Technology Policy Meets the Public
PESTO Papers 2

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Foreword

These papers have been written as part of the research project, Public Participation and Environmental Science and Technology Policy Options (PESTO), supported by the European Union's program in targeted socio-economic research. They are based on research conducted during the first "work package" of our project, which in most of the participating countries was carried out from September 1996 to December 1997. In the same period, there has been a slightly different Nordic project, which has been conducted in conjunction with the EU project, and we acknowledge the support of the Nordic Environmental Research Program in making possible the publication of our results in this form. These papers are to be seen as a joint product of the two overlapping project groups (research teams in Sweden, Norway, and Lithuania are partners in both projects; Italy, the Netherlands and the United Kingdom are only participants in the EU project, while Iceland and Denmark were only partners in the Nordic project).

It should be stressed that the papers are exploratory in nature, since the time available has been quite limited and each author has approached the material from somewhat different perspectives. There has been a certain common terminology and, most importantly, a common set of questions that have been asked of the material, based on discussions at PESTO meetings in Trondheim (November 1996) and Aalborg (May 1997). At those meetings, we agreed that it would be valuable to seek to divide the multidimensional "public" into more specific categories, and to discuss particular issues, such as the different types of entrepreneurship that have emerged to mediate between the public and the policy makers, the changing nature of activities carried out by environmental organizations, the varieties of experience with local Agenda 21, and the role of the public in sustainable transportation programs. The chapters that make up part one of this book were then written by a team of authors, drawing on examples from at least two of the different partner countries.

In part two, we present single-authored papers which were originally intended to be included in collaborative chapters. They are presented here, since their quality and informative value warrant wider dissemination. One presents the experience of public-policy interaction in Italy, a second the shifts in the Danish policy discourse on cleaner production, a third extends the PESTO perspective into the area of biotechnology and the final chapter discusses constructive technology assessment as a way to include the public more directly in technological development.

The production of this volume has been an experiment in both the form and content of research collaboration, and I would like to thank the authors for their patience and cooperation in a process of collective writing.

This anthology is the second in a series, and it might be of interest for readers to consult the first set of PESTO papers, which were published by Aalborg University Press in 1997 under the title *Public Participation and Sustainable Development: Comparing European Experiences.* Future publications are planned, and interested readers are invited to contact me if they would like additional information about PESTO. As editor and project coordinator, I thank my colleagues in the project for their contributions, and for their ability to translate my project vision into real results. I also wish to thank Bente Vestergaard for her able assistance in the further translation of those research results into readable form. For the more direct translation of material into English, I thank Richard Rogers and Emily Jamison Gromark.

Aalborg in May 1998
Andrew Jamison

Chapter One

Sustainable Development and the Problem of Public Participation

by Andrew Jamison and Brian Wynne

1. The Environment as a Bonding Narrative

In just about every industrialized country, it was at some point in the 1980s that environmental concern ceased to be a living source of collective identity for a relatively small number of movement activists and became instead a societal discourse: a bonding narrative. The apocalyptic tones, the "bad news" that had characterized so much of the environmental debate up till that time was gradually transformed into the encouraging, good news rhetoric of sustainable development, which, since it was propounded in 1987 in the Brundtland report, *Our Common Future,* has provided inspiration for very different kinds of social actors. What had previously been a wide ranging critique of industrial society and its waste and artificiality has been more or less replaced by a much more delimited set of symbols, ideas, slogans and practices that, in the 1990s, have been working their way into the worlds of science and technology, of business and government. The environmental "movement", which had earlier been seen by those in power as a threat to the further expansion of the corporate state has come instead to be seen, by many actors in both business and government, as an important contributor to economic recovery and rejuvenation, as well as a participant in developing new forms of scientific and technological knowledge (cf. Eder 1996, Jamison 1996).

From the paradigmatic notions of sustainable development and ecological modernization to the pragmatic techniques of cleaner production and pollution prevention to the new marketing strategies of green consumption and environmental labeling, the discourse of environmentalism has been reinvented over the past ten years as a cluster of green competences, as new forms of environmental expertise. The critical rejection of the wonders of modern science and technology that the environmental movement articulated

in the 1970s has come to be deconstructed and reconstituted, from the mid 1980s onward, as central components in constructive programs of science, technology and economics.

This discursive shift is intimately connected to changes in the character of the international political economy. By the mid 1980s, socio-economic life had become increasingly "globalized", with research and invention often carried out in one part of the world, technological innovation and development in another, and manufacture in still others. Individual firms had increasingly become nodes in transnational corporate networks, and socio-economic relations in general had more and more come to be governed by international institutions and rules of behavior. Both in terms of production and consumption, the fundamental structures of organization and decision-making had moved to a transnational space, making it increasingly difficult for nation states and governments to impose, or even articulate, their own independent policy agendas.

These geographical transformations have been accentuated - and, according to some observers, in large measure caused - by developments in telecommunications and information technology. In the 1980s, it became possible, and, in a few short years, common practice, to carry out economic transactions and conduct industrial activities on a global basis, and to shift operations from country to country depending on changes in market and financial conditions. In Europe, these developments have fed into the efforts to integrate policy making and to develop new kinds of institutions at a European "level". Increasingly, economic activity is conducted across national boundaries, and the key policy functions have been taken over by European regulations, commissions, authorities, and agencies.

For environmentalism, and environmental science and technology policy, these transformations have meant a shift in substantive focus - from the local and national to the transnational and global, when it comes to the issues to be dealt with - as well as a shift in location - from national bodies to intergovernmental and international organs, when it comes to policy making and implementation. In actual research practice, the new information and communication technologies have meant a great deal, in terms of the kinds of observations that can be simulated, the kinds of models that can be constructed, and the kinds of calculations that can be made. The "social construction" of scientific facts has been shifted from a more or less direct interaction with the environment and its component parts, to an ever more abstract and aggregate virtual environment of atmospheric, hydrological and geological processes that cannot be directly observed or, for that matter, studied.

It is increasingly apparent that the new environmental problems require for their "solution" something more than traditional, disciplinary science and technology. They rather seem to call for what has been termed a new "mode of knowledge production" that combines different disciplinary perspectives in a problem-oriented and context-dependent transdisciplinarity (Gibbons et al 1994). In particular, there is need for an intermediary expertise between the social and the technical, an expertise in environmental social science, or, as it is often called, the human dimensions of global change. This expertise involves a knowledge of particular methods of accounting, assessment, scenario building, forecasting, foresighting, and prediction for dealing with the extremely abstract and uncertain new range of environmental problems. But it is also, at various levels and in various ways, an expertise in societal adjustment, environmental management, life-cycle analysis, risk assessment. It is what Ulrich Beck terms reflexive knowledge, a form of knowledge that Beck sees as characteristic for the "risk society" in which we in Europe now find ourselves (Beck 1992; cf. Beck 1995).

The broad change of focus involved in the discursive move from "environmental protection" to "sustainable development" has complicated our appreciation of the attendant challenges, by explicitly proposing that the issues are much more than those of maintaining the functional viability of the natural environment. This has given widespread recognition to the insight that the natural and the human are inextricably intertwined and mutually defining. But the dominant "modernist" discourses in public policy, as well as in social theory and planning, continue to find it difficult, if not impossible, to digest and take seriously this fundamental insight. Thus the recognition-in-principle of the human challenges posed by sustainability still finds those human dimensions inadequately - indeed often counterproductively - expressed in the doctrines and programs of public policy.

It has been increasingly acknowledged that contemporary environmental challenges require for their resolution more than mere technical "fixes" to achieve optimal eco-efficiency in all areas of social and economic life. Even though finding appropriate technical solutions is important and challenging in itself, it has been fairly widely accepted that even the most optimistic of scenarios of such putative eco-efficiency improvements - which will have to be not just innovated but implemented, too - will be overtaken in terms of environmental impact, due to inexorably increasing consumption. In other words the background problem is our apparently still unrestrained and expanding demand for goods and services, with the attendant strains on natural systems. If eco-efficiency - and a greener, cleaner production and consump-

tion on all fronts - were a realistic prospect, it might buy us time, but it does not obscure the fundamental conclusion that unlimited material human demands and aspirations, as reflected in our basically exploitative relationships with nature and each other, are the main problem. These are problems of our human subjectivities, and of human culture, which therefore cannot be left to be reproduced and reinforced by default.

2. The Resistance of the Established

The quest for sustainable development has come to provide a new collective heuristic, a new historical project for late modern societies. The interpretive flexibility and lack of precision in such concepts as sustainable development, cleaner production, environmental management and green consumption offer opportunities for diverse actors to be held together in a common discursive arena, even though the particular policy options continue to be highly contested. At a time when the role of the state is being diminished in many areas, thus calling into question traditional notions of democratic process and representation, the quest for sustainability has led to an array of new forms of knowledge production and to a search for new modes of public participation. Indeed, a broader public involvement has come to be seen as fundamental to the effectiveness of many of the new policy proposals and measures.

Despite a certain rhetorical association between environmental sustainability and democratic renewal, however, the dominant forms of public policy discourse continue to serve as obstacles for broader participation. On the one hand, there has been a transfer of responsibility in many areas of environmental science and technology policy from the public to the private sectors, and a decrease in direct state involvement in research and innovation. Privatization has tended to limit public access to decision-making and to the setting of policy agendas. On the other hand, the typical form of policy making privileges technical expertise; in problem formulation, as well as in policy implementation, an instrumental and objectivist mind set delimits human agency, and tends to reduce social and political issues to matters of technical measurement and expert evaluation. Even non-governmental organizations are often affected by this scientistic cultural bias, seeking niches in the policy arena for instrumentalized and professionalized versions of environmental competence.

The instrumental forms of knowledge which have been virtually a defining feature of policy and expert advice embed and reproduce existing conceptualizations of the human subject and our instrumental relationship with nature. Thus whatever use they have been thus far, they need complementing and

indeed often challenging as to the proper and desirable scope of the instrumental ethic embedded within them. This instrumentalism does not pertain only to natural-scientific or technological forms of knowledge, which have been defined by the epistemic principle of instrumental prediction and control at least since the 17th century scientific revolution. It also pertains to dominant social sciences, especially economics, which play a defining role on the public policy domain. These instrumental and behaviorist social sciences such as most of psychology, geography, economics, demography and many others are epistemically correspondent with the natural sciences in these respects, humans being analytically constructed as objects which follow deterministic laws of behavior.

Even within scientific environmental or risk public policy discourses that are apparently only about nature, and nothing to do with the human, implicit models or visions of the human do thread such supposedly purely propositional "natural" knowledges. This hermeneutic dimension is always latently present, but especially when such natural knowledge is explicitly used as policy authority and the boundaries between scientific knowledge and policy as ambiguous as they typically are.

In his 1986 book, Ulrich Beck described processes of individualization going on in the mainstream institutions of modern society, fragmenting them from within and destroying the individual's identification with the institution - work, family, educational base, political party, etc. Those institutions correspondingly no longer offer protection, loyalty or commitment to which the individual might reciprocate. Against this backdrop the further factor of environmental risks intensifies these dynamics, according to Beck, and gives them their fundamentally new and distinctive form. These risks, he argues, are generated by modern science and its institutions, yet are no longer contained and controlled by them. Unlike in previous eras, even the rich and powerful cannot escape them. They are now pervasively global, uninsurably large and catastrophic in potential, and irreversible. Thus modern science, the epitome of modernity, has created a monstrous and comprehensive risk situation, yet cannot manage it. Even worse, according to Beck's thesis, scientific institutions cannot summon the integrity or maturity to acknowledge and take responsibility for this dire and historically new predicament.

Faced with this reality with its central breakdown of the scientifically-inspired maintenance of civil security, as Beck describes it, citizens at large have withdrawn identification, trust and legitimacy from modern scientific and expert-led institutions. Modernity as such has taken a reflexive turn, as ordinary people question the basis of political and technical authority which is constantly embarrassed by unanticipated, and often even denied, ecological

and human health consequences of its own previous "scientific" actions and technologies. People instead identify with and commit to new informal, extra-institutional forms of political activity often focused around issues previously defined as unpolitical, like lifestyle, health, and cultural practices; hence the growth of new subpolitical spheres and movements and cultural interest-groups of myriad kinds actively hostile to conventional institutional politics and policy.

Anthony Giddens' version of this reflexive process of sociocultural change in what he calls "high modernity" contains some key differences but also similarities with Beck's account (Giddens 1991). He emphasizes more the rise, in every walk of life, of expert disagreement and uncertainty (a version of expert institutions' inability to control risks), and the lay public's unprecedented encounter with a radical existential need therefore to make life-identity choices (including, crucially, "which experts shall I trust?") previously taken care of by monolithic (and according to Giddens, trusted) expert institutions. Giddens shares with Beck a concern with globalization, and with the severity and irreversibility of risks, but stresses not the role of ignorance (unanticipated environmental effects) in generating public mistrust, but the self-reflexive knowledge of the modern scientific temper itself as it has diffused more widely in modern society.

3. New Forms of Representation

For all their originality and persuasiveness in many respects, and despite some fundamental differences, for example as to the agent of the reflexive force at work (ignorance or knowledge? nature or human?), both these theories share an embedded construction, or representation, of the public as responding through a calculative, instrumental and individual subjectivity. The cultural, human responses to the inadequate forms of representation of the human given in rational policy discourses are inherently difficult to demonstrate, and are themselves a process recognized by our considered but fallible interpretive intervention, not by pretended observation alone. They advance a model of the human which is less reduced to a calculative instrumental individual and more of a human subject animated by non-instrumental feeling as much as instrumental calculation, and relational rather than isolated.

Natural discourses in public policy can never be purified of human correspondences which take on normative dimensions, but they should - and can - be rendered more transparent and publicly accountable. It seems that problematic representations of the human are being exercised but at the same time buried from open view in modern expert-led policy discourses about environ-

ment and risk. Moreover the kinds of tacit assumption, projection or representation of the human are not simply hypothetical models which are cast upon the waters of public debate and response to be tested and if inadequate, revised or replaced. They are typically not even recognized as existing and influencing public self-understandings, because scientific discourses are vehemently defended as exempt from any such human dimensions. Thus by default of such acknowedgement they become not merely representational errors, but an ontological program which in effect potentially imposes them as normatively authoritative definitions of the human dimensions of such issues and indeed more widely. Thus the imagined "human dimensions" may gradually - not deterministically but subtly - materialize as human subjects adapt to their intensified diffusion in public culture.

If such tacit human representations are inadequate as emotionally and intellectually recognizable discourses, they are not open to correction by purely intellectual means because they do not identify themselves in this way - they are tacit, and maybe even not conscious or deliberate, just reflecting available cultural resources in the prevailing policy and disciplinary discourses. Thus public reactions to the possible inadequacy of such human representations are likely to be indirect, and culturally-practically based rather than intellectual. They are most likely to engender disaffection, alienation, lack of moral identification, mistrust and practical self-differentiation from them without this necessarily being explicitly rationalized, deliberated, and "chosen" through conscious decision. The result is a culturally rooted, humanly engendered response to what may often (though not always) be a diffuse sense of profound alienation from the implicit representations of the human in dominant discourses which we are expected to respect and grant authority to.

Such an interpretation of a basically cultural process of public recoil and alienation from expert-led rational policy making and surrounding debate (for example in the ways the public is represented in discourse of public understanding of science, or in surveys of attitudes to environmental risks and science) is entirely consistent with the widespread research finding and common experience of public mistrust of and disaffection from modern forms of policy discourse on risks, environment and related issues (cf. Macnaghten and Urry 1998). This is not to argue that the posited poverty and concealment of such tacit human representations in official discourses is the only reason for this observed syndrome of public mistrust, but that it is an important factor. The cultural problem of unreflective embodiment and dissemination of such inadequate human representations is bound to make the problem of public alienation even worse, as research has shown that people are realistic

enough to recognize their own unavoidable dependency upon those same expert institutions which are both so badly misrepresenting them, and also avoiding recognition of those open and debatable human dimensions. Open recognition of this ultimately conditional nature of their scientific knowledge by such expert institutions would be a prior condition of their public authority and legitimacy. Yet they still appear to exercise an anachronistic contrary cultural instinct that their public authority depends upon the concealment of any such indeterminacies underlying their explicit natural expert discourses.

The depth and pervasiveness of this problematic and self-defeating modern cultural syndrome is not adequately taken into account in the social theories of modern cultural change of Beck and Giddens. Though these have provided a wealth of insight into late-modern conditions, they have failed in respect of their unreflexive adoption of a decisionistic, rational-choice and instrumental model of the human. Yet we must be aware that the forces and feelings engendering cultural, as distinct from instrumental and chosen, responses of public alienation and disaffection from modern expert policy systems or actors, are not going to be directly expressed or even expressible, hence they are never going to be amenable to direct demonstration in fieldwork situations, however intimate. It is also worth noting that such mistrust and alienation is often ambivalent, tinged with realism about dependency, and shows a countervailing conditional readiness to "trust" expert institutions. This may also reflect the essentially open and indeterminate interpretive work which the public also has to do to apprehend the tacit human representations which are problematic within expert discourses.

To summarize, the three basic aspects of most of the modern discourses of expert policy institutions which are problematic are their:

- determinism, which both symbolically and materially imprisons the human subject in a web of projected natural determination, predictability and controllability;
- their empirically and morally inadequate substantive accounts of the human as instrument, individual pursuers of self-interest;
- and the fact that, whether or not they are adequate substantively, they are hidden and unacknowledged, thus unaccountable and profoundly anti-democratic given that they potentially shape material human dispositions of a political and ethical kind.