

# Town Meetings on Technology

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*The "consensus conference," a recent Danish innovation, gives ordinary citizens a real chance to make their voices heard in debates on technology policy. And business and government, as well as the general public, could reap substantial rewards.*



In a democracy, it normally goes without saying that policy decisions affecting all citizens should be made democratically. Science and technology policies loom as grand exceptions to this rule. They certainly affect all citizens profoundly: the world is continuously remade with advances in telecommunications, computers, materials science, weaponry, biotechnology, home appliances, energy production, air and ground transportation, and environmental and medical understanding. Yet policies 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.

According to conventional wisdom, the reason for this state of affairs is that nonexperts are ill-equipped to comment on complex technical matters and probably wouldn't want to anyway. But the success of an innovative European process dubbed the consensus conference has begun to shed new light on the subject. Pioneered during the late 1980s by the Danish Board of Technology, a parliamentary agency charged with assessing technologies, the process is intended to stimulate broad and intelligent social debate on technological issues. Not only are laypeople elevated to positions of preeminence, 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. 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. They can also help industry steer clear of new products or processes that are likely to spark public opposition.

Since 1987 the Board of Technology has organized 12 consensus conferences on topics ranging from genetic engineering to educational technology, food irradiation, air pollution, human infertility, sustainable agriculture, and the future of private automobiles. And the board's achievements have recently led to new incarnations of the Danish process--twice in the Netherlands and once in the United Kingdom. Other European nations, as well as the European Union, Canada, New Zealand, and Australia, are actively considering consensus conferences as well.

Ironically, the process is gaining popularity just as the U.S. Congress has 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, 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. And there is no reason why the United States could not adapt the process.

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## Framing the Issues

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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 narrower than trying to formulate a comprehensive national environmental strategy. The board then chooses a well-balanced steering committee to oversee the organization of the conference; a typical committee might include an academic scientist, an industry researcher, a trade unionist, a representative of a public interest group, 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 lay participants. Candidates must send in a one-page letter describing their backgrounds 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 specific 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 lay group, 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 lay group next begins formulating questions to be addressed during the public forum. Based on the lay panel'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 lay group 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 lay group'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-on questions from the lay panel and, if time allows, the audience. Afterward, the lay group retires to discuss what it has heard. On the second day the lay group publicly cross-examines the expert panel in order to fill in gaps and probe further into areas of disagreement.

Once cross-examination has been completed, the experts are politely dismissed. The remainder of that day and on through the third, the lay group 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 lay panel retains full control over the report's content. On the fourth and final day, the expert group has a brief opportunity to correct outright factual misstatements in the report, but not to comment on the document's substance. Directly afterward, the lay group presents its report at a national press conference.

Lay panel 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. 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.

Portions of lay panel reports can be incisive and impassioned as well, especially in comparison with the circumspection and dry language that is conventional in expert policy analyses. 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 concluded blandly that "concepts of what is normal will always be influenced by cultural variations"; 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 lay group 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.

This central concern with social issues becomes much more likely when expert testimony is integrated with everyday citizen perspectives. For instance, 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, 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 only 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." The corresponding OTA study does not even consider such ideas.

When the Danish lay group did address the matter of how to divide up resources, they 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 genetic inheritance, and 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, they 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."

Not that consensus conferences are better than the OTA approach in every possible way. While less accessibly written 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, the 1993 Dutch consensus conference on animal biotechnology used a prior OTA study as a starting point for its own more participatory inquiry.

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## Timeliness and Responsiveness

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Once the panelists have announced their conclusions, the 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 post-conference 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 agency was that the process it employed was mismatched to legislative timetables. Upon learning about consensus conferences and their relatively swift pace, Robert S. Walker, Republican chair of the House Science Committee, told a March 1995 public forum that if such a process can "cut down the time frame and give us useful information, that would be something we would be very interested in."

The Board of Technology's efforts do seem to be enhancing public awareness of issues in science and technology. 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. Significantly, too, Simon Joss, a research fellow with the London Science Museum 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.

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. Manufacturers are taking heed of the reports that emerge from

consensus conferences as well. According to Professor Tarja Cronberg of the Technical University of Denmark, Danish industry originally resisted 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 80s that more or less derailed nuclear power are a clear example of the phenomenon.

By contrast, early public involvement and publicity--of the sort that a consensus conference permits--can facilitate more flexible, socially responsive research and design modifications all along the way. This holds the potential for a fairer, less adversarial, and more economical path of technological evolution. 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."

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.

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## Bringing It All Back Home

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Finding suitable topics for U.S. consensus conferences would hardly be difficult; a variety of technically complex and socially significant issues currently on the federal agenda could work. One likely candidate would be the evolution of the information superhighway. The World Wide Web and other information systems promise to significantly affect everyone in our society, including many people who do not presently use computers and who are poorly represented in current deliberations on telecommunications policy.

Another good topic would be post-Cold War reorganization of the U.S. national laboratory system. All taxpayers finance that system, which is intended to function as a national resource. However, blue-ribbon commissions appointed to help chart the labs' future have focused on the concerns of scientists, the military, industry, and the communities immediately adjacent to the labs--not on the needs of the American public as a whole.

Moreover, the mechanisms for distributing lay panel reports and encouraging follow-on social debate are readily available in this country. They include the Internet and the League of Women Voters. Also, the Connecticut-based Study Circles Resource Center, the Public Agenda Foundation, and the Kettering Foundation are experienced in facilitating nonpartisan, public-affairs discussions across the United States--everything from study groups with four or five people to large community forums.

Of course, a lay panel composed of, say, 15 people would represent a feeble statistical sample in a nation whose population numbers 250 million. However, hearing the considered views of a diverse group of 15 ordinary citizens would be a marked improvement over excluding the lay perspective entirely, which is the norm in most contemporary technology policy analysis and decision making. Skeptics could also point out that consensus may be much easier to attain in a small, fairly homogeneous nation such as Denmark. But it is not as if consensus is impossible here; U.S. juries routinely reach consensus on highly contested, complex legal disputes. And besides, the significant feature of the consensus conference model is not consensus itself but the cultivation of informed citizen judgment. The final report can and often does identify issues on which the panel is unable to reach agreement. The report from the 1993 Dutch consensus conference on animal biotechnology included majority and minority opinions. In fact, believing that consensus is not essential to the model at all, Dutch organizers renamed their variant simply a "public debate."

Consensus aside, would an ad hoc assemblage of U.S. citizens even be capable of deliberating together reasonably? There is some reason to think so. The intensive preparatory weekends that precede a public consensus conference help by letting lay panelists get to know one another and develop their ability to reason together. More to the point, key real-life trials have met with encouraging results. For instance, although Britain is populous and racially and socioeconomically diverse, panelists on the first U.K. consensus conference proved quite able to converse and work together.

And the Jefferson Center--a Minneapolis-based nonprofit organization that explores new democratic decision-making methods--has developed a deliberative format, known as a "citizens jury" process, that is similar in many ways to a consensus conference. In 1993, such lay panels formed working relationships sound enough to permit an examination of such contentious issues as national health care reform and federal budget restructuring. The panels' conclusions did not directly alter government policy, but they received enough media attention to influence public debate, and elected officials paid attention. Indeed, representatives from the budget jury were invited to discuss their proposals with the U.S.

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As to the question of who should organize consensus conferences, European organizers stress the need to seek an institution that is--and will be perceived as--scrupulously impartial on the issues under debate, authentically committed to democratic deliberation, and of sufficiently high stature to attract strong media, popular, and government attention. Consider, for example, the Library of Congress or a trusted nonprofit organization such as the League of Women Voters. But for maximum media attention and social influence, congressional or

presidential sponsorship, with bipartisan oversight, would presumably be ideal. With many Americans convinced that the federal government has grown seriously out of touch with the concerns of ordinary citizens, perhaps consensus conferences would be one way to start rebuilding trust.

Of course, we might start on a more modest level, to learn some of the ropes, before going national. Norman Vig, a Carleton College political scientist who has studied technology assessment throughout western Europe, recommends experimenting carefully in different U.S. institutional settings and at various governmental levels. For instance, the consensus conference methodology could be applied in a university setting, or at the state level on issues in science and technology policy pending before the legislature.

At least in the abstract, we Americans are fiercely proud of our democratic heritage and our technological prowess. But it is striking that we do virtually nothing to ensure that these twin sources of national pride are in harmony with one another. Consensus conferences are not a magic bullet for all that ails democracy or for ensuring that science and technology are responsive to social concerns. But they do reawaken hope that, even in a complex technological age, democratic principles and procedures can prevail and, indeed, extend into the technological domain.

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