

Danish participatory models

Scenario workshops and consensus conferences: towards more democratic decision-making

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Consensus conferences and scenario workshops have been developed in Denmark within a democratic perspective that assumes it is both possible and necessary to establish a dialogue with citizens about technology politics. In consensus conferences, the citizens have the role of a citizen panel, which will set the agenda for the conference. In scenario workshops, a group of citizens interacts with other actors to exchange knowledge and experience, develop common visions and produce a plan of action. The focus of both methods is to create a framework for dialogue among policy-makers, experts and ordinary citizens. Both methods are also characterised by their ability to create new knowledge.

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A CONSENSUS CONFERENCE is a public meeting, which allows ordinary citizens to be involved in the assessment of technology. The conference is a dialogue between experts and citizens. It is open to the public and the media. Usually it is attended by some members of the Danish Parliament.

The citizen panel plays the leading role: it consists of about 14 people who are introduced to the topic by a professional facilitator. The citizen panel formulates the questions to be taken up at the conference, and participates in the selection of experts to answer them. The panel has two weekends for this preparation.

The expert panel is selected in a way that ensures that essential opposing views and professional conflicts can emerge and be discussed at the conference. Good experts are not only knowledgeable but also open-minded and good communicators with an overview of their field.

An advisory/planning committee has the overall responsibility of making sure that all rules of a democratic, fair and transparent process have been followed.

On the first day of the conference, the experts present their answers to the questions from the citizen panel, from the point of view of their field of expertise. The following morning is reserved for clarifying questions and for discussions between the expert panel, the citizen panel and the audience. The rest of the second day and the third day are reserved for the citizen panel to

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produce a final document, presenting their conclusions and recommendations. Consensus on attitudes and recommendations is achieved through open discussion. Thus the final document is an expression of the extent to which the citizen panel can reach consensus.

On the morning of the fourth day, the citizen panel reads the final document to the experts and the audience, including the press. The experts have the opportunity to correct misunderstandings and factual errors, but at this point they are not allowed to influence the views of the citizen panel.

Scenario workshops

A consensus conference focuses on society's use and regulation of technology; a scenario workshop starts with a problem looking for solutions. The solutions can be technological, regulatory or maybe a new way of organising and managing certain problems.

A scenario workshop is a local meeting that includes dialogue among four local groups of actors: policy-makers, business representatives, experts and citizens. The participants carry out assessments of technological and non-technological solutions to the problems, and develop visions for future solutions and proposals for realising them.

Before the workshop can take place, a set of scenarios is written, describing alternative ways of solving the problem. They have to be different with respect to both the technical and organisational solutions described and the social and political values embedded in them.

In the workshop, the scenarios are used as visions, and as an inspiration in the process. The participants are asked to criticise and comment on them to enable them to develop visions of their own — not to choose among, or prioritise, the scenarios.

The workshop process, which may last for one or two days, has three principal steps: to comment on, and criticise, the scenarios by pointing out barriers to realising the visions; to develop the participants' own visions and proposals; and to develop local plans of action.

The process is guided by a facilitator and takes place in 'role' groups, 'theme' groups and plenary sessions. Dialogue among participants with different knowledge, views and experience is central. Various techniques can be employed to accomplish good dialogue and the production of results in the form of identification of barriers, of visions and of proposals for action to be taken.

The Danish Board of Technology has used the scenario workshop method for two topics. First, was "Urban Ecology", 1991–93, which is treated in more detail later. Second was "The Library of the Future", 1995–96.

This article describes the format of the two methods, giving examples and experience from practical projects as a background to discussing some strengths and weaknesses of each method. Expectations of future development in Denmark and other countries are discussed.

Institutional setting

Consensus conferences and the scenario workshops were developed by The Danish Board of Technology (DBT), which is an independent institution established by the Danish Parliament. It is financed by the state with 10 million Dkr (approximately 1.3 mill ECU) a year, and has a permanent staff of 13. The DBT has, since it was established in 1986, experimented with, and developed, participatory methodologies, which allow ordinary citizens to be involved in technology assessment. According to the Law (no 375, 14 June 1995) that is the basis of the Board, its work has two main purposes:

To initiate independent technology assessment by carrying out investigations and comprehensive assessments on the possibilities and consequences of technology for society and the citizens.

To further a public debate on technology by communicating the results to Parliament, other political decision-makers and the Danish population.

The participatory methods discussed here were developed to combine this dual task by producing an interactive relationship with the public. Citizens are not only looked on as receivers of information and expert knowledge, but are expected to make useful and necessary contributions to technology assessment.

A basic principle in the work of the DBT is that technology assessment should: include the wisdom and experience of ordinary citizens/lay people; integrate the knowledge and tools of experts; respect the political processes and the working conditions of policy-makers; and build on the democratic tradition in Denmark (Klüver, 1995, page 41).

Cultural context

DTB's understanding of technology assessment has a background in Danish democratic traditions (Andersen and Jæger, 1997; Joss, 1998; Klüver, 1995). Basically, democracy is a question of the possibilities available to citizens to influence the circumstances of their lives. As technology becomes more and more integrated, influencing more circumstances in life, citizens should have a democratic right to influence its development (Bijker, 1993; Sclove, 1995). This viewpoint opens a discussion about democracy and technology assessment.

We distinguish between two concepts of democracy — representative and participatory. Most western societies, including the Danish, are organised as a representative democracy. In principle, every citizen has the opportunity to be elected Member of Parliament. All citizens have a moral duty or opportunity to vote for a party or a person who expresses the political opinions they find most reasonable.

This is the most widespread definition of democracy, it is closely linked to the national state and for many years seems to have functioned adequately. However, because of the reduction in Parliament's power, partly because of decisions in the European Union (EU) and partly because of the decentralisation to local authorities, Parliament's role as a forum for societal decision-making has weakened. Thus we have seen signs of crises of the representative democracy in the last few years (Sørensen *et al*, 1996). Another weakness concerns who is actually represented by Parliament. Members of Parliament are selected from the political parties, but the number of Danes who are members of a political party has been decreasing in the last couple of decades.

The ideals of the representative democracy are built on what some political scientists have described as "aggregative political processes" (March and Olsen, 1989), in which, the will of the people is discovered through bargaining among rational citizens who are pursuing self-interests within a set of rules for governance by majority rule. Order is seen as based on rationality, and the primary outcome of a political process is the public policies and the allocation of resources. Leadership involves the arrangement of coalitions among interests.

There is also a tradition of participatory democracy, in which citizens take part in political processes. Participation takes several forms, from citizens just expressing their opinion without any kind of obligation, to 'user-boards' in which they have a high degree

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of responsibility, actually becoming engaged directly in running a local institution such as a school.

The ideals of participatory democracy are based on integrative political processes, in which the will of the people is discovered through deliberation by reasoning citizens following rules seeking to find the general welfare within a context of shared social values. Order is presumed to be based on history, obligation and reason. The primary outcome of an integrative process is seen as a policy with shared purpose and trust. Leadership involves a trusteeship for social traditions and future needs, and an educational role (March and Olsen, 1989).

March and Olsen do not regard these two traditions of political processes as contradictory. They see them as linked to the difference between contractual and communal perspectives on social organisation, but real political institutions tend to involve a mixture of both traditions.

In Denmark there is a strong tradition of integrative political processes. Danish citizens take part in discussions and decisions about various matters. For example, by law local authorities have to make a plan for changing a local area and this is sent out for a local hearing among the citizens before the final decision. Another example is from 1996 when Copenhagen was the European Cultural City of the year. In the planning of the cultural activities, all citizens, associations and enterprises were asked if they had any ideas. They could apply for grants to realise those ideas. In Denmark, participatory democracy is mostly linked to the local perspective and is often limited to a special task. Very often it is a matter of local decision-making closely connected to the everyday life of the involved users.

It is difficult to explain the strength of the tradition of integrative political processes in Denmark. Without going into too much depth, one explanation could be historical. There is a specific Danish tradition, based on Nicolai Frederik Severin Grundtvig (1783–1872), a Danish clergyman, philosopher and teacher. He founded the 'Folk highschool' where adults participate in 'life-long' education without any direct professional goal, just with the aim of being enlightened. This has been further elaborated in this century, for example, by the political philosopher and Social Democrat Hal Koch. He believed that active and engaged people are better citizens (Cronberg, 1995, page 125).

More recent history also points to the political development during the 1960s and 1970s. Denmark, like other European countries, had active social movements in the environment, for example, nuclear power. In a referendum in 1984, the use of nuclear power was rejected by the people. This was the result of a very active social movement and can be considered as a technology assessment by the whole population. The critique of the representative democracy and its institutions was an important part of this development, and the establishment of the Board of Technology in 1986 can be seen as one of the results of the spirit of that period.

The movement towards a more participatory democracy built on integrative political processes has many advantages, but also some disadvantages. Using the example of user-boards, we see that many of them act very selfishly over questions such as allocation of resources to the institutions, because it is linked to a special local task. The user-board usually focuses on the needs of its own institution. As regards representative democracy, the problem is that not all citizens have the same opportunity to join the political process (Floris and Bidsted, 1996).

We have to consider these disadvantages when we talk about democracy and technology assessment. In several cases, technological problems cannot be solved by either individuals or small, local groups. Solutions in fields such as nuclear power, genetic modification of food, irradiation of food or the whole way of producing our food demand decisions at a higher level than local, and sometimes not even the national level but the international level. In these situations, local participatory democracy is insufficient.

In this light, we can see the work of the DBT as a way to develop methods combining both forms of democracy. Both consensus conferences and scenario workshops involve citizens. Their task is to create solutions, recommendations, develop visions and express demands to be used in relation to political decision-making. The two methods may overcome some of the limitations of both concepts of democracy, and in some cases may build bridges between the local, national and even the international level.

Consensus conferences in practice

Purpose of organising a consensus conference

In this period of history, the development of science and technology continually provides us with good and relevant topics for a consensus conference.¹ For instance, in medicine and the environment, society is confronted with difficult decisions, involving conflicting attitudes to technology. Questions concerning what we, as a society, want to use technology for, if we want to use it, and how the use of it should be regulated?

Yet, why should ordinary citizens, without any specific knowledge about the technology in question,

be asked to advise politicians and society in general on such difficult and intricate matters? One simple answer is, because of democracy. Because in a democratic society citizens are supposed to have the opportunity to influence important decisions affecting their lives.

Another answer is related to the limitations of expert knowledge, which is often strictly limited to one specific subject. The question of application and possible regulation involves a much broader approach, regarding the consequences for economy, environment and so on, which have not always been taken into account in technology development of the past.

Normally, ordinary citizens have a different approach to technology. They tend to see it from the perspective of their own life: how could this possibly affect my work situation, my health and the life of my family? As members of a citizen panel, they also look at technology from the perspective of an informed public with a responsibility for the development of society.

This broader approach almost inevitably provides the debate with more comprehensive arguments and considerations, which become part of the panel's assessments of the expert's proposals and reasoning. In this way, the conclusions in the panel's final document reflect what we could call 'the wisdom and experience of ordinary citizens' as well as the knowledge which the panel has obtained from the experts during the process.

Danish politicians, according to the experiences of the DBT and a recent study, are satisfied with the opportunity given by the consensus conferences to obtain information on how ordinary citizens consider these difficult questions.² The conferences provide the politicians with information, which they normally do not have, either from the media nor from the experts themselves. Also, politicians know the limitations of expert knowledge and the possible interests and biases involved in experts' assessment. Therefore they use results and final documents, for example, when they need to find out where the most important conflicts are, related to a given decision on technology.

Topics

During the last ten years, the DBT has conducted more than 15 consensus conferences, for example on: irradiation of foods (1989); how we should apply the increasing knowledge on human genes (1989); the future of motoring (1993); treatment of infertility (1993); limit values and risk assessment — chemicals in food and environment (1995); sustainable consumption (1996); and telework (1997).

According to the DBT experience a good conference topic is: of current interest; requires expert knowledge, which is also available; is possible to delimit; and involves conflicts and unresolved issues regarding attitudes to questions such as applications and regulation

Recruitment for citizen panel

The recruitment and composition of the citizen panel is a crucial factor in a consensus conference. It is not possible to create a 14-person panel, which is representative of the Danish population. The DBT recruits participants by sending invitations to a random sample of 2000 people. Those who want to participate must write a letter to the DBT with some information about themselves and their motives to be part of the panel.

Among these (about 120–150 applicants) the citizen panel is composed of participants with varied backgrounds regarding age, gender, education, occupation and geographical location. The citizen panel should consist of non-experts, but they are expected to be able to raise critical questions and to work independently.

Consensus and conflict

The concept of consensus is only relevant in relation to that envisaged among the members of the citizen panel. It is especially important to obtain consensus in relation to two phases. First, concerning the selection and formulation of main questions to be asked of the experts. These questions also constitute the agenda for the whole conference. Secondly concerning the conclusions and recommendations in the final document, which is another visible product of the work of the whole panel.

These two phases are decisive steps in a consensus conference. They are precisely the points when the panel is confronted with the outside world: press, experts, audience and so on, and every member should share in responsibility for the common work.

A consensus between the lay panel and the expert panel is not especially relevant or important in consensus conferences, although some of the experts may agree with some conclusions of the citizens.

Sometimes the conclusions reached by the citizen panel are controversial according to other groups in society. For example, in a conference on "The future of motoring" the main recommendation of the panel — 14 members of which 11 were car owners — was, gradually to double the price of gasoline to reduce car traffic. This did not lead to a doubling of gasoline prices, although the question is still alive and discussed. There are too many 'holy cows' involved in it,

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which the discussion after the conference showed very clearly. However, it showed the ability of the method and the process to lift the participants out of the selfish way of thinking as car owners, and put broader perspectives on the problems of transport and the environment.³

In a conference on infertility, the citizen panel recommended that sperm donors should not be allowed to stay anonymous, if the child later wanted to know who its father was. This is an example of how sometimes a lay panel can reach conclusions which are not evident or easy, for example, for potential receivers of infertility treatment or potential donors of semen, who may also be members of the panel.⁴

It was not difficult for these panels to reach these conclusions. After having worked with the problems of the conference during the whole preparation phase, the recommendations appeared obvious and appropriate to all panel members as possible solutions to issue. This is not always the case. In all consensus conferences there have also been moments of conflict and sometimes negotiations until late in the night regarding one or more recommendations.

In the conclusion phase it usually becomes very important to the panel, that the recommendations are agreed by all members, because of the political impact. Disagreements regarding one or more conclusions will probably be used by journalists or others to focus on disagreements instead of agreements, which may imply that the importance of the results will be reduced and maybe not taken seriously by politicians. Lay people know this and therefore strive for consensus. This may lead to the conclusions being 'softer', than they could have been, had it not been for one 'irritating person'.

Strengths and weaknesses

Can recommendations from consensus conferences make a difference? Yes, they almost certainly will, but not always in the way envisaged. Since the DBT conference on irradiation of food, Denmark has prohibited this kind of preservation. The question is regarded as controversial, for instance, in today's debate on food safety.

Since the DBT conference on mapping the human genome, Denmark has prohibited companies from claiming a DNA health profile from their staff and from job applicants.

Consensus conferences represent an opportunity to hear the voices of people who normally are not asked about their attitude to technology. An important contribution from the conferences is the information given to politicians, experts and society as a whole on the ideas and concerns of ordinary citizens. This is, in our opinion, the most important aspect of new knowledge produced in the whole process.

Another very important aspect is the self-confidence acquired by the participating lay people. They experience during the process, maybe for the first time, that their ideas and concerns regarding

technology are communicated and listened to by a wider public, and maybe used as an input to policy-making.

If the dominant economic–technical rationality is looked on as a societal power structure, it can be claimed that the conferences represent an opportunity for those with little power to obtain information and to be heard, and thus an opportunity for more democratic decision-making on the use and regulation of new technology (see Bijker, 1993, page 28).

The conferences may provide political and public debate and decision-making on new technology with dimensions and reasoning which were not taken into account previously. In this way, they may contribute to better and more comprehensive decision-making, which may save society from unwanted consequences of the use of technology.⁵

The history of consensus conferences also shows many examples of recommendations which were not listened to, and results which have no documented impact on technology politics. The question is, whether the most important results of the conferences are their direct impact on specific decisions, or that they communicate new knowledge to politicians on ideas and concerns of ordinary citizens, and new self-confidence and awareness to lay people on the role they may play in setting an agenda for society's debate on technology.

No matter how good or democratic the contributions that consensus conferences give to decision-makers, they are of no use, if the development or application of new technology is not an object of political decision-making, but designed and decided on far away from both the public and the politicians.

Consensus conferences do not promise any miracles, and it is very important to make this clear to the citizens before engaging on the work. They will have to see themselves as advisors to Parliament: voluntary and unpaid advisors, without any guarantee that their efforts will be taken into account in future decision-making.

The recruitment of the lay panel always is a good subject for discussion and critique. The problem is whether the results can be regarded as a true picture of the 'voice of the people'. The DBT does not claim that the outcome is representative of the opinion of the Danish population. We are fully aware that many people have not the slightest inclination to take part in such a conference. The participants are recruited from among the large part of the population concerned about the development and wanting to use this chance to express their opinion. They are selected from different groups that are supposed to hold different views and values. A decisive criterion furthermore is that they should not have any stakeholder or expert interest in the topic.

Scenario workshops in practice

Example of urban ecology, 1992–93

The scenario workshop method⁶ was developed in the early 90s, very closely related to the need for new and

integrated ways of handling environmental problems. In 1991, the DBT agreed on "sustainable housing and living in the future" as a topic for a new project. As a preparation for the Rio Conference in 1992, the Government had formulated an official policy on environmental protection and sustainable development in all areas of Danish society.

In this way, the project could benefit from a broad political consensus concerning the need to develop and transform cities and urban communities in a way which was ecologically sustainable. The concept of urban ecology became a point of departure to help the project formulate more concrete ideas of what was needed in an overall effort towards sustainable development. Urban ecology in the DBT project was defined as the interaction between people and nature in urban areas. To think and act in an ecological way implies saving resources, recycling and reusing products and materials and returning used materials to nature in a clear form.

It soon became clear that this project was dealing with an extensive process of societal transition, which obviously cannot take place overnight. The project had to comprise the whole technical infrastructure for energy, water, waste water and solid waste management, as well as daily life, habits and values of all the involved actors, including residents.

Urban ecology is concerned with the interaction among different types of technology, various involved actors (organised and individuals), different criteria for assessing technology, different types of knowledge, a broad spectrum of laws and rules from different authorities, and various places and levels of action and several possible solutions.

This multitude of aspects is what mostly confronts us as citizens in a technological world. The problem focus of the scenario workshop method, together with its emphasis on local problems and local solutions makes it necessary to handle multi-technological and even non-technological problems. This broad and open approach has been mentioned as a specific advantage of the method, because it is well suited for handling local problems and is open to citizens' visions on innovation and technological design (Sclove, 1997).

Why local scenario workshops?

After having formulated the problem of sustainable housing and living, one project team was confronted with the task of organising a project which could provide for:

the creation of new knowledge on locally existing visions, barriers, and opportunities to realise visions;
the production of policy proposals: who must do what to accomplish the necessary changes?
a more qualified debate based on an increased exchange of experience and knowledge: this was regarded of great importance, if changes were to stabilise over time.



Figure 1. Scenarios to solve urban ecology problems

To fulfil these aims it was not sufficient merely to consult engineers and other technical experts. Local actors had to be consulted to get the needed knowledge and experience. It was assumed that the meeting of a variety of social actors, from different places and sectors in society, would create new ideas on visions and barriers, and produce proposals for sustainable urban development.

The development of good tools and procedures for dialogue among actors at a local level, therefore, from the very beginning, played a major role in the project planning.

Scenarios

In the urban ecology project, the scenarios described a day in the life of a certain family in the year 2010, portraying four different kinds of life in future housing areas. They described alternative ways of solving urban ecology problems with regard to energy, water, waste and waste water in residential areas and individual houses. The scenarios were presented as visions, not as predictions, with names: “the block of flats” ((A) in Figure 1), “the low-rise high-density housing area” (B), “the people’s solar house” (C) and “the intelligent house” (D).

All four scenarios represented urban ecologically sustainable solutions in the sense that they fulfilled the criteria for savings of resources and non pollution, which were officially agreed upon for Denmark by the year 2010. They were different with respect to both the technical and organisational solutions described in each vision, and with respect to the social and political values embedded in them (Elle, 1992).

The four scenarios were presented inside a two-dimensional ‘cross’. The first dimension centres on *who* will be acting, and the second on how they will act. In the ‘*who*’ dimension, the question is whether the local authority or the market is to be the catalyst of development. Who will be carrying out the individual activities — the local authority, individual households or somebody in between? In the ‘*how*’ dimension, the question is whether a focus on technology will provide the answers, or whether people must, to a great extent, solve the problems themselves. Will the necessary savings result from the creation of a programmable water tap or from changed habits?

Workshop structure

Scenario workshops were conducted in four local communities during 1992. The criteria for choosing the communities were that there should be some positive effort and experience regarding urban ecology, and that the four places should be of different size and urban development.

Each participant took part in two workshops with 20–25 participants. First, there were ‘role group’ workshops, where participants from the same role group, for example, business people, but four different localities met. The task was to develop visions using the scenarios as an inspiration. The cross-local dialogue gave new knowledge on barriers and new ideas on visions, both to participants and to organisers. Reports from the first workshops were used as input for the next round — local workshops, arranged in the four local communities.

At the local workshops, participants were split into ‘theme groups’ according to experience and interests: the task was to agree on common vision and produce local action plans for energy, water and waste.

The results from these workshops were evaluated and were competent for public and political debate. The outcome was a report and a national plan for urban ecology, which was presented at a public conference in January 1993. Subsequently, this was partly implemented by the Danish Minister of the Environment (Ministry of Environment, 1994).

Results

The results of the workshop were threefold:

- barriers to urban ecology were identified
- visions were developed and
- action plans were proposed.

Results from the project in all these fields have played an important role in the Danish debate on sustainable housing and planning during the years after the conference. The following give an idea of some of the post-project changes:

1993: the Minister of Environment established a national committee on urban ecology, inspired by recommendations from the national action plan.

1995: the Urban Ecology Committee decided to establish a Danish Centre of Urban Ecology (to support experiments and give advice to local activities), and a Green Foundation to finance activities such as the Ecological Council and the association of Green Families.

The DBT has a fund to supply grants for local activities. It has supported hundreds of local meetings with material about urban ecology and money to arrange the meeting.

Today the scenario workshop method is widely used in education, research and consultancy.

The public debate in general has developed

towards more awareness of the importance of urban ecology principles to be integrated in regulation and law making.

An evaluation among all participants shortly after the project showed that the experience had been important learning exercise and paved the way for better dialogue at local level. However, the DBT has not followed the long-term changes resulting from this project in the four communities.

Strength and weaknesses

The role of citizens in a scenario workshop is somewhat different from their role as lay people in a consensus conference. In scenario workshops, the citizens are a group of actors among other groups. The experience and vision of all the actors contribute to the proposals and plans of actions resulting from the workshop. All groups contribute with their knowledge and experience from local activities, for instance, as local residents, business people and so on. They can all be regarded and defined as experts, because local experience and knowledge is a crucial factor in this locally oriented method.

Our environmental future depends on a joint effort from all members of society. It can only partly be planned and regulated top-down by experts and policy-makers. Therefore the involvement of many citizens in vision making, identification of barriers, development of ideas, proposals and plans has to be stressed as an important advantage of the scenario workshop method. The method can contribute to better decisions in a field, where future changes depend on the engagement and participation of many citizens.

Furthermore, the workshop process tends to bring people together, who do not usually engage in dialogue, even if they live in the same place. This is a precondition for breaking down 'stereotyped images', which can sometimes be an obstacle to finding solutions.

The advantage of local participation also may have a reverse side, because the results may not be able to be used more general level. More experience (more than one workshop) may be needed, as was the case in the Danish urban ecology project, to produce results which can be generalised and used by other local communities or at national level. This is a question of time and money.

The scenario workshop method needs good preparation, planning and facilitation. It may also need effort from the organisers to document and present the results in a structured way, if they are going to be used as an input for decision-making both at local level and more generally. It is not always easy to interest the press and politicians in the results of local scenario workshops.

Therefore, the success of this method depends on the existence of a 'customer' — somebody at local, national or even international level, who needs the results and wants to use them. This makes the process very vulnerable, because who will buy a product, which cannot be exactly described, maybe even predicted, in advance?

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Use of participation in other countries

In 1992–93 a European Commission project (EC DGXIII, the Innovation Programme) was looking for an appropriate method for establishing and improving communication between different sectors in society such as the scientific community, the political community, and the public at large. The purpose was to bring the EC R&D programme more in line with the future needs of society.⁸

The scenario workshop method was selected for a pilot study, which was conducted in 1993 and 1994 in four European cities: Ede (the Netherlands), Corfou (Greece), Preston (UK) and Mulhouse (France). This was followed by several scenario workshops in other European cities, for instance, for Local Agenda 21 projects. Training courses for National Monitors from all EU countries were arranged and followed by the production of a ready-to-use package for local organisers (EU Innovation Programme, 1999).

The Innovation Programme has also explored the possibility of applying the method in other areas, such as the provision of information and communication technology (Andersen *et al*, 1995; 1996). Currently, this work is part of the so-called Fleximodo project, in which partners from the Netherlands, Portugal, Italy and Denmark are collaborating to design new scenarios for local mobility, urban regeneration and local information and communication.⁹

The general idea is to create more flexible and modular applications for the method, so that local communities can be provided with tools and procedures to organise scenario workshops, which are tailored according to the local needs and interests. The Fleximodo project will be finished at the end of 1998.

The consensus conference method has been applied for several conferences in other countries: Britain, the Netherlands, Norway, Austria, New Zealand, Japan and Switzerland.¹⁰

Conclusion

The two methods we have described represent a framework, which makes it possible to involve ordinary citizens in technology assessment and thus give an input to society's decisions on technology.

It has been shown that results from consensus conferences and scenario workshops have had some direct impacts on decisions taken. More important, though, in our view is their indirect influence by giving politicians new knowledge about citizens' discussions of the threats and opportunities of technology, and giving citizens new knowledge and awareness. In general, it is difficult to measure and document both direct and indirect impact of the two methods.

The two methods offer a new way of hearing 'the voice of the people'. We see this as a supplement to well-established, well-known ways, such as elections, referenda and opinion polls. The established ways show us the will of the people regarding a well-structured set of alternatives. The two methods cannot claim to express the voice of the *whole* people, but they offer an opportunity for citizens to present their ideas and opinions in a more open way, which they have the opportunity to influence and structure themselves.

This is important, because society is full of people — experts, technocrats, politicians and so on — who have time and resources to set the agenda for public debate on technology. If these methods are able to counterbalance this, just a little, this is a very important advantage.

We have pointed to some of the strengths and weaknesses we see in each method, and have shown that the objectives to be reached by using the methods are common in some respects, and differ in others.

Consensus conferences usually concern a particular technology. It should be easy to delimit and arrange dialogue between experts and the public to clarify some of the conflicts involved. The conclusions and recommendations are used by politicians for debate and regulation and are widely accepted as an input of 'the voice of the people'. Therefore the recruitment and composition of the citizen panel is crucial in this method.

In the scenario workshop, the topic is formulated as a problem, for instance, a local issue, which cannot be solved without the participation of local people. The workshop is designed to find solutions, technical or not, to the problem. The design of scenarios is a crucial challenge in the scenario workshops. The results can be used to make better and longer-term solutions to problems with many actors and technologies involved.

It is not possible here to evaluate all relevant elements of the two methods. Both have attracted a good deal of interest from national and international institutions and policy bodies. We see this as a sign that in technology assessment there is a general need for policy-makers to involve the public in decisions, to compensate for the deficit of both the market and the political system. This need is partly met by the two methods, which represent well documented, convincing and tested efforts to involve citizens in technology assessment. In the DBT, this experience is used to become conscious that all such methods are conditioned by the cultural context of their origin and must be adapted for use in a different cultural context.

What also becomes more and more clear, from both the Danish experience and initiatives in other countries, is that there is one, indispensable criterion for success, for real changes to take place. This is that the policy-makers, to whom the results are addressed, have to be able and willing to listen and take the results seriously as proposals from the public. This also means that the institution organising the projects, must enjoy credibility with the public. If this is not so, it will be more difficult first, to find participants prepared to give the required time, and second, to make the politicians listen to the outcome.

The most important future perspectives on using participatory methods in our opinion are:

Development of scenario workshops so that citizens can be involved earlier, at the stage of design and selection of criteria for developing technology. Strengthening the power of consensus conferences to present the broad approach of citizen panels as just as legitimate a criterion in technology decision-making as the more narrow approach of experts.

Both methods have demonstrated great capacity for creating awareness of methodological innovations and diversification, and for building networks.

Notes

1. More detailed information and evaluation of the method is available on the internet (DBT, 1999) and in Joss and Durant (1995).
2. See Joss (1998) which gives extensive documentation of the political impact of consensus conferences in Denmark.
3. Summary in "The future of motoring — results from a consensus conference", no 3/1993.
4. Summary in "Consensus conference on infertility, conclusions of the lay panel", November 1993.
5. For further documentation on both the direct and more indirect impact of consensus conferences see Joss (1998).
6. More detailed descriptions of methods and results can be found in Andersen et al (1992; 1993; 1995).
7. The scenarios are also available in 11 languages on the internet, EU Innovation Programme (1999).
8. For a detailed description of the use of the method in this context see Mayer (1997, chapter 5). See also Bilderbeek and Andersen (1995).
9. Fleximodo has developed its own homepage, Fleximodo (1999).
10. Documentation and discussion on this can be found in Joss and Durant (1995) and Joss (forthcoming).

References

- I-E Andersen and Birgit Jæger (1997), *Involving Citizens in Assessment and the Public Debate on Information Technology* (TMV, University of Oslo).
- I-E Andersen, L D Nielsen, M Elle and O Danielsen (1992), "The scenario workshop in technology assessment", paper presented at The Third European Congress on Technology Assessment, Danish Board of Technology, Copenhagen, Denmark.
- I-E Andersen, L D Nielsen, M Elle and O Danielsen (1993), *Byøkonomiske øjebliksbilleder. Visioner, barrierer og muligheder for at handle*, report from Danish project (Danish Board of Technology, Copenhagen).
- I-E Andersen, L Klüver, R Bilderbeek and O Danielsen (1995), "Feasibility study on new awareness initiatives. Studying the

- possibilities to implement consensus conferences and scenario workshops" (European Commission, DG??, Interfaces III, Brussels). See also DBT (1999) and EU Innovation Programme (1999).
- I-E Andersen, S Stripp, R Bilderbeek and J Geurts (1996), "The local information society, development and descriptions of possible scenarios for the assimilation of the new information technologies by the European society in the next decades" (EU Innovation Programme, European Commission, DGXIII, Brussels). See also EU Innovation Programme (1999).
- Wiebe E Bijker (1993), *Dutch, Dikes and Democracy*, Technology Assessment Texts no 11 (Technical University of Denmark, Lyngby).
- R Bilderbeek and I-E Andersen (1995), "Raising awareness among citizens: experience from European local scenario workshops on sustainable urban development", *EPTA Newsletter*, 10.
- Tarja Cronberg (1995), "Do marginal voices shape technology?", in Joss and Durant (1995) page 125.
- DBT, Danish Board of Technology (1999), [http://www.ing.dk/tekraad/ ask for "English"](http://www.ing.dk/tekraad/ask%20for%20English).
- M Elle (1992), *Byøkologiske Fremtidsbilleder (Scenarios on urban ecology)* (Danish Board of Technology, Copenhagen). See also EU Innovation Programme (1999).
- EU Innovation Programme, DGXIII (1999), <http://www.cordis.lu/innovation/home/html>, with self-training hypertext and CD multimedia slide show, in 11 European languages.
- Fleximodo (1999), <http://www.idis.unina.it/fleximodo/fleximodo/html>, is under development and will be gradually updated from the Fleximodo project.
- Toini S Floris and Charlotte Bidsted (1996), *Brugerbestyrelser på tværs — erfaringer fra kommuner og amter (User-boards across — experience from municipalities and counties)* (AKF Forlaget, Copenhagen).
- S Joss (1998), "Danish consensus conferences as a model in participatory technology assessment: an impact study of consensus conferences on Danish Parliament and Danish public debate", *Science and Public Policy*, 25(1), pages 2–22.
- S Joss (forthcoming), "Participation in parliamentary technology assessment: from theory to practice", in N J Vig and H Paschen (editors), *Parliaments and Technology: the Development of Technology Assessment in Europe* (State University of New York Press, New York).
- S Joss and J Durant (editors) (1995), *Public Participation in Science: the role of consensus conferences in Europe* (Science Museum, London).
- L Klüver (1995), "Consensus conferences in the Danish Board of Technology", in Joss and Durant (1995).
- James G March and Johan P Olsen (1989), *Rediscovering Institutions* (The Free Press, New York).
- Igor Mayer (1997), *Debating Technologies, A Methodological Contribution to the Design and Evaluation of Participatory Policy Analysis* (Tilburg University Press, Tilburg).
- Ministry of Environment (1994), "Byøkologiske anbefalinger", *Betænkning fra det rådgivende udvalg om byøkologi (Urban ecology recommendations)* (Ministry of Environment, Copenhagen).
- R E Sclove (1995), *Democracy and Technology* (Guilford Press, New York, London).
- R E Sclove (1997), "Using democratic design criteria in participatory technology assessment", unpublished.
- Eva Sørensen, Allan Dreyer Hansen and Carsten Greve (1996), *Demokrati i forandring (Democracy in Change)* (Projekt Offentlig sektor, Copenhagen).