

Chapter 15

PRACTICING THE PRINCIPLE

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My mother, my grandmothers, and six aunts have all had mastectomies. Seven are dead. The two who survive have just completed rounds of chemotherapy and radiation. I've had my own problems: two biopsies for breast cancer and a small tumor between my ribs diagnosed as a 'borderline malignancy' . . . I cannot prove that [my family] developed cancer from nuclear fallout in Utah. But I can't prove they didn't.

—Terry Tempest Williams¹

People who inhabit and intimately know a single place day-after-day, understand things about the environmental risks they face that no outside or objective perspective can provide. Ordinary middle- and lower-class citizens (e.g., mothers, fishermen, secretaries, and industrial workers) are frequently the first to discern health problems and environmental ills. In the face of a death or loss of livelihood, practicing the Precautionary Principle—taking prudent action steps in the face of incomplete knowledge—is a survival strategy.

In a democracy, it normally goes without saying that decisions affecting

all citizens should be made democratically. Decisions that involve scientific and technical complexity stand as grand exceptions to this rule. They certainly affect all citizens profoundly: The world is continuously shaped by advances in telecommunications, computers, materials science, weaponry, biotechnology, home appliances, energy production, air and ground transportation, and environmental and medical understanding. Yet policies incorporating technical complexity are customarily framed by representatives of just three groups: business, the military, and universities. These are the groups invited to testify at congressional hearings, serve on government advisory panels, and prepare influential policy studies.²

Institutionalizing the Precautionary Principle requires open and informed processes that involve all potentially affected parties in making and implementing responsible decisions in the face of uncertainty. In this chapter we describe two models of how the Precautionary Principle is being exercised in practice by people participating in deciding their own fate. The first model, community-based research, provides a direct, bottom-up avenue for popular engagement in setting research agendas and conducting community-driven research projects. Community-based research empowers workers, grassroots, and other community groups to take action in the face of uncertainty and institutional resistance. The second model, the consensus conference, is an innovative method for introducing informed citizen concerns into high-level and complex policy-making processes—processes in which a high degree of uncertainty about future impacts is endemic.

COMMUNITY-BASED RESEARCH

I'd rake a bath and break out, like chicken pox. Take another and there's the pox again. I took a water sample to the health department; they said nothing's wrong with it. I thought they was good people, smarter than I was. But they wasn't.

—Victim of toxic waste poisoning in Woburn, Massachusetts³

The recently popularized story of toxic waste in the town of Woburn, Massachusetts, in the United States includes a dramatic example of community-based research: Two decades ago children in Woburn were contracting leukemia at alarming rates. Other childhood disorders such as urinary tract and respiratory disease were also unusually common, as were mothers' miscarriages. The families of the leukemia victims were the first to discern a geographical pattern in the proliferation of disease.

Anne Anderson, a Woburn housewife whose son, Jimmy, had leukemia,

began gathering information about other sick children on the basis of chance meetings with other victims' families and word of mouth. She theorized that the proliferation had something to do with the town water supply and asked state officials to test the water. She was rebuffed.

The affected families responded by initiating their own epidemiological research. Eventually they were able to establish the existence of a cluster of leukemia cases and then relate it to industrial carcinogens leaked into the water supply. Their civil suit against the corporations responsible for the contamination resulted in an \$8 million out-of-court settlement and provided the major impetus for federal Superfund legislation that provides resources to clean up the country's worst toxic waste sites.⁴

Two key factors led to this outcome: victims and their families organized and worked together; and victims and their families were able to enlist the help of several scientists at the Harvard School of Public Health, and at other research institutions in the area, who conducted crucial research both with and on behalf of the affected families. The Woburn case is an example of what community-based research can accomplish.

In contrast with the prevailing undemocratic model of research, where expert concerns or market incentives drive research agendas, community-based research is rooted in the community serves a community and encourages participation of community members at all levels. For instance, the Woburn case involved citizens collaborating with university experts committed to helping citizens conduct research. It was an interdisciplinary effort with researchers and experts collaborating across several disciplines and with community members.

Scientists working with Woburn also took into consideration the observations and knowledge of the Woburn residents. Community-based research recognizes the indigenous expertise of communities and aims not merely to advance understanding, but also to ensure that their knowledge contributes to making a concrete and constructive difference in the world. Community-based research seeks solutions—even before scientific certainty proves a causal relationship.

In the Woburn case, it may not have been necessary for residents of Woburn to initiate their own study had the state officials in Massachusetts practiced the Precautionary Principle. By practicing the Precautionary Principle, the burden of proof would not have been on the families of leukemia victims. Were it not for the assistance of sympathetic researchers, Woburn might still be in the company of communities across the country on the front lines of toxic waste litigation where the burden of proof continues to make victims of innocent residents.

Examples of Community-Based Research and Its Practical Results

Following are three mini-case studies of community-based research and how results are used widely in the United States to empower communities, prevent harm, and effect social change.⁵

Jacksonville Community Council, Inc., Jacksonville, Florida: Assessing the Fairness of Public Service Distribution

The Jacksonville Community Council, Inc. (JCCI), is a broad-based civic organization that performs research intended to improve the quality of life in northeast Florida. Study topics are selected by a committee of JCCI members—which includes all citizens who express an interest—after soliciting input from public officials, nonprofit organizations, human service agencies, labor leaders, minority community leaders, and the public at large. Members of the JCCI and the community study the selected topics, reach consensus on key findings, compile a list of recommended solutions, and then establish a task force to promote implementation.

In the early 1990s, some residents suspected that government services were not being provided equally across Jacksonville's several distinct neighborhoods. A 1994 JCCI study examined public services in Jacksonville—including streets and drainage, parks and recreation, and police and fire services—to determine their geographic distribution and to evaluate whether needs were being met throughout the city. On the basis of its research, the JCCI recommended better communication between city functionaries and the public, more citizen involvement in decisions about the distribution of public services, improved monitoring of public service distribution, and adherence to standards of distributional fairness. These recommendations resulted in developing an annually updated "Equity Index" that measures the fairness of public service distribution in the Jacksonville area. One early result is that the Sheriff's Office implemented a new system for more equitable police patrol services.

Neighborhood Planning for Community Revitalization, Minneapolis, Minnesota: Planning to Revitalize the South East Industrial Area

Neighborhood Planning for Community Revitalization (NPCR) is a consortium of colleges and universities in Minneapolis and St. Paul, Minnesota, that works with neighborhood organizations on pressing urban issues. Community organizations apply for assistance in conducting neighborhood research projects by working closely with NPCR's project director to develop a project proposal. After NPCR approves a proposal, the community organization uses the money awarded to hire a student researcher. NPCR works

closely with the organization and the student from the initiation of a research project to completion.

For example, residents and business owners in the South East Industrial Area (SEIA), just outside Minneapolis, were concerned that their area's viability was threatened by increasing pollution, overstrict zoning laws, crime, and the lack of sidewalks, bike paths, and park space. In addition, various groups affected by the SEIA had a contentious history and had not worked together for years. The SEIA community appealed to NPCR for assistance. Researchers, working jointly through NPCR and the SEIA community members, conducted a research project that established that an urban area can compete with the suburbs in quality of life and still retain industrial and heavy commercial business. As a result the city, county, and state agencies formed a steering committee to prepare a master development plan for the area. The original research project was funded by NPCR and involved 960 hours of time committed by graduate student researchers.

Childhood Cancer Research Institute, Worcester, Massachusetts: Preventing Radiation Contamination Risks in Native-American Communities

The Childhood Cancer Research Institute (CCRI) is a small nonprofit organization located at Clark University in Worcester, Massachusetts. The CCRI's mission is to prevent childhood cancer by investigating the causes of disease and educating the public on its findings. The CCRI specializes in epidemiological studies of radiation and other related causes of cancer and in promoting public participation in radiation and public health risk assessment. The CCRI staff have made particular efforts to develop long-term collaborative relationships with Native-American communities.

In 1993, the CCRI responded to the concerns of the Native-American Western Shoshone and Southern Paiute communities. In collaboration with several tribal groups and Clark University, the CCRI developed a model for working in partnership with communities to improve public health protection from environmental contaminants. The partnership prepared community exposure profiles, trained community members on matters of environmental health, strategized on nuclear hazards' management, and provided outreach to other Native-American communities. Funding for these projects came from private foundations and small programs in two federal government agencies. As a result, the Native-American communities established a sustainable infrastructure for community planning and group decision making. This provides the participating communities with a sense of ownership in the risk management process and in epidemiological and radioactive-dose-reconstruction studies conducted by government and academic

researchers. This infrastructure also requires scientists to work through Native-American communities when they do research, first by securing community permission and then, often, a community's knowledgeable input.

The preceding examples attest to citizens' ability to act constructively before it is too late. Community-based research offers a tested and relatively economical means for addressing a wide variety of social, economic, and environmental problems. Insofar as communities identify potential problems, initiate research to reduce uncertainty, or formulate action plans in the face of uncertainty and take remedial or preventive action before problems develop into full-blown catastrophes, community-based research exemplifies one type of precautionary approach. It can also begin to counterbalance the undemocratic processes that currently determine most national research agendas.

CONSENSUS CONFERENCES: CITIZEN-BASED TECHNOLOGY ASSESSMENT

According to conventional wisdom, ordinary citizens are excluded from most decisions involving scientific knowledge and technology because non-experts are ill-equipped to comment on complex technical matters, and they probably wouldn't want to anyway. The earlier examples of community-based research contradict these suppositions. And the success of an innovative European process, dubbed the "consensus conference," has also begun to shed new light on the subject. Pioneered during the late 1980s by the Danish Board of Technology, a parliament agency charged with organizing technology assessment activities, the process is intended to stimulate broad and intelligent social debate on policy issues involving technical complexity and scientific uncertainty.

Not only are laypeople elevated to positions of preeminence in a consensus conference, but a carefully planned program of reading and discussion—culminating in a forum open to the public—ensures that they become well-informed prior to rendering judgment as well. Both the forum and the subsequent judgment, written up in a formal report, become a focus of intense national attention—usually at a time when the issue at hand is due to come before Parliament. Though consensus conferences are hardly meant to dictate public policy, they do give legislators some sense of where the people who elected them might stand on important questions. Involving laypeople in policy deliberations empowers them to act on the elements of the Precautionary Principle. Consensus conferences can furthermore help industry

steer clear of new products or processes that are likely to cause public harm or spark public opposition.

Since 1987 the Danish Board of Technology has organized about 20 consensus conferences on topics ranging from genetic engineering to educational technology, food irradiation, air pollution, human infertility, sustainable agriculture, telecommuting, and the future of private automobiles. Ironically, the process began gaining popularity and diffusing to other nations (including to date The Netherlands, the United Kingdom, Norway, Switzerland, France, and Japan) just as the U.S. Congress abolished its Office of Technology Assessment (OTA), whose establishment in 1972 helped motivate Europeans to develop their own technology assessment agencies. But the truth is that when the OTA faced the chopping block in 1995, those rallying to its defense were primarily a small cadre of professional policy analysts or other experts who had themselves participated in OTA studies—hardly a sizable cross-section of the American public. By contrast, a consensus conference format, which engages a much wider range of people, holds the potential to build a broader constituency familiar with and supportive of technology assessment.

The Danish consensus conference is an institutionalized manifestation of the Precautionary Principle. It is a democratic process that helps ensure informed consent and that publicly examines research agendas and new technologies during their early stages, when there is normally both great uncertainty about outcomes but also relatively great latitude to steer resource and development agendas down alternative, *socially preferred* paths.

Framing the Discussion

To organize a consensus conference, the Danish Board of Technology first selects a salient topic—one that is of social concern, pertinent to upcoming parliamentary deliberations, and complex, requiring judgment on such diverse matters as ethics, disputed scientific claims, and government policy. The board has also found that topics suited to the consensus conference format should be intermediate in scope—broader than assessing the toxicity of a single chemical, for instance, but more narrow than trying to formulate a comprehensive national environmental strategy. The board then chooses a well-balanced steering committee of knowledgeable stakeholders to oversee the organization of the conference; a typical committee might include an academic scientist, an industry researcher, a trade unionist, a public-interest group representative, and a project manager from the board's own professional staff.

With the topic in hand and the steering committee on deck, the board advertises in local newspapers throughout Denmark for volunteer, laypartic-

ipants. Candidates must send in a one-page letter describing their background and their reasons for wanting to participate. From the 100 to 200 replies that it receives, the board chooses a panel of about 15 people who roughly represent the demographic breadth of the Danish population and who lack significant prior knowledge of, or a specific material interest in, the topic. Groups include homemakers, office and factory workers, and garbage collectors as well as university-educated professionals. They are not, however, intended to comprise a random scientific sample of the Danish population. After all, each panelist is literate and motivated enough to have responded in writing to a newspaper advertisement.

At the outset of a first preparatory weekend meeting, the laygroup, with the help of a skilled facilitator, discusses an expert background paper, commissioned by the board and screened by the steering committee, that maps the political terrain surrounding the chosen topic. The laygroup next begins formulating questions to be addressed during the public forum. On the basis of the laypanel's questions, the board goes on to assemble an expert panel that includes not only credentialed scientific and technical experts but also experts in ethics or social science and knowledgeable representatives of stakeholder groups such as trade unions, industry, and environmental organizations.

The laygroup then meets for a second preparatory weekend, during which members, again with the facilitator's help, discuss more background readings provided by the steering committee, refine their questions, and, if they want, suggest additions to or deletions from the expert panel. Afterward, the board finalizes selection of the expert panel and asks its members to prepare succinct oral and written responses to the laygroup's questions, expressing themselves in language that laypeople will understand.

The concluding public forum, normally a four-day event chaired by the facilitator who presided over the preparatory weekends, brings the lay and expert panels together and draws the media, members of Parliament, and interested Danish citizens. On the first day, each expert speaks for 20 to 30 minutes and then addresses follow-up questions from the laypanel and, if time allows, the audience. Afterward, the laygroup retires to discuss what they have heard. On the second day, the laygroup members publicly cross-examines the expert panel in order to fill in gaps and probe further into areas of disagreement.

Laypanel Reports

Once cross-examination has been completed, the experts and stakeholders are politely dismissed. The remainder of that day and on through the third day, the laygroup prepares its report, summarizing the issues on which it could

reach consensus and identifying any remaining points of disagreement. The board provides secretarial and editing assistance, but the laypanel retains full control over the report's content. On the fourth and final day, the expert group has a brief opportunity to correct any outright misrepresentations of its testimony, but not otherwise to comment on the documents substance. Directly afterward, the laygroup presents its report at a national press conference.

Laypanel reports are typically 15 to 30 pages long, clearly reasoned, and nuanced in judgment. The report from the 1992 Danish conference on genetically engineered animals is a case in point, showing a perspective that is neither pro- nor anti-technology in any general sense. The panel expressed concern that patenting animals could deepen the risk of their being treated purely as objects. Members also feared that objectification of animals could be a step down a slippery slope toward objectification of people. Regarding the possible ecological consequences of releasing genetically altered animals into the wild, they noted that such animals could dominate or out-compete wild species or transfer unwanted characteristics to them. "Also," they wrote, "there could be risks which one is unable to foresee and therefore cannot assess." On the other hand, the group saw no appreciable ecological hazard in releasing genetically engineered cows or other large domestic animals into fenced fields and endorsed deep-freezing animal sperm cells and eggs to help preserve biodiversity.⁶

Portions of laypanel reports can be incisive and impassioned as well, especially in comparison with the circumspection and dry language that is conventional in expert policy analyzes. Having noted that the "idea of genetic normalcy, once far-fetched, is drawing close with the development of a full genetic map," a 1988 OTA study of human genome research prepared by experts concluded blandly that "concepts of what is normal will always be influenced by cultural variations."⁷ In contrast, a 1989 Danish consensus panel on the same subject recalled the "frightening" eugenic programs of the 1930s and worried that "the possibility of diagnosing fetuses earlier and earlier in pregnancy in order to find genetic defects creates the risk of an unacceptable perception of man—a perception according to which we aspire to be perfect." The laygroup went on to appeal for further popular debate on the concept of normalcy. Fearing that parents might one day seek abortions upon learning that a fetus was, say, color blind or left-handed, 14 of the panel's 15 members also requested legislation that would make fetal screening for such conditions illegal under most circumstances.⁸

A Precautionary Approach to Social Issues

This central concern with social issues becomes much more likely when expert testimony is integrated with everyday citizen perspectives. For in-

stance, while the executive summary of the OTA study on human genome research states that "the core issue" is how to divide up resources so that genome research is balanced against other kinds of biomedical and biological research,⁹ the Danish consensus conference report, prepared by people whose lives are not intimately bound up in the funding dramas of university and national laboratories, opens with a succinct statement of social concerns, ethical judgments, and political recommendations. And these perspectives are integrated into virtually every succeeding page, whereas the OTA study discusses ethics in a single discrete chapter on the subject. The Danish consensus conference report concludes with a call for more school instruction in "subjects such as biology, religion, philosophy, and social science"; better popular dissemination of "immediately understandable" information about genetics; and vigorous government efforts to promote the broadest possible, popular discussion of "technological and ethical issues."¹⁰ The corresponding OTA study does not even consider such ideas.

When the Danish laygroup did address the matter of how to divide up resources, the members differed significantly from the OTA investigators. Rather than focusing solely on balancing different kinds of biomedical and biological research against one another, they supported basic research in genetics but also called for more research on the interplay between environmental factors and generic inheritance and for more research on the social consequences of science. They challenged the quest for exotic technical fixes for disease and social problems, pointing out that many proven measures for protecting health and bettering social conditions and work environments are not being applied. Finally, the group members recommended a more "humanistic and interdisciplinary" national research portfolio that would stimulate a constructive exchange of ideas about research repercussions and permit "the soul to come along."¹¹ The consensus conference format enabled the Danish laypanelists, when pondering policy decisions entailing far-reaching but uncertain impacts, to express the characteristic predisposition of citizens who are treated with dignity and respect to act on principles of ethical sensitivity, caution, and prudential action.

Not that consensus conferences are better than the expert-driven OTA approach in every possible way. While less accessibly written, arid, and less attentive to social considerations, a traditional OTA report did provide more technical detail and analytic depth. But OTA-style analysis can, in principle, contribute to the consensus conference process. For example, a 1993 Dutch consensus conference on animal biotechnology used a prior OTA study as a starting point for its own more participatory inquiry.

Timeliness and Responsiveness

Once the panelists have announced their conclusions, the Danish Board of Technology exemplifies its commitment to encouraging informed discussion by publicizing them through local debates, leaflets, and videos. In the case of biotechnology, the board has subsidized more than 600 local debate meetings. The board also works to ensure that people are primed for this whirlwind of postconference activity. For example, the final four-day public forums are held in the Parliament building, where they are easily accessible to members of Parliament and the press.

Nor is it any accident that the topics addressed in consensus conferences are so often of parliamentary concern when the panelists issue their findings. The board has developed the ability to organize a conference on six months notice or less, largely for the purpose of attaining that goal. This timeliness represents yet another advantage over the way technology assessment has been handled in the United States: Relying mostly on lengthy analysis and reviews by experts and interest groups, the OTA required, on average, two years to produce a published report on a topic assigned by Congress.

In fact, one complaint leveled by the congressional Republicans who argued for eliminating the OTA was that the process it employed was mismatched to legislative timetables. Upon learning about consensus conferences and their relatively swift pace, Congressman Robert S. Walker—at the time, Republican chairman of the House Science Committee—told a March 1995 public forum that if such a process can “cut down the timeframe and give us useful information, that would be something we would be very interested in.”¹² This suggests that at least some of the political resistance to practicing the Precautionary Principle might be reduced to the extent that it can be institutionalized in effective, timely, and economical ways.

The Danish Board of Technology's efforts do seem to be enhancing public understanding of technically complex issues. A 1991 study by the European Commission discovered that Danish citizens were better informed about biotechnology, a subject that several consensus conferences had addressed, than were the citizens of other European countries, and that Danes were relatively accepting of their nation's biotechnology policies as well.¹³ Significantly, too, Dr. Simon Joss of the University of Westminster, who has conducted interviews on consensus conferences with Danish members of Parliament, has found the legislators to be generally appreciative of the process—indeed, to the point where several eagerly pulled down conference reports kept at hand on their office shelves.¹⁴

And although consensus conferences are not intended to have a direct impact on public policy, they do in some cases. For instance, conferences that were held in the late 1980s influenced the Danish Parliament to pass

legislation limiting the use of genetic screening in hiring and insurance decisions, to exclude genetically modified animals from the government's initial biotechnology research and development program, and to prohibit food irradiation for everything except dry spices.¹⁵ Manufacturers are taking heed of the reports that emerge from consensus conferences as well. According to Professor Tarja Cronberg in reports issued by the Technical University of Denmark, Danish industry originally revisited even the idea of establishing the Board of Technology but has since had a change of heart. The reasons are illuminating.

In conventional politics of technology, the public's first opportunity to react to an innovation can occur years or even decades after crucial decisions about the form that innovation will take have already been made. In such a situation, the only feasible choice is between pushing the technology forward or bringing everything to a halt. And no one really wins: Pushing the technology forward risks leaving opponents bitterly disillusioned, whereas bringing everything to a halt can jeopardize jobs and enormous investments of developmental money, time, and talent. The mass movements of the 1970s and 1980s that more or less derailed nuclear power are a clear example of the phenomenon.

By contrast, implementing the Precautionary Principle with early public involvement and publicity—as a consensus conference permits—can facilitate more flexible, socially responsive research and design modifications all along the way. This holds the potential for a fair, less adversarial, and more economical path of technological evolution.¹⁶ A representative of the Danish Council of Industry relates that corporations have benefited from their nation's participatory approach to technology assessment because “product developers have worked in a more critical environment, thus being able to forecast some of the negative reactions and improve their products in the early phase.”¹⁷

For example, Novo Nordisk, a large Danish biotechnology company, reevaluated its research and development strategies after a 1992 panel deplored the design of animals suited to the rigors of existing agricultural systems but endorsed the use of genetic engineering to help treat incurable diseases. The firm now wants to concentrate on work more likely to win popular approval, such as animal-based production of drugs for severe human illnesses.

CONCLUSION

At least in the abstract, we Americans are fiercely proud of our democratic heritage and our technical prowess. But it is striking how little we do to ensure that these twin sources of national pride are in harmony with one

another. Community-based research and consensus conferences are not magic cures for all that ails democracy or for ensuring that science and technology become fully responsive to social concerns. But they do reawaken hope that, even in a complex technological age, democratic principles and procedures, incorporating a precautionary approach to decision making under uncertainty, can prevail.

NOTES

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2. Richard E. Sclove, "Better Approaches to Science Policy," *Science*, Vol. 279 (27 Feb. 1998), p. 1283; also available under the "Publications" section of the World Wide Web pages of the Loka Institute at <www.loka.org>.
3. Quoted in Phil Brown and Edwin J. Mikkelsen, *No Safe Place: Toxic Waste, Leukemia, and Community Action* (Berkeley: University of California Press, 1990), p. 145.
4. For more information on the Woburn case, see Jonathan Harr, *A Civil Action* (Vintage Books: New York, 1996); and Brown and Mikkelsen, *op. cit.*
5. These and additional case studies may be found in Richard S. Sclove, Madeleine L. Scammell, and Breena Holland, *Community-Based Research in the United States: An Introductory Reconnaissance, Including Twelve Organizational Case Studies and Comparison with the Dutch Science Shops and the Mainstream American Research System* (Amherst, MA: The Loka Institute, July 1998); this report is available as a free download via the World Wide Web pages of the Loka Institute at <www.loka.org>.
6. "Consensus Conference on Technological Animals: Final Document (preliminary issue)" (Copenhagen: Danish Board of Technology, 1992); also available on the World Wide Web at <http://www.tekno.dk/eng/publicat/92teaneo.htm>.
7. U.S. Congress, Office of Technology Assessment, *Mapping Our Genes—Genome Projects: How Big, How Fast?*, OTA-BA-373 (Washington, DC: U.S. Government Printing Office, April 1988), p. 85.
8. "Consensus Conference on the Application of Knowledge Gained From Mapping the Human Genome: Final Document" (Copenhagen: Danish Board of Technology, 1989).
9. *Mapping Our Genes*, p. 10.
10. "Consensus Conference on the Application of Knowledge Gained From Mapping the Human Genome," pp. 28–29.
11. *Ibid.*, pp. 7, 17–25.
12. Robert S. Walker, "Democratizing R&D Policymaking," lecture and discussion during the 10th Annual Meeting of the National Association for Science, Technology & Society, Arlington, Virginia, March 2, 1995.
13. INRA (Europe) and European Coordination Office SA/NV, Eurobarometer 35.1: Biotechnology (Brussels: European Commission; Directorate-General; Science, Research, Development; "CUBE"—Biotechnology Unit, June 1991).
14. Simon Joss, telephone interview with Richard E. Sclove, July 14, 1995.
15. Lars Kløver, "Consensus Conferences at the Danish Board of Technology," In: *Public Participation in Science: The Role of Consensus Conferences in Europe*, eds. Simon Joss and John Durant (London: Science Museum, 1995), p. 44.
16. Richard E. Sclove, *Democracy and Technology* (New York and London: Guilford Press, 1995), esp. pp. 183–184.
17. Quoted in Tarja Cronberg, "Technology Assessment in the Danish Socio-Political Context," *Technology Assessment Texts No. 9* (Lyngby, Denmark: Unit of Technology Assessment, Technical University of Denmark, no date), p. 11.

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