced if it is assumed that experts recognize and respond to the demand for deference to matters of value as the controversy progresses.

Experts are, proportionately, a much more significant part of the controversy at its beginning. Table 19 suggests that they tend to stick closer to matters of fact at this stage. Note once again in Table 19 the tendency for values to become part of the repetoire of experts. The rise in their fact-value scores plainly supports Proposition II.

Support for Proposition III can also be found in the data summarized in Table 19. It shows a disproportionate rise in all arguments relative to those by experts. This relationship is better illustrated by Figure 3. The growth of participation by nonexperts relative to experts is particularly evident in the later phase of the dispute. These data can be intepreted to mean that injection of expertise with divergent viewpoints into a controversy will stimulate further debate.

Turning to the quality of the debate, Figure 4 shows that experts' fact-value scores, although generally lower, do not seem to be out of step with all scores. Experts may be following the trend toward normative issues rather leading it. The figure shows the increase in expert debate about values (in support of Proposition II) and the general tendency for increasing debate about matters of value (in support of Proposition IV).

Finally, comparison of fact-value scores for proponent and opponent experts (Figure 5) shows them to be fairly close, with opponent experts apparently being much more willing to incorporate

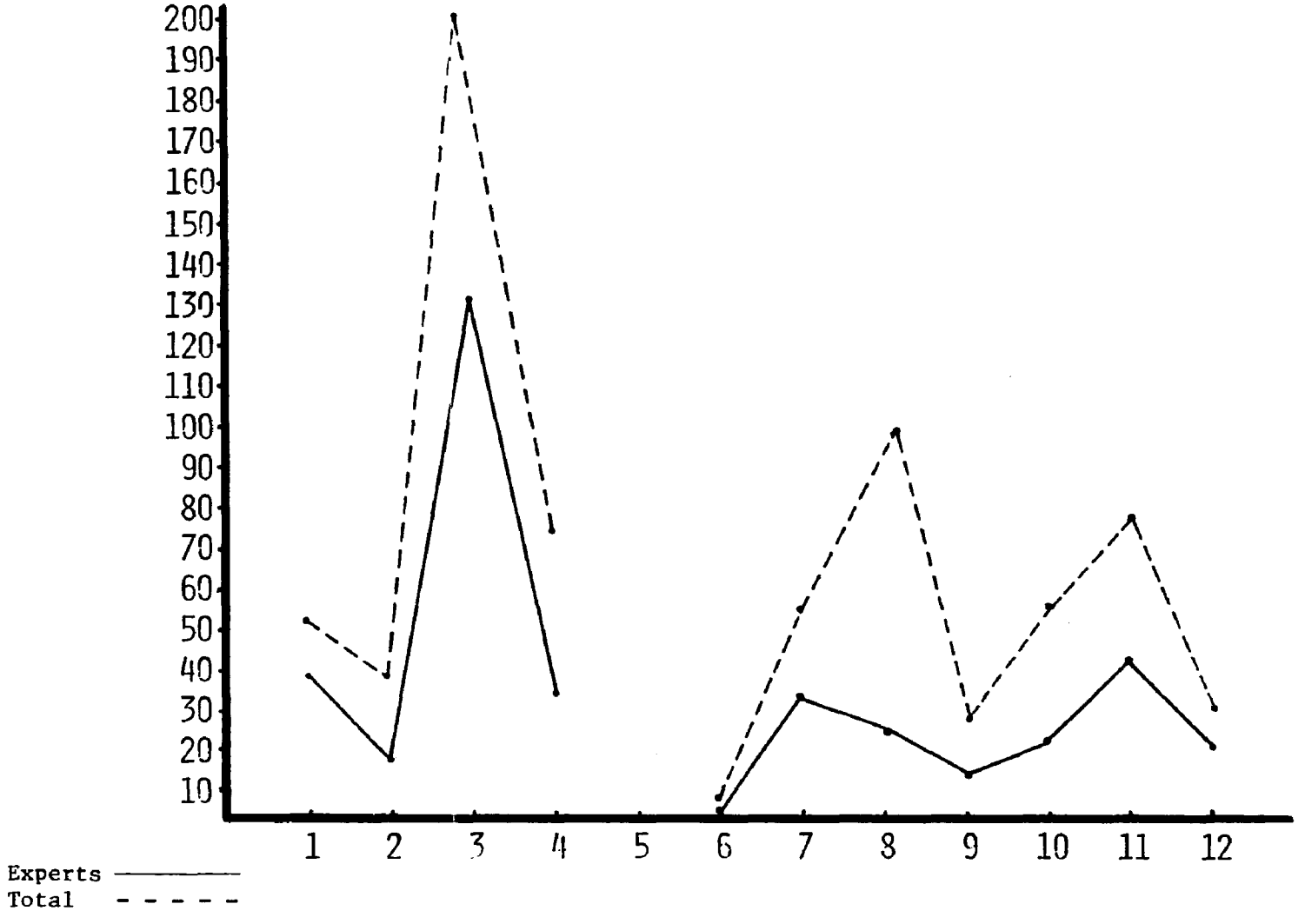
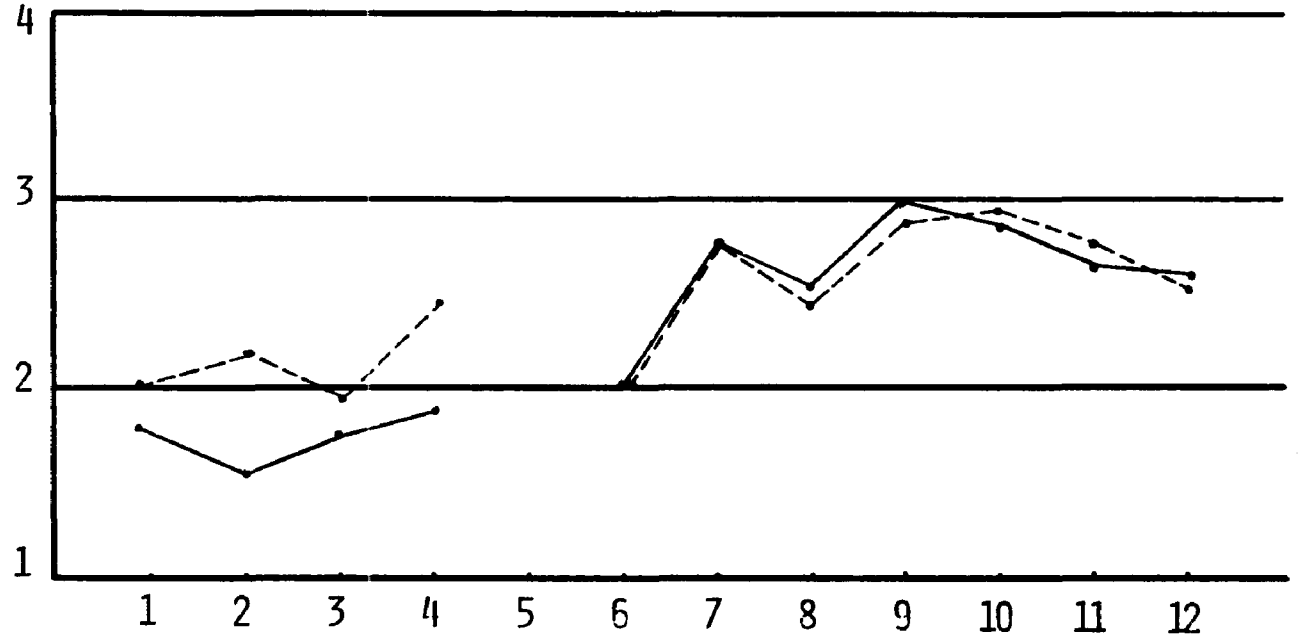
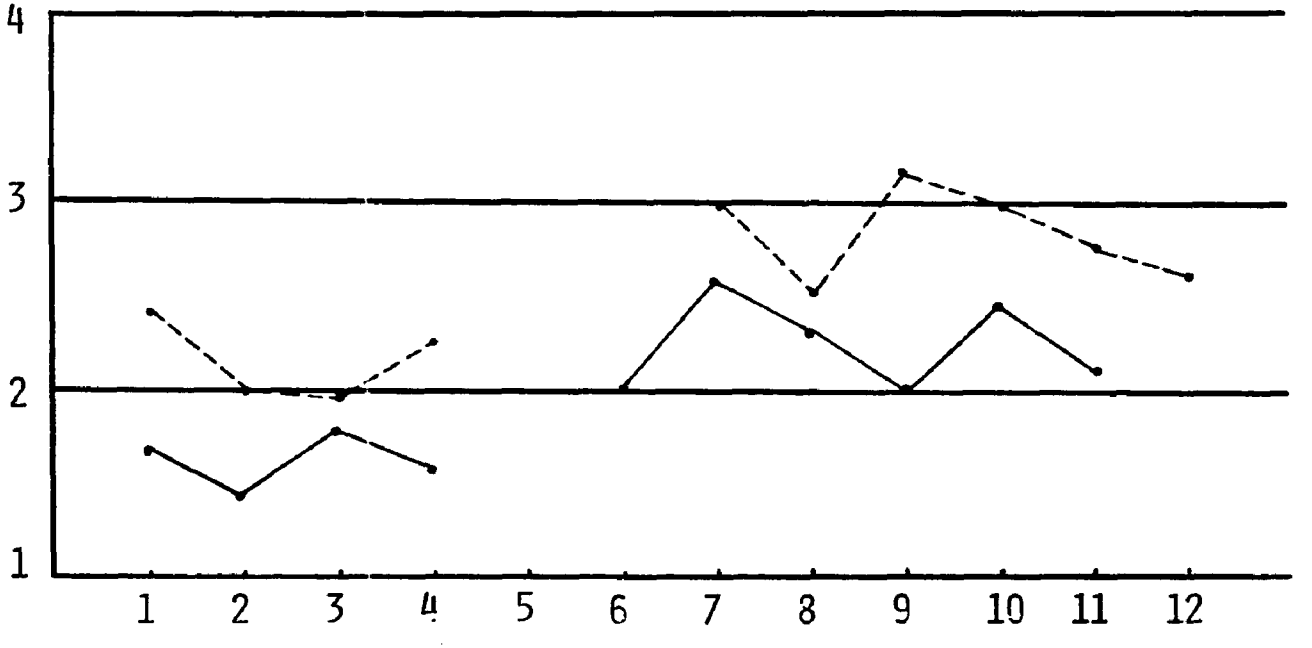


Fig. 3 Quantity of expert arguments relative to total



Experts Fact-Value Scores ————————
Total Fact-Value Scores - - - - - -

Fig. 4. Quality of arguments by experts relative to total



Proponent Experts ————
Opponent Experts - - - - -

Fig. 5. Fact-value scores for arguments by experts

questions of value into their arsenal. This implies that vigorous attention to values is an advantage in technical controversies. The success of the opponents may stem from their willingness to embrace value issues.

CHAPTER 6

LOCAL AND COSMOPOLITAN ORIENTATIONS IN THE CONTROVERSY

Introduction

This case study is especially interesting from a sociological perspective because it involves a remote nometropolitan community. Protest against such facilities usually arises in an urban community. As pointed out in the last chapter, valued amenities surrounding Hersey attracted newcomers to the area. Along with these migrants have come new values and orientations, significantly increasing pluralism in local politics. This change is reflected in the character of the Hersey plant opposition -- i. e., young, well educated, and recently introduced to the area from urban areas to the south. They showed a commitment to preserving the values that had attracted them to Hersey.

On the face of it, orientation to cosmopolitan ("save our forests") rather than local concerns sparked the controversy, effectively matching the cosmopolitan orientation ("America needs the energy") of the WFPP promoters. However, the situation is actually much more complex. Local as well as cosmopolitan orientations are evident in arguments made on both sides. The

opposition became regional in scope. It was explicitly in tune with the supra-national movement against large-scale technologies. CRUF sought to protect the forests of Michigan in the public interest, arguing that replacing labor intensive technology with energy and capital intensive technology would curtail small-scale logging and firewood use (CRUF, 1980b). By means of such arguments it was able to mobilize local interests, not the least of which was the threat to local firewood supplies. Plant promoters, on the other hand, touted the interest of the state in meeting future energy needs from indigenous sources. The local community would be called upon to serve the larger community. Nevertheless, they argued, local interests could be well served by the additional tax base and employment opportunities created by the demonstrational WFPP. A detailed evaluation of orientations in the controversy is set out in this chapter.

Two underlying features of cosmopolitan-local orientation in technical controversies are prominent in the Hersey case. Resistance to technical change implicit in siting disputes arises at least in part from orientation to local autonomy (in response to the powerlessness inherent in the pervasive influence of expertise), as well as from an orientation to cosmopolitan interests (a reaction to the abrogation of values epitomized by reductionism in science)(Nelkin, 1979c). Science and technology seem to be taking over, thereby threatening cherished values like ability to participate in democratic decision making in the community. Local orientation in siting disputes rests on the paramount concern that the local community may be called upon to bear the social costs of a

project that will benefit a much broader constituency. Both facets of this resistance to change are obvious in the Hersey controversy.

Two propositions are put to the test in this phase of the study. Each is presented and briefly discussed next.

> PROPOSITION V: In technical controversies project promoters ignore local interests and, based upon a perceived cosmopolitan mandate, seek to define decisions as technical and to impose these decisions on the local community.

Caldwell et al. (1976) provide a cogent discussion of the source of this tendency. They are well worth quoting at length here:

> . . . When acting with statutory or corporate authority, [public and corporate] officials characteristically assume a role of rectitude. Thus they tend to view the interposition of so-called public interest groups (e. g., on behalf of environmental protection) as obstructionist meddling. The acrimony characterizing many environmental disputes reflects moral indignation felt on both sides of the controversy. The environmentally concerned citizen sees the public or business official as sacrificing or betraying the interest of society at large for some special economic or political purpose that is substantively or morally wrong whatever its legality. The officials see the protesters as self-appointed troublemakers interfering with the orderly, lawful, and efficient processes of government and business. By what right, they ask, does this self-interested minority burden and delay the conduct of public business for which society, in its wisdom, made them and not the protesters responsible? (xiii-xiv)

Apparent in this statement is the strategy of citizen opposition groups. Motivated by cosmopolitan concerns, they mobilize local resources to defeat projects they regard as serving special interests. This strategy can be stated in the guise of a proposition:

PROPOSITION VI: In technical controversies local opposition groups advocating a cosmoplitan orientation utilize local interests to resist the plans of project promoters.

A brief foray into the literature rounds out this introduction. Some consideration is given general findings on cosmopolitan and local orientations in rural communities. Specific observations about the relative importance of cosmopolitan and local orientations in technical controversies are also brought into the review.

A number of the works cited in the Introduction allude to cosmopolitan and local orientations. Often this distinction is posed in terms of urban versus rural orientation (e. g., Caine, 1979; Tichenour et al., 1980). Much of what was said in the last chapter about urban and rural differences in values also applies to orientations. Orientations are the action strategies by which values are achieved. As a result, value differences will often turn up as differences in orientation. Some correspondence is to be expected between urban-rural differences in orientations as well as values. Salient orientation issues of lifestyle, local autonomy, economic development, and the like reflect basic values. Accordingly, as was true in the case of facts-values, there is no sharp cleavage between urban and rural communities in matters of orientation. Rather, there is, as Christenson (1981) and Caine (1979) imply, an urban-rural continuum in the range of social characteristics. Divergent orientations, like divergent values, increasingly coexist in sparsely populated rural areas that have recently experienced in-migration. Aldrich and Mack (1979a, 1979b, 1979c), Cluett et al. (1979), Cortese (1979), and Sokolow (1978,

1981) address the qualitative changes engendered by the turnaround in these terms. In contrast to this social flux, it is well worth remembering that traditional rural communities tend to be inflexible regarding change (Cluett et al., 1979).

While ignoring the turnaround Tichenour et al. (1980) and Caine (1979) look at urban and rural differences as they might relate to conflict in rural situations. Caine finds that the general rule which holds that urban communities are pluralistic and rural communities homogeneous ceases to be true pursuant to changes engendered by the turnaround. Tichenour et al. maintain the distinction for purposes of their analysis of the impact of the media in rural-based disputes. However, the cases they study, in particular protests against power-line siting, demonstrate the emerging pluralism in nonmetropolitan areas.

This dissertation is less concerned with examining the changing mix of values and orientations in a rural community than it is with finding out how they interact with expertise in technical controversies. A review of the literature on this topic reinforces the approach taken in this study. In general, technology is disruptive of older norms (Horowitz, 1964). Protest groups fight to preserve values lost in the course of technological progress (Nelkin, 1979a). One's response depends on his or her orientation. Long-time residents and rural in-migrants greatly esteem the physical and social amenities of the rural life-style. Both local and cosmopolitan orientations among Hersey WFPP opponents reflect this value. Part and parcel of this esteem are environmental values, a topic which often finds newcomers and oldtimers in

agreement (Aldrich and Mack, 1979a, 1979c). Local orientation to environmental problems is greatly influenced by belief about larger issues (cosmopolitan orientation). Mazur (1975), Aldrich and Mack (1979c), and Caine (1979) find that opposition leaders are impelled by concerns with larger national problems. In the Hersey case decentralization of technology (see Harris, 1978) and its sociopolitical concomitants was an issue used even by project promoters to make their case (see Sells, 1979).

The tendency for decisions affecting rural communities to be made by outside interests is gaining ground in local affairs (Cluett et al., 1979; Cortese, 1979; Nelkin, 1979a; Tichenour et al., 1980). Project promoters appear to embody such interests. Increasing dependence on outside interests and corresponding loss of local autonomy is, perhaps, the most significant factor in local orientation to siting disputes.

Promoters usually take a financial interest in a project, a fact reflected in their orientation. They proceed with a view of economic rationality presumed to benefit society as a whole (Molotch, 1970; Consumption, Location, and Occupational Patterns Resources Group Synthesis Panel, 1980). Their strongest argument in favor of a facility usually is the benefit of the project to the local economy (Nelkin, 1979b). Very often they acquire the support and assistance of local businessmen whose economic orientation is toward the large urban centers of capital and organizational control (Aldrich and Mack, 1979b). If pressed they may get into discussion of environmental tradeoffs versus economic benefits (Aldrich and Mack, 1979a). Yet, project promoters generally try to avoid the

direct approach, employing expertise instead to mask political choices. This use of expertise fits with the tendency of scientists and engineers to interpret and define problems as though they were scientific/technical, and then to treat those aspects as though they are the whole problem (Hoos, 1978). Suffice it to say here, expertise is the basic tool of project promoters. By this means they have sought to control decisions that are crucial for local communities.

The mix of orientations mirrors the increasing complexity of technical controversies. Complexity in technical debates is confusng to the public and foments additional controversy. The result, as Nelkin (1979a) points out, is that ". . . even in the various siting controversies no amount of data [can] resolve [the] differences. Each side [uses] technical information mainly to legitimate a position based on existing priorities." This study attempts to test this hypothesis by measuring the local and cosmopolitan orientations in the Hersey controversy.

Sources of data and information for the analysis of cosmopolitan/local orientations are indentical to those described in the foregoing chapter. The reader should refer to that section for details. The next order of business, then, is the method of analysis.

Content Analysis of Cosmopolitan/Local Orientations

The rationale for and a description of content analysis are provided in the corresponding section of Chapter 5. The type of

TABLE 20

COSMOPOLITAN/LOCAL ORIENTATIONS TYPOLOGY

1. COSMOPOLITAN, IN FAVOR.
2. COSMOPOLITAN, AGAINST.
3. LOCAL, IN FAVOR.
4. LOCAL, AGAINST.
5. NOT APPLICABLE OR UNDETERMINABLE.

TABLE 21

COSMOPOLITAN AND LOCAL ORIENTATION CHARACTERISTICS OF ARGUMENTS IN THE HERSEY WFPP SITE HEARING OF OCTOBER 24, 1978

	Cosmopolitan Arguments	Local Arguments	Total
Proponents	65%	35%	100% = 78
Experts	72%	28%	100% = 25
Nonexperts	62%	38%	100% = 53
Opponents	61%	39%	100% = 49
Experts	79%	21%	100% = 33
Nonexperts	25%	75%	100% = 16
Uncommitted	80%	20%	100% = 5
Experts	---	---	---
Nonexperts	80%	20%	100% = 5

content analysis is the same as that for the fact-value analysis. The basic units of the analysis are individual arguments and bimonthly time intervals. The Reed City hearing on the Hersey site, held October 24, 1978, and the 78 accounts that appeared in the Osceola County Herald (OCH) are again the data set.

The categories for the analysis are the four types of cosmopolitan/local orientations and a residual category set out in Table 20. Orientation refers to attitudes or beliefs that can be characterized as inwardly (local) or outwardly (cosmopolitan) directed relative to the community under study. In practice the distinction rests on the interests served, either those of the local community per se or social units outside the community. Orientation bears a relationship to values similar to that of means to ends. Values may motivate particular orientations but do not encompass them. Orientations represent action strategies for realizing values.

An example should serve to show how the typology is intepreted. The DNR promoted the WFPP because of an abiding interest in improving the productivity of Michigan's forests. The thinning of forests is a spin-off of the plant that the DNR actively sought. This is a cosmopolitan orientation to the WFPP. On the other hand, residents of the Hersey area were concerned about the effect of the chipping operation on the aesthetics of their community. This concern derived from their orientation to the local community. In each case orientations proceed from but are an extention of values. The nexus of each is in doing.

The two csomopolitan/local orientations propositions are

operationalized as follows.

Proposition V postulates that orientation arguments expressed by project proponents are generally cosmopolitan and score toward the low end of the fact-value scale. The proposition will be viewed as reinforced if the analysis shows these tendencies.

Proposition VI postulates that orientation arguments expressed by project opponents are generally local, and their arguments, in general score toward the high end of the fact-value scale. Findings in the expected direction will be taken as evidence in support of the proposition.

Cosmopolitan Orientation, Local Orientation, and Expertise

The analysis of the Hersey site hearing summarized in Table 21 provides baseline information on orientations in the conflict. Once again, caution should be exercised in generalizing to dynamic social processes from cross-sectional data. Analysis of the hearing reveals an emphasis on cosmopolitan orientation by proponents, a finding that supports Proposition V. This accords with the result for the overall controversy. By contrast, the general tendency for opponents to argue from a cosmopolitan orientation at the hearing does not square with what was observed in the main analysis. Little support for Proposition VI can be found in the hearing data. The fact-value scores for the hearing (Table 13) show the relationship anticipated, with proponents being more "fact" oriented and opponents more "value" oriented. However, these scores are far less compelling than those for the main analysis.

The insignificant difference between cosmopolitan and local orientation arguments by experts of both camps in the hearing is consistent what happened in the controversy as a whole. Nonexpert proponents couched their arguments much more frequently in cosmopolitan terms and made marginally greater use of locally oriented arguments in the hearing as compared with the controversy.

The relationships enumerated in Tables 22-24 and illustrated in Figures 6-8 summarize the results of the main analysis. These data offer support for Propositions V and VI. Proponents more often argue from a cosmopolitan orientation (Table 22) and opponents from a local orientation (Table 23). Experts are on the vanguard of the former tendency, whereas nonexperts tend to lead the way in the latter case. Comparison of Tables 22 and 23 also reveals a tendency for opponents to more readily employ cosmopolitan orientation arguments early in the controversy and to shift to locally oriented arguments later on. There is very little apparent difference between proponent and opponent nonexperts in terms of quantity of arguments from a cosmopolitan orientation.

The fact-value scores in Table 24 -- overall 2.12 for proponents and 2.64 for opponents -- complete the picture, showing the expected relationships. Opponents' scores tend to stay in the 2.5-3.0 range and to shift toward the higher score during the controversy. Proponents' scores shift dramatically toward the value end of the scale during the controversy, a trend partly due to their "narrow" interest in the facts at the beginning.

In addition to supporting Proposition VI, the relationships in Figure 6 seem to suggest that opponent nonexperts get busy with

TABLE 22

TEMPORAL DISTRIBUTION OF COSMOPOLITAN ORIENTATION ARGUMENTS

	Phase I		Phase II		Total
Proponents	157	80%	39	20%	100% = 96
Experts	119	93%	9	7%	100% = 128
Nonexperts	38	56%	30	44%	100% = 68
Opponents	62	47%	69	53%	100% = 131
Experts	45	49%	47	51%	100% = 92
Nonexperts	17	44%	22	56%	100% = 39
Total	219	67%	108	33%	100% = 327

TABLE 23

TEMPORAL DISTRIBUTION OF LOCAL ORIENTATION ARGUMENTS

	Phase I		Phase II		Total
Proponents	46	48%	50	52%	100% = 96
Experts	27	55%	22	45%	100% = 49
Nonexperts	19	40%	28	60%	100% = 47
Opponents	52	25%	159	75%	100% = 211
Experts	14	23%	46	77%	100% = 60
Nonexperts	38	25%	113	75%	100% = 151
Total	98	32%	209	68%	100% = 307

TABLE 24

FACT-VALUE SCORES FOR PROPONENTS AND OPPONENTS

	Phase I	Phase II	Total
Proponents	1.96	2.44	2.12
Opponents	2.30	2.78	2.61
Mean Scores	2.08	2.67	2.38

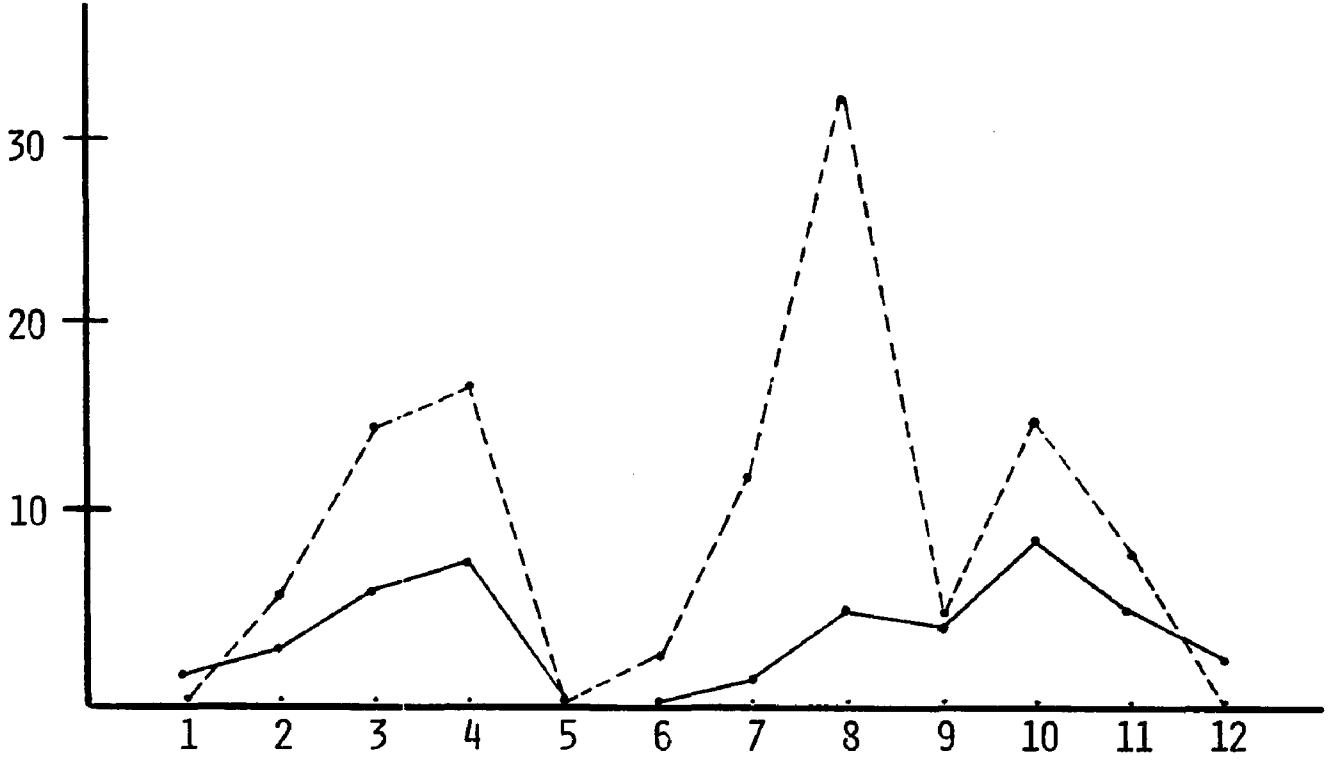


Fig. 6. Quantity of non-expert arguments from a local orientation

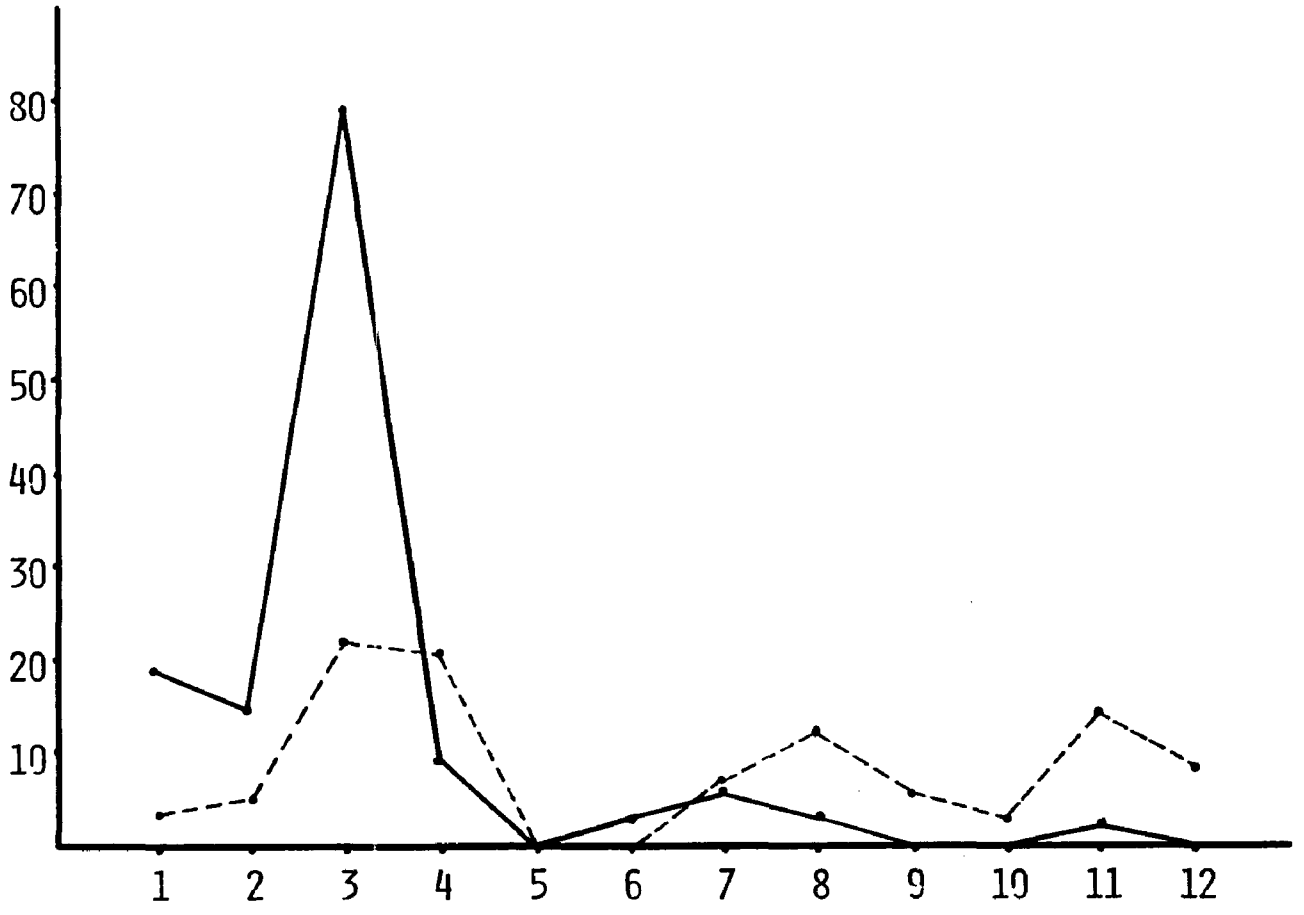


Fig. 7. Quantity of expert arguments from a cosmopolitan orientation

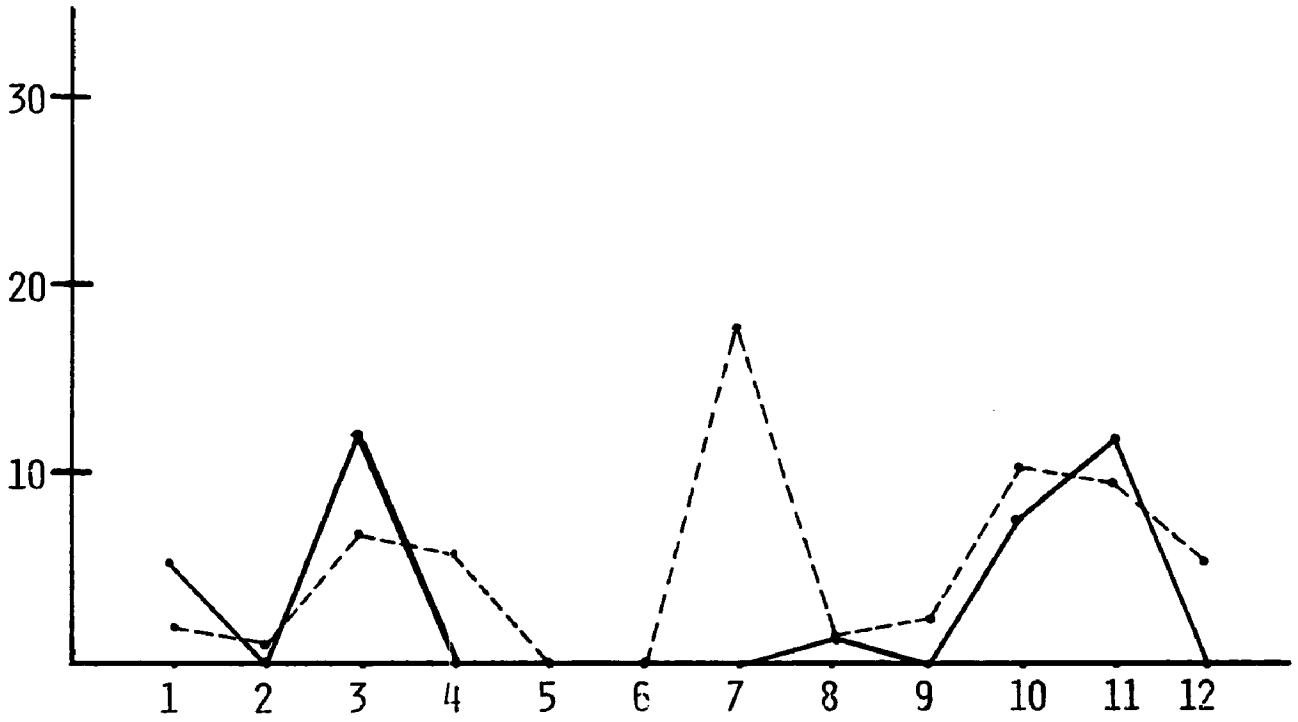


Fig. 8. Quantity of expert arguments from a local orientation

local concerns and issues as the controversy rolls to a conclusion. Figure 7 is less supportive of Proposition V because of the precipitous fall in cosmopolitan orientation by proponent experts after the initial round. Opponent experts appear to be relatively more willing to raise cosmopolitan-oriented arguments in the later stages of the controversy, even though they turn primarily to local orientation at this time (see Figure 8). Although local orientation clearly becomes more significant for opponent experts late in the controversy, its adoption is especially pronounced for opponent nonexperts (see Figure 6).

CHAPTER 7

THE ISSUES IN THE CONTROVERSY

Introduction

The development of issues in the Hersey controversy provides additional evidence relevant to the propositions evaluated in the last two chapters. For this reason the content of arguments was further analyzed to determine the categories of issues and their dynamics in the dispute. The results are summarized in this chapter and lead beyond the hypotheses to other important questions. Links between the principles already supported and the changing matrix of issues are emphasized in this treatment.

The issues of scale and centralization in energy development and siting disputes are relevant to this analysis. To recipitulate briefly, environmental quality lies at the heart of the so-called two paths debate. The choice in the Hersey case is between small-scale development of the resource for residential wood burning (in addition to continued small-scale logging) versus whole-tree harvesting on a large-scale to supply fuel for the WFPP. In siting disputes a community is often called upon to bear the costs of a project that will benefit other areas. Disputes over power-plant siting are the epitome of this kind of opposition. At Hersey the

community refused to sacrifice local autonomy to the state's need for indigenously produced energy. Issues of environmental quality and political autonomy are at the forefront of this case.

Content Analysis of the Issues

The analysis of issues relied on the same data sources and basic units as the foregoing analyses. The categoriesissues were not prejudged, save for the broad categories -- economic, environmental, and social/political. Rather, as arguments were coded, a set of specific issues was generated. In this fashion the issue categories "fell out" of the analysis. Iteration insured that an adequate and complete set of categories was generated. These are presented with codes in Table 25.

The Hersey site hearing is once again the harbinger of things to come. Table 26 shows that the scale of development, solid waste burning, impacts on the local environment, and ecological impact on the forests were already concerns at the outset. Of these, the waste issue occupied a similar prominence in the debate as a whole. The energy problem in general, economic benefits/detriments to the area, and adequacy of wood supply for the WFPP were of marginally lower concern in the hearing. Although prominent in both the hearing and the OCH debate, most of these issues would decline in relative importance. However, adequacy of wood supply and benefits/detriments to the area economy, along with the overriding issue of waste burning, remained high priorities throughout the controversy.

TABLE 25

ISSUES IN THE HERSEY CONTROVERSY

Code	Issue
A	local autonomy, protection of way of life
AD	adequacy of wood supply for the WFPP
B	economic benefits or detriments to the area
C	abuses of corporate power
EC	ecological impact, especially on forest soils and wildlife
EF	energetic efficiency of the WFPP
EG	energy problem in general
EQ	equity in allocation of wood for area loggers and home woodburning
F	decimation or enhancement of the forest resource
LE	impacts on the local environment
O	waste ordinance adopted by Hersey Township in October 1979
R	wood as a renewable resource
S	scale and centralization in energy resource development
T	prospective use for and health/environmental effects of burning toxic wastes
W	prospective use for and health/environmental effects of burning solid waste
WR	utilization of unmerchantable wood, a resource argued to be otherwise wasted

TABLE 26

ISSUE ANALYSIS OF THE HERSEY SITE HEARING OF OCTOBER 24, 1978

Code	Proponents	Opponents	Total	Rank
W	14	6	20	1
S	9	11	20	1
EC	8	6	14	2
LE	8	6	14	2
B	11	0	11	3
EG	6	5	11	3
AD	5	5	10	4
A	3	5	8	5
EQ	4	4	8	5
F	4	4	8	5
WR	7	0	7	6
C	0	5	5	7
EF	1	1	2	8
R	2	0	2	8
O	0	0	0	-
T	0	0	0	-
Totals	82	57	139	-

The salient issues and a strong indication of their dynamics is shown in Table 27. The conflict at first focused on area economic impact, effects of whole-tree harvesting on forests, and adequacy of wood supply for the plant. As the controversy developed, the emphasis shifted to the burning of solid waste and to local autonomy. Area economic benefits/detriments and solid waste burning were persistent concerns in the controversy, the latter increasing in relative importance to become the single most important issue. The trend is especially pronounced if the late-breaking issues of toxic waste and the waste ordinance passed by Hersey township are lumped in. With respect to the dramatic rise in the issue of local autonomy, Marco Menezes, one of the opposition experts, aptly sums up the basis for the conflict:

> It's the to-hell-with Hersey attitude that bothers me. The plant, if constructed, will affect people's lifestyles. The people here know that the area is depressed and jobs are hard to find. But people choose to live here anyway. The pace is slow. The air and water are clean. We're not willing to take a risk with this woodburning plant. I'm of the mind that individuals must act in order to protect their rights (Miller, 1979).

In general these data give a concrete indication of the generalizations tested in connection with facts/values and orientations. The rise of value issues and the growing emphasis on local orientation issues are apparent. Issues were placed into three major categories for purposes of this analysis. The categories -- economic, environmental, and social/political -- are defined in Table 28.

The ratios of economic, environmental, and social/political issues enumerated in Table 28 are very close to 3:2:1 for the

TABLE 27

RANKINGS OF ISSUES IN THE CONTROVERSY

Issue	Total	Rank	Phase I	Rank	Phase II	Rank
B	96	1	64	1	32	3
W	80	2	21	5	59	1
AD	64	3	35	3	29	4
F	62	4	48	2	14	8
A	54	5	16	6	38	2
EC	42	6	26	4	16	6
EQ	31	7	13	9	18	5
LE	29	8	16	6	13	9
O	29	8	--	-	29	4
EG	21	9	14	8	7	12
EF	20	10	7	10	13	9
WR	20	10	14	8	6	12
R	18	11	15	7	3	13
T	15	12	0	-	15	7
S	12	13	3	11	9	10
C	11	14	3	11	8	11
Totals	604	--	300	--	304	--

TABLE 28

TEMPORAL DISTRIBUTION OF ECONOMIC, ENVIRONMENTAL, AND SOCIAL/POLITICAL ISSUES

	Proponents			Opponents			Totals		
	Phase I	Phase II	Total	Phase I	Phase II	Total	Phase I	Phase II	Total
Economic	78	22	100	48	52	100	64	36	100
Environmental	36	64	100	30	70	100	33	67	100
Social/Political	69	31	100	22	78	100	33	67	100
Total	64	36	100	35	65	100	48	52	100

Explanation: The distributions for these categories are expressed in percentages. This table is based on issue categories which are defined as follows (refer to the issue codes in Table 25):

Economic = AD + B + EF + EG + F + R + S + WR

Environmental = EC + EF + LE + O + T + W

Social/Political = A + C + EQ + S

Note that N is greater here than for issue arguments coded in Table 25 because some issues are double counted for purposes of this classification.

controversy as a whole. Overall the opponents carried more of the debate in terms of the major issues (327 to 277). Except on economic issues -- where proponents have the edge by nearly 2 to 1 -- the debate was fairly even during Phase I. Opponents grabbed hold of social/political issues in Phase II, while proponents modestly shifted toward environmental issues.

Not surprisingly opponents were less prepared to mount a response during Phase I. They were out-debated 180 to 120 or on a ratio of three to two. However, the opposition caught fire during Phase II when the figures turned around to 207 to 96, an edge of more than 2 to 1. Opponents emphasized the economic issues in Phase I. Environmental and social/political issues became almost twice as prominent in Phase II. Economic issues dropped off by nearly half compared with Phase I. Proponents and opponents were even in terms of arguments on environmental issues overall, but opponents moved sharply up front on these issues during Phase II. The proponents attempted to make their case on economic arguments at the outset but, oddly enough, their economic arguments fell to a trickle in Phase II when the opposition seemed to steal their thunder with social/political issues. This result is consistent with the general observation of what happens in technical controversies.

The description of issues completes the analysis and serves to further illuminate the controversy in terms of the foregoing propositions. The Hersey case typically emphasizes environmental quality and local autonomy. This description shows a pattern generally consistent with the postulated shifts in facts/values and orientations.

CHAPTER 8

SUMMARY AND CONCLUSIONS

Summary

This research study has described a case in most respects typical of controversies involving siting of power production facilities. Yet in some aspects it is unique. The technology and resource are innovative but the public response to the proposed facility was not exceptional. The use and impact of expertise followed the pattern established by previous research, with some nuances attributable to the turnaround in migration to rural areas. A brief summary of the case follows.

Pursuant to an appeal for a demonstrational WFPP by Michigan Governor William Milliken at his national conference on wood energy development (Hiser, 1978), Consumers Power Company, Morbark Industries, and Wolverine Electric Cooperative formed a partnership to pursue the idea. Daverman and Associates, consulting engineers, was hired to do a feasibility study. Citizens of Hersey expressed concern at this meeting and subsequently began to explore alternative viewpoints on the project. When Hersey was announced as the site concurrently with the release of the Daverman and Associates feasibility study in February 1979, the conflict was well

established. The Committee for the Rational Use of Our Forests (CRUF) had formed late in December 1978 out of a community study group. CRUF was mainly composed of relative newcomers to the area. Nevertheless, it soon cultivated a rising tide of community opposition to the WFPP.

Debate soon became intense on the pages of the Osceola County Herald. Feeding this debate was CRUF's position paper (1979a), the group's rebuttal to the Daverman and Associates feasibility study. Promoters were behooved to respond at length to the challenge. CRUF gained credibility in the exchange, at least among members of the Hersey community. The controversy raised the level of public concern about the potential adverse impacts of the WFPP.

Initially, potential harm to the forests and the area surrounding the site for the WFPP occupied media accounts. During the first year of the conflict CRUF sought to stop the plant by lobbying the Michigan Natural Resources Commission to veto the plan to allocate wood from state forest land requested by the promoters. When this approach failed, CRUF honed in on the issue of burning RDF in the WFPP. An environmental lawyer was retained to draft a waste ordinance for the township prior to the decision on wood allocation by the Michigan DNR. A petition containing 330 signatures was then presented to the Hersey Township Board calling for adoption of an ordinance to prohibit the burning of solid waste in the plant. The stated plan of the promoters had been for a 90-day test burn of solid waste, but CRUF and the petitioners feared this would be just the beginning. The board unanimously adopted the ordinance in November 1979.

At first the utilities countered by trying to get the Township Board to throw out the ordinance. When this failed, they sought to have it amended. Lawyers for all parties to the dispute met in December 1979 to consider amendments to the ordinance. An agreement was reached and the Board amended the ordinance in January 1980, providing for a procedure whereby the utilities could apply for a permit to burn RDF experimentally.

The conflict subsided until March 1980 when the utilities applied for a permit five years before the test burn would take place. The concern increased among opponents that solid or even toxic waste might become regular fare for the WFPP. Rather than risk a decision in the emotion-charged atmosphere that ensued, the Hersey Township Board unanimously voted for a referendum on the question of granting the utilities a permit.

For the next several months the Osceola County Herald served as a forum for numerous recriminations by both sides in the controversy. The utilities, citing their need for "an orderly planning process aimed at minimizing delays and uncertainties," withdrew consideration of the Hersey site in May 1980. They had apparently weighed the situation and found little reason to hope that the community would approve the permit or eventually welcome the WFPP.

A number of communities tried to leap into the breech after the withdrawal was announced. Opposition began to form in many of these communities, in some cases with the assistance of CRUF. That the utilities considered the unsolicited offers from a dozen or so sites may have been a face saving measure after the Hersey experience.

The idea was placed on hold by Consumers Power in August 1980 after Wolverine Electric Cooperative withdrew from the venture on grounds of financing problems.

The Impact of Technical Expertise in the Hersey Controversy

This analysis of the Hersey controversy reinforces previous research findings on the role and impact of technical expertise in siting disputes. By casting a finer net with the help of a documentary analysis, it adds to this knowledge, graphically showing how facts/values and cosmopolitan/local orientations interact with expertise. Values were found to be the nexus of conflict even though the debate appeared to center on the "facts." When experts disagree they reduce the impact of factual information and, regardless of their competence, affect the outcome by reinforcing existing values. Conflict is therefore stimulated by disagreements among experts. As a result, a transition in basic emphasis occurs from technical issues to value issues . This study also shows that the opposition, although inspired by cosmopolitan concerns, effectively used local orientation to the controversy in achieving its goals. Proponents proceeded from a cosmopolitan orientation, a tendency that tapered off along with the volume of their argumentation as the conflict developed. Finally, the analysis points yet again to widespread public concern about environmental hazards in general and the disposal of wastes in particular. A strong issue throughout the controversy, waste proved to be critical to the outcome.

The experts for the proponents had a high profile from the outset of the controversy. They were well-trained technicians and scientists on the staff of the promoters or hired as consultants. In either case they were well paid and expected to do a job. The experts for the opponents were unpaid volunteers mostly from the local community. They possessed modest levels of technical training and experience by comparison with proponent experts. However, the expertise of the opposition group proved adequate in challenging the legitimacy of the experts employed by the WFPP promoters. As the foregoing general conclusion points out, disagreement among experts overs technical matters directs public attention to social and political values. In that domain technical expertise is not a prerequisite. The outcome of the Hersey controversy aptly demonstrates that, although financial and political resources can be used to hire and legitimate expertise, this is no guarantee that local communities will stand mute when their values are threatened.

Policy Implications

Policy implications in terms of three topics -- scale and centralization in energy development, the siting of large-scale energy facilities, and the political use of technical expertise -- merit discussion based on these results. The situation is ostensibly more complex today than when Nelkin (1971) identified the policy gap between the need for energy and for protection of the environment. Although the policy gap remains, citizen activity has continued to refine the terms of the debate. Scale and

centralization have become the nexus of debate about the direction energy policy should encourage. Energy development, in general, and siting of large-scale energy facilities, in particular, should be of increasing interest to policy makers as fossil energy resources are depleted. The role of experts has become more egalitarian; counterexpertise will continue to find a niche in technical controversies.

The results of this study are germane to the policy debate about scale and centralization in energy development. It is once again evident that public concern about environmental quality and especially the hazards of power plants continues unabated. This concern extends even to large-scale renewable energy resource development in which the environmental risks are presumed to be of a lower order of magnitude. In this connection it is important to understand that small-scale, decentralized technologies involve consumer choice in which the individual consumer assumes his own risks. The social choice for large-scale energy development is qualitatively different. This choice requires opponents to acquiesce to risks they do not wish to assume (see Holdren et al., 1980). In this case the public did not object to the small-scale uses to which the resource had been put. Indeed, the threat to these uses was a factor motivating opposition to the WFPP. By implication, energy policy that recognizes the growing interest in small-scale energy technologies would seem to be the path of least resistance.

The history of this case suggests that coordination of regulatory activities on the local, state, and, by implication,

federal levels is still needed in connection with energy facility siting. State agencies proceeded on the myopic assumption that the local community could not have the final say. Resources and time were wasted in the process. Part and parcel of cooperation on all levels of government is a clear understanding of energy policy in terms of future energy needs, environmental quality, and scale and centralization in energy resource development.

Renewable resources are by nature more likely to be found in nonmetropolitan locations. This study shows that it would be a mistake to take public support for granted in such areas. Nonmetropolitan siting of large-scale energy facilities is less likely to succeed today because of increased pluralism in rural areas. The newcomers in the population migration turnaround are bringing with them values, interests, and abilities to oppose controversial developments. Policy as well as practice by government agencies should pay heed to this change.

Finally, the use of expertise as a tool to both support and oppose controversial projects is the current modus operandi. Opposition groups have learned to cultivate their own experts in order to effectively match those of project promoters. At the same time choices in technical controversies involve competing values as well as technical alternatives. The public, as Nichols (1979) lucidly argues, is usually less interested in the facts, especially when they conflict, than in the choice between different political and social values. Given the role of experts and the complexities of the energy problem, the gap between public acceptance of small-scale and large-scale energy technologies may not be narrowed by

continued resort to expertise. Whatever policy ultimately guides future energy development, the practice of trying to depoliticize issues by hiring experts will undoubtedly be re-evaluated as citizen opposition groups continue to stymie large-scale projects. Better methods of resolving "technical" disputes are required and will likely take the form of increased public participation in decision making.

The question for the parties to controversial projects to ponder is the natural sociological process versus how to get things done. The natural process need not be repeated without intervention. It is within the power of the social units involved to pre-empt conflict and restore expertise to the consultative role it idealizes.

Suggestions for Further Research

The use of content analysis to study public controversies appears to be a fruitful technique. Refinement of the technique for this purpose calls for additional applications. At the same time the extent to which these results might be generalized awaits further applications to energy facility siting controversies.

In this connection, study of an existing parallel case is desirable. The 50-MW WFPP proposed for Burlington, Vermont offers a unique case ripe for comparative study. In contrast with Hersey, Burlington initially embraced the idea. It overwhelmingly passed a bond issue to fund the project. However, opposition quickly developed there, leading to the decision in the Fall of 1979 to buy

power from Ontario Hydro instead of building the WFPP. Because content analysis is an unobtrusive measure applicable to past cases, it would be feasible to analyze newspaper accounts of this controversy as well. This and future cases of renewable energy development controversies might benefit from the critical use of the techniques and propositions elaborated in this dissertation.

Survey research on future cases is also recommended. A diversity of research strategies should help refine understanding of experts and social change.

The social movement described by such phrases as "voluntary simplicity" and "back-to-the-land" deserves further attention from social scientists. Rural return migrants with a cosmopolitan outlook seem to be effectively involving themselves in local politics. Field and survey studies of the movement, particularly in connection with technical controversies, could enrich studies similar to the one just reported.

NOTES

1. Nelkin (1977) summarizes the roots and scope of the environmental movement in terms of the impact of technology on society.

2. Frankena (1980) suggests that a more holistic approach is emerging in the understanding of energy, but that this approach remains a small component of work in the social sciences.

3. See also Lovins (1978). A further measure of the importance of the debate is the outpouring of research and writing on its various facets. See, for example, Messing et al. (1976) and the bibliography by Ohi et al. (1980).

4. U. S. Select Committee on Small Business and the Committee on Interior and Insular Affairs (1976). Appendicies in a separate volume under the same title total 1553 pages.

5. The other major analysis in this study considers cosmopolitan and local orientations in the controversy and is similarly introduced in the ensuing section on siting disputes and treated at length in Chapter 6.

6. See Mazur (1975) for a discussion of the connection between local disputes and the rise and fall of interest in larger values of broad national significance. Particularly relevant to this case study is the anomaly he finds between rise of the environmental movement and opposition to nuclear power plants but not to fossil fuel power plants. Mazur cites evidence that fossil fuel plants pollute more. He suggests that novelty is the factor causing greater public concern about nuclear power plants. It may be that novelty was a factor in the Hersey controversy. Moreover, aside from the novelty of the technology greater resistance to technical innovations or change in general is often characteristic of nonmetropolitan communities.

7. An extensive review of the siting literature is beyond the scope of this study. Cluett et al. (1979) provide a thorough review on community response to energy facility siting in all phases of the development process. An annotated bibliography is appended to the review, reproduced with minor abridgement in Cluett et al. (1980).

8. See note 6. The Council on Environmental Quality (1980) summarizes survey evidence on continued aversion to the siting of power plants near the respondent's home.

9. Mazur (1975) documents the ups and downs of of opposition to nuclear power plants. Nelkin's ground-breaking case study of the proposal to build a nuclear power plant on Lake Cayuga at Ithaca, New York lists and summarizes eight nuclear power plant siting disputes that occurred between 1958 and 1968, the first being Bodega Head, California (see Hudgepeth, 1965; Caldwell et

al., 1976).

10. Molotch's (1970) case study of an environmental accident documents the problem of one-sided expertise. He found that most of the experts were beholden to the oil companies., a situation that led to questioning of the credibility of these experts. Rozak, quoted in Marshall (1979, an article on adverse public opinion about toward science and technology), points out that people have learned expertise can be bought and, as a result, the experts used to legitimate government plans are losing public sympathy.

11. Caldwell et al. (1979) provides an especially cogent discussion. He points out that the decision-making process must be opened to the public simply because government agencies and energy conglomerates do not have all the experts. Much of the interest in public participation in technical decisions is related to energy technology development (e. g., Caldwell et al., 1976; Hendricks, 1978; Ravetz, 1978).

12. This discussion relies heavily on Ravetz (1978).

13. All references for citations of the OCH can be found in Appendix I I.

14. See Sullivan and Mullin (1980) for a bibliography of the literature on this subject.

15. PBB is the acronym for polybrominated biphenyl, a complex organic chemical used as a fire retardant. It was first produced in the 1970's (Egginton, 1980).

16. See Coyer and Schwerin (1981) for a political case study of dissatisfaction among farmers and the response by regulatory agencies.

17. PBB: An American Tragedy (Chen, 1979) and The Poisoning of Michigan (Egginton, 1980).

18. Tichenour et al. (1980) propose "phases of conflict" that are nearly congruent with the Mazur scheme, but use different terminology and focus more on the role of communication. The stages identified are (1) initiation, (2) conflict definition, (3) public phase, (4) one or more legitimation phases, and (5) other phases, depending upon the nature, extent, and organized basis for the conflict. The public phase requires recognition of the issue by different segments of the community and generally involves secondary communication, e. g. via the newspaper. By this criterion the Hersey controversy reached the public phase very quickly. The conflict definition phase was almost instantaneous, a function perhaps of the barrage of public hearings in September/October 1978.

19. The reader is urged to compare the chronology in Table 7 with Tables 8 and 9, and to refer to it in digesting this section.

20. The flavor of this debate can be gathered from the captions for the letters (see Appendix I).

21. Hearings were held at Whitehall on October 10, 1978; Mesick (re: the Harlan site) on October 17, 1978; and Reed City (re: the Hersey site) on October 24, 1978.

22. Table 11 reproduces the "general conclusions . . regarding the attitudes prevailing at all three [prime site] meetings" from the Daverman and Associates feasibility study.

APPENDIX I

Osceola County Herald Accounts of the Hersey WFPP Controversy

Listed in chronological order are the 78 accounts related to the Hersey controversy from the Osceola County Herald, September 1978 to September 1980. They are listed by date, title, type of account (N = news item, L = letter to the editor, and C = column), and page number(s).

(1) 9-28-78 "Hersey Site Chosen for Chipping Plant" (N): 1.

(2) 10-19-78 "New Plant Could Provide Jobs" (N): 3.

(3) 10-26-78 "Opinions Split on Plant Near Hersey" (N): 1,3.

(4) 11-30-78 "Wood Chipping: The Future's Energy Source" (N): 3.

(5) 12-14-78 "Hersey Residents Plan Meeting" (N): 1.

(6) 12-21-78 "Hersey Residents Not Sold on Plant" (N): 1.

(7) 1-4-79 "Opposition Mounting to Wood-Energy Plant" (N): 1,2.

(8) 1-18-79 "Hersey Site Likely Choice for Pilot Plant" (N): 1.

(9) 1-25-79 "Hot Time in Hersey" (C): 4.

(10) 1-25-79 "Young Explains Success of Vermont Plant" (N): 7.

(11) 1-25-79 "Dense Forests Tend to 'Over Crowd' Growth Conditions" (N): 7.

(12) 1-31-79 "Wood Chip Executive Speaks Out: Hersey Still Probable Site" (N): 3,5.

(13) 1-31-79 "Wood chip Plant Meeting Set February 8" (N): 3.

(14) 2-8-79 "Hersey Site Selected for Wood Plant" (N): 1,3.

(15) 2-8-79 "Wood Chip Energy Plant: Area Wood Pulp Cutters, Foresters Have Doubts" (N): 8B.

(16) 2-15-79 "200 Attend Hersey Wood Chip Plant Meeting" (N): 1.

(17) 2-15-79 "Hersey Woodchip Plant Monster" (C): 4.

(18) 2-28-79 "How and Why: Morbark Ventures Replies to CRUF's 12 Questions Concerning Wood Chip Plant" (N): 1,5,8.

(19) 2-28-79 "Wood Chip Plant -- Enter the Big Boys" (L): 4.

(20) 3-15-79 "On the Wood Chip Plant" (C): 4.

(21) 3-22-79 "News from the Committee for Rational Use of Our Forests" (N): 9.

(22) 4-5-79 "Wood Fuel Could Solve Energy Problems: Says Oregon Official" (N): 3.

(23) 4-5-79 "Once Upon a Time" (C): 4.

(24) 4-12-79 "The Wood Chip Controversy: Pro: Money's A Key . . . Con: Use is Inefficient" (N): 3,8B.

(25) 8-23-79 "Commitment for Waste Wood Sought" (N): 1.

(26) 9-6-79 "Decision of Waste Wood Commitment Expected" (N): 1.

(27) 9-13-79 "CRUF Continues Battle Against Proposed Plant" (L): 2.

(28) 9-13-79 "DNR Delays Wood Decision" (N): 3.

(29) 10-11-79 "Auctions May Fuel Hersey Plant" (N): 3.

(30) 10-18-79 "Wood Chip Plant Fuel Supply Approved for 10 Years" (N): 1.

(31) 10-18-79 "What's Really Being Planned for the Hersey Area?" (C): 4.

(32) 10-25-79 "Wood Chip Plant Closing December 1" (N): 1.

(33) 10-25-79 "CRUF Reaffirms Stand Opposing Hersey Wood Chip Plant" (N): 1.

(34) 11-1-79 "There's More Than One Way to Fight Back" (C): 4.

(35) 11-8-79 "Wood Chip Plant Proponent Retaliates" (L): 4.

(36) 11-8-79 "Commissioners Urged to Reconsider" (C): 4.

(37) 11-15-79 "Vermont Wood Chip Plant Shelved" (N): 1.

(38) 11-15-79 "Contradictions Arise About Proposed Wood Chip Plant" (C): 2.

(39) 11-29-79 "Scrambling to the Need" (L): 4.

(40) 12-13-79 "County Seeks Assurance from Utility Firms" (N): 1.

(41) 12-13-79 "Willson Appointed to Post at Hersey Plant" (N): 3.

(42) 12-20-79 "Hersey Township Approves Proposed Plant" (N): 1.

(43) 12-20-79 "Controversy Continues: Solid Waste Ordinance Under Fire" (N): 1.

(44) 12-27-79 "Amendments to be Presented at January Township Meeting" (N): 1.

(45) 12-27-79 "Board Commended" (C): 4.

(46) 1-3-80 [Year's top stories in Osceola County; Hersey WFPP controversy ranked 3rd] (N): 1.

(47) 1-3-80 "Ordinance Sparks Reaction" (L): 4.

(48) 1-10-80 "Citizens Call Meeting" (N): 1.

(49) 1-10-80 "Utility Company Plans Outlined by Manager" (L): 4.

(50) 1-24-80 "Hersey Township Amends Ordinance; Tues., Jan. 15 Meeting" (N): 1.

(51) 1-31-80 "Wood Harvesting Becoming a Big Business" (N): 1.

(52) 2-7-80 "An Alternative Look" (N): 1.

(53) 3-13-80 "Controversy Resurfaces: Hersey Township" (N): 3.

(54) 4-3-80 "Hearing on Proposed Hersey Plant on April 10" (N): 1,6B.

(55) 4-3-80 "Is Something Rotten in Hersey" (C): 2.

(56) 4-3-80 "Ostling Discusses Wood Plant at 'Town Meeting' in Evart" (N): 3,7B.

(57) 4-17-80 "RDF Hot Issue in Hersey" (N): 1,4B.

(58) 4-17-80 "Don't Become State's Incinerator" (L): 4.

(59) 4-24-80 "Utilities to Re-evaluate Site: Wood Plant Still Hot Issue" (N): 1.

(60) 4-24-80 "Your Choice: Fact or Fiction" (L): 4.

(61) 5-1-80 "Consumers Power Asks, Answers Questions" (N): 1.

(62) 5-1-80 "CRUF and Residents Did What They Set Out to Do" (L): 4.

(63) 5-1-80 "Somewhat Distorted Reasoning" (L): 4.

(64) 5-8-80 "Fight Facts Were Presented" (L): 2.

(65) 5-22-80 "Hersey Nixed as Wood Plant Site" (N): 1.

(66) 5-29-80 "More CRUF Fiction" (L): 4.

(67) 5-29-80 "No Shred of Democracy Left" (L): 4.

(68) 6-5-80 "Cause of Accuracy Not Well Served" (L): 2.

(69) 6-5-80 "Addresses Point" (L): 2.

(70) 6-5-80 "Konchar Trying to Obscure What Took Place" (L): 2.

(71) 6-5-80 "CRUF Is Not Short on Facts" (L): 2.

(72) 6-12-80 "Here We Go Again" (L): 4.

(73) 6-12-80 "Facts Support Wood Plant Construction" (L): 4.

(74) 6-19-80 "Local Towns Offer Sites for Plant" (N): 1.

(75) 6-19-80 "Farwell to Host Wood Plant Meeting" (N): 1.

(76) 7-31-80 "The Demise of the Hersey Woodburner -- Why and How?" (C): 5B.

(77) 8-14-80 "Gas Line Posed Question at Proposed Woodburning Plant" (C): 6B.

(78) 9-18-80 "CPC to Delay Wood Plant Study: Mitchell Concerned Over Decision" (N): 1.

APPENDIX II

The following is an example of the way in which the fact/value typology was interpreted in the analysis. The account selected is a column that appeared in the OCH on 11-1-79 under the title "There's More than One Way to Fight Back." Numbers between slash marks indicate the end of an argument. The assigned fact-value scores are listed at the end of the selection.

"If some individual was to cut down your trees, chip them, haul the chips into your back yard, mix them with trash which was also hauled into your back yard, then burn the whole mess for his very own profit, and then make you pay for the whole operation, what would you do?

You would (I'll bet) balk like the proverbial "Missouri Mule." You would scratch and kick and bite and beller and stop the deal even if you had to use a shot gun.

But since it is a big corporation with plenty of money, and probably with some bureaucrats and politicians on their "subscription" list, and all of them soft soaping you with disguised half truths and half promises, you dear citizens are behaving like a trained puppy dog. You sit up, speak, roll over, or play dead on command. /1/

Many people believe the promise of 81 new jobs for the area.

If the power companies were sincere in that promise they would declare publicly that out of these 81 jobs at least 40 or 20 or maybe only 10 would be positively earmarked for the local people. They would give us a promise that "x number" of jobs would be filled by YOUR kids or grand kids.

But they will make no such promise. Three or four months ago Consumers, Morbark and Wolverine representatives made a presentation to the Osceola County Commissioners on the proposed plant. During the recess these men were asked about the number of jobs scheduled to be filled by local people. Their answers were evasive, with references to labor skills, technical requirements and special training. And when asked if even one, "MINE YOU, IF EVEN ONE LOUSY LITTLE JOB," could be guaranteed to some local boy or girl, each one of these three men suddenly remembered, that they had to catch some particular commissioner, and disappeared without answering the question.

They say that of these 81 jobs, 31 will be in-plant jobs. It is reasonable to expect that at least 20 of these jobs should be filled, not only available to, but "actually filled" by local young men and women. The short term expense of training these people would repay the plant owners a hundred-fold in local good will and agreeable acceptance. /2/

As a matter of fact instead of a job gain, there may be an eventual job loss in the county because of the use of improved heavy machinery. It was recently announced that because Morbark of Winn has outbid Buskirk Enterprises of Paris for the Menasha (Gaylord) chip contract, the Buskirk plant will close Dec. 1. This means a

probable gain of two or three jobs for the city of Winn, but a loss of 10 jobs in Paris. /3/

The trash problem has been very well covered in previous articles in this paper, but up to the present time no responsible person has made a public statement about it. Now, Vernon J. Ehlers, chairperson of the Kent County Board of Commissioners (that's Grand Rapids) says that Consumers Power has "informally" agreed to burn some of this area's refuse (500 tons a day the feasibility study say; that's a lot of "some") in the woodburning power plant near Hersey. So now it's official. Pretty soon it will be an accomplished fact. /4/ And if we allow ourselves to be covered by the Grand Rapids and other big city trash we will certainly deserve it. /5/

On top of all of this they are going to add insult to injury by making you pay for the whole she-bang.

Yes sir! They are going to give you a rooking and make you pay for it too, while they, the investors, sit back and enjoy a tax-exempt income of maybe 10 or 12 or maybe even 18 percent on their investment. While you will not gain one penny, tax-wise. /6/ In fact, as Mr. Don Albosta stated in a newspaper interview, YOU will pay for at least one new road and one new railroad siding for the plant.

But wait a dog-gone minute. Nobody has mentioned a new bridge for the new railroad siding. They have already rebuilt the highway bridges across the Muskegon River in Hersey and Paris, with your (State) money, but they will also need a bridge for the railroad to cross the river. And as per Mr. Albosta, WE will have to build it for them. /7/

It may be that all of this criticism is unwarranted, but before we allow this plant to be forced on us, we should demand that our elected officials tell us the whole truth. So let's all (this includes Mecosta, Osceola and Lake counties) call or write our city, township, county, state and federal elected officials and demand three things.

One: that at least 30 percent of all jobs generated by the plant be allocated to local people. /8/

Two: that no rubbish from outside the local area (Mecosta, Osceola, Lake) be burned either on a trial or permanent basis. /9/

Three: that no public money be used to assist, in any way, the building of the plant, or for highway or railroad construction to the plant. That only conventional financing be allowed. No lease leverage financing. /10/

POST SCRIPT. Just received a phone call from a CRUF member, that he has just received some newspaper clippings from a friend in Vermont. These clippings show that the Vermont plant, similar to the one proposed in Hersey, is to be shut down, because of high operating cost. It is cheapter to buy their power from Canada." /11/

1. Type 3: factual, normative apparent.
2. Type 3: factual, normative apparent.
3. Type 2: factual, normative implied.
4. Type 2: factual, normative implied.
5. Type 4: strictly normative.
6. Type 3: factual, normative apparent.
7. Type 3: factual, normative apparent.
8. Type 3: factual, normative apparent.
9. Type 3: factual, normative apparent.
10. Type 3: factual, normative apparent.
11. Type 3: facutal, normative apparent

The columnist was a nonexpert in the controversy and was coded accordingly. Parenthetically, all of the arguments in this column were viewed as Type 4: Local, Against for purposes of the analysis of cosmopolitan/local orientations.

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